

Tena Seeds, PE Senior Engineer, Uplands Unit Northwest Region Toxics Cleanup Program Washington State Department of Ecology PO Box 330316 Shoreline, WA 98133-9716 Arcadis U.S., Inc. 1420 5<sup>th</sup> Avenue Suite 2400 Seattle Washington 98101 Phone: 206 325 5254 Fax: 206 325 8218 www.arcadis.com

Date: May 23, 2025 Subject: BNSF Property Boring Logs Agreed Order No. DE 18042 Facility Site Identification No. 75486194 Cleanup Site Identification No. 14604 Time Oil Bulk Terminal – BNSF Property Seattle, WA

Dear Ms. Seeds,

On behalf of BNSF Railway Company (BNSF), Arcadis U.S., Inc. (Arcadis) is providing the boring logs for soil borings and monitoring well installation completed at the Time Oil BNSF Property in Seattle, Washington as part of the Remedial Investigation in accordance with the Ecology approved Remedial Investigation Work Plan (RIWP, Arcadis 2023).

Following soft dig clearance, the borings were advanced using sonic drilling technology to the depths noted in the boring logs (Attachment 1). Continuous soil cores were retrieved, screened, sampled and logged during drilling as described in accordance with the RIWP. Following completion, the entire borehole was either sealed using hydrated bentonite to prevent vertical transport between units or the boring was converted to permanent monitoring well.

Monitoring wells were constructed of 2-inch-diameter Schedule 40 polyvinyl chloride (PVC) pipe with 10 to 15 foot screens of 0.010-inch slotted PVC screen, in accordance with the Arcadis TGI – Monitoring Well Installation. Wells were installed to an approximate depth of 15 feet bgs (Perched WBZ) or 35 feet bgs (Shallow WBZ); however, the screen interval and total well depth were determined in the field based on the depth to the water table and soil lithology (Attachment 1).

The enclosed boring logs for SB-BN-01 through SB-BN-11 (Attachment 1) were reviewed by the field geologist and the licensed geologist.

Please contact me or Kyle Haslam with any questions or comments regarding these boring logs.

Ms. Tena Seeds Washington State Department of Ecology May 23, 2025

Sincerely, Arcadis U.S., Inc.

C. Anyth

Christopher Shepherd WA LG # 22004390



Email: <u>christopher.shepherd@arcadis.com</u> Direct Line: 602-797-4512

CC. Scott MacDonald, BNSF Shane DeGross, BNSF Kyle Haslam, Arcadis Emily Zikmund, Arcadis

## References:

Arcadis 2023. Remedial Investigation Work Plan, Time Oil Bulk Terminal – BNSF Property, Seattle, WA. Prepared for BNSF Railway Company. June 26.

Attachments: Attachment 1 – Boring Logs for the following:

- SB-BN-01
- SB-BN-02
- SB-BN-03/MW-BN-01
- SB-BN-04/MW-BN-02
- SB-BN-05
- SB-BN-06
- SB-BN-07/MW-BN-03
- SB-BN-08/MW-BN-04
- SB-BN-09
- SB-BN-10/MW-BN-05
- SB-BN-11

9	ARC/	٩D	S				Boring/Wel	I No.: <u>SB-BN-01</u>	
Soil	Boring	an an	d W	/ell	Cor	struction Log		Sheet: 1	of 1
Client I		BNSF					Logger:	Roberto Piemo	
Project	t Number:				•	•		Elizabeth Schel	
Project	t Name:	BNSF	Time	Oil R		Total Depth: 20.0 ft bgs	Reviewer:	Christopher Sh	
Depth (feet)	Sample ID	Rec. (%)	PID (ppm)	Blow Counts	USCS Graphic	Description		Construction Detail	ls
					Crapino	(0.0-2.5 ft) Not logged.			
				Air					
- 3 -	SB-BN-01- 2.5(110223)		64.3	Knife	SM	(2.5-3.0 ft) Silty SAND (0,80,20,0), fine to medium, subround to round; little silt, no plasticity, no dilatancy; poorly sorted; dry to moist; 10BG 6/1 -			
4						greenish gray. (3.0-5.0 ft) Not logged.			
_ 5 _	SB-BN-01-		93.1		SM	(5.0-5.5 ft) Silty SAND (0,80,20,0), fine to medium, subround to round; little			
6	5(110223)	Π		1		silt, no plasticity, no dilatancy; poorly sorted; dry to moist; 10BG 6/1 - greenish gray.			
						(5.5-10.0 ft) CLAY (0,5,0,95), low to medium plasticity; trace very fine sand, subround to round; dry to moist; hard; 10YR 5/1 - gray.			
		100.0							
_ 8 _	SB-BN-01- 7(110823)		16.9	-	CL				
9				-					
									Hydrated
_ 10	SB-BN-01-		0	-		(10.0-11.0 ft) Sandy SILT (0,30,70,0), no plasticity, no dilatancy; some very			Bentonite Chips
	10(110223)	Π		]		fine to fine sand, subround to round; dry to moist; stiff; 10YR 5/1 - gray.	_		Onipo
						(11.0-13.0 ft) Silty SAND (0,70,30,0), fine to medium, subround to round; some silt, no plasticity, no dilatancy; poorly sorted; dry to moist; 10YR 5/1 -			
				-	SM	gray.			
_ 13 _	SB-BN-01- 12(110823)		0	-		(13.0-17.0 ft) CLAY (0,5,0,95), medium plasticity; trace very fine to fine sand			
_ 14 _						subround to round; dry to moist; hard; 10YR 5/1 - gray.	'		
_ 15 _	SB-BN-01- 15(110223)	100.0	0		ĊĹ				
_ 16 _	10(110220)	11							
_ 17 _									
			0	-		(17.0-19.0 ft) Sandy SILT (0,30,70,0), no plasticity, no dilatancy; some very fine to fine sand, subround to round; dry to moist; stiff; 10YR 5/1 - gray.			
_ 18 _	SB-BN-01- 17(110823)				ML				
_ 19 _		_		-					
	SB-BN-01- 19(110823)		0	-	ŶŶŶŶŶŶ	(19.0-20.0 ft) SAND (0,90,10,0), fine to medium, subround to round; little silt; poorly sorted; dry to moist; 10YR 5/1 - gray.			
						20 ft. bgs End of Boring	. L		
_ 21 _									
22									
Drilling		Casca				Sampling Method: Sonic			
	Driller: Carlos Anguiano Sampling Length: Contir								
Driller Assistant: <u>Donovan Garretson, Willie Williams</u> Drilling Method: <u>Roto-Sonic</u> ↓ First Encountered Water (ft bgs): <u>NA</u> ↓ Static Water Level (ft btoc) <u>NA</u>									
Drill Ri		Geopr				Top of Casing Elev: <u>NA</u>			
Remar	ks:					Surface Elev: <u>NA</u>			
						North Coor: <u>NA</u> East Coor:NA			
Notes:	Abbrevi	ations:	bgs =	below	ground	surface, btoc = beneath top of casing, ft = feet, NA = not applica	ble, USCS Unit	fied Soil Classificat	tion Svstem.
			-		-	and Easting coordinates are reported in the NAD 83 (2011) system			-
	88 system. Soil percentages are field estimates (%gravel,%sand,%silt,%clay).								

9	Boring/Well No.: SB-BN-02										
Soil	Borino	a a	nd ۱	Nell	Cor	struction Log	Sheet: 1 of 1				
Client				ilway C			Logger: Roberto Piemontese				
	t Number:					•	Id Personnel: Elizabeth Scheller				
Depth	t Name:	BNS Re		D Blow		Total Depth: 20.0 ft bgs	Reviewer: Christopher Sheperd, LG Construction Details				
(feet)	Sample ID	(%	6) (ppr	n) Counts		Description					
						(0.0-5.0 ft) Not logged.					
_ 2 _				Air							
3				Knife							
4											
F 7											
5 6	SB-BN-02- 5(11023)		11.	7	SM	(5.0-6.0 ft) Silty SAND (0,80,20,0), fine to medium, subround to round; little silt, low plasticity, no dilatancy; poorly sorted; dry to moist; 10YR 5/1 - gray.					
						(6.0-10.0 ft) CLAY (0,5,0,95), low to medium plasticity; trace very fine sand, subround to round; dry to moist; hard; 10YR 5/1 - gray.					
- 7 -						cableana to realid, ally to mole, haid, for tool to gray.					
8			0	_	CL						
_ 9 _				_							
							Hydrated				
_ 10 _	SB-BN-02- 10(110223)		0		.•ŝŵ.•	(10.0-11.0 ft) SAND (0,90,10,0), fine to medium, subround to round; little silt	Bentonite				
_ 11 _	10(110220)	11				no plasticity, no dilatancy; poorly sorted; dry to moist; 10YR 5/1 - gray. (11.0-13.0 ft) Sandy SILT (0,20,80,0), no plasticity, no dilatancy; little very					
_ 12 _					ML	fine to fine sand, subround to round; dry to moist; very stiff; 10YR 5/1 - gray.					
			0	_							
_ 13 _					ML	(13.0-14.0 ft) SILT and SAND (0,40,60,0), very fine to fine, subround to round, no plasticity, no dilatancy; poorly sorted; dry to moist; very stiff; 10YR					
_ 14 _						5/1 - gray.					
_ 15 _	SB-BN-02-			_		(14.0-20.0 ft) CLAY (0,5,95,0), medium plasticity; trace very fine to fine sand subround to round; dry to moist; hard; 10YR 5/1 - gray.	,				
	15(110323)		0	_							
_ 17 _			0		CL						
_ 18 _											
19											
20	SB-BN-02- 19(110323)		0	_							
					<u> </u>	20 ft. bgs End of Boring					
_ 21 _											
22											
Drilling Driller:			<u>cade</u> os An	guiano		Sampling Method: <u>Sonic</u> Sampling Length: <u>Continue</u>	DUS				
Driller	Assistant:	Don	ovan	Garrets		illie Williams ⊻ First Encountered Wate					
-	Method:					Static Water Level (ft b	-				
Drill Ri Remar	-	<u>Geo</u>	probe	9		Top of Casing Elev: <u>NA</u> Surface Elev:NA					
						North Coor: NA					
						East Coor: <u>NA</u>					
Notes:			-		-	surface, btoc = beneath top of casing, ft = feet, NA = not applica and Easting coordinates are reported in the NAD 83 (2011) syst	-				
		-	-			eld estimates (%gravel,%sand,%silt,%clay).					

9	Boring/Well No.: <u>SB-BN-03/MW-BN</u> -01										
Soil	Boring	a an	d V	/ell	Cor	struction Log			Sheet: 1 of 2		
Client					ompar		Started: <u>10-31-2023</u>	Logger:	Roberto Piemontese		
	t Number: t Name:	30198 BNSF			1		•		Elizabeth Scheller Christopher Sheperd, LG		
Depth		Poo	PID	Blow	USCS	Deseri	Depth: 40.0 ft bgs	Reviewer.	Construction Details		
(feet)	Sample ID	(%)	(ppm)	Counts	Graphic		plion				
 _ 1  _ 2				Air		(0.0-2.5 ft) Not logged.		2-inch	Concrete		
	SB-BN-03- 2.5(103123)		2.3	Knife	SM	(2.5-3.0 ft) Silty SAND (10,60,30,0), fine some silt, low plasticity, no dilatancy; litt poorly sorted; dry to moist; 10YR 3/3 - c (3.0-5.0 ft) Not logged.	le gravel, subangular to subround;	diameter Sch. 40 P\ Casing			
						(5.0-5.0 ft) Not logged.					
5 6 7 7		100.0	0	-	SM	(5.0-8.0 ft) Silty SAND (10,70,20,0), fine silt; little gravel, subround to round; poor brown.					
8  _ 9			0	-	ML	(8.0-10.0 ft) Sandy SILT (0,30,70,0), no fine to fine sand, subround to round; dry gray.		2-inch			
10 -	SB-BN-03- 10(110223)		0	-		(10.0-12.5 ft) CLAY (0,5,0,95), medium subround to round; dry to moist; hard; 1		diameter S 40 PVC w screen 0.0 inch slot	ell Cemex #2/12 01 Mesh (12x20)		
12								¥			
13 13 14			0	-	SM	(12.5-14.0 ft) Silty SAND (0,80,20,0), fir silt; poorly sorted; dry to moist; 10YR 5/		2			
15						(14.0-20.0 ft) SILT and SAND (0,40,60, round, no plasticity, no dilatancy; poorly		Sch. 40 P			
		100.0	0			5/1 - gray.		End Cap			
16 17					ML						
 _ 18 _			0								
19									Hydrated		
_ 20 _	SB-BN-03-		0	-		(20.0-24.5 ft) SAND and SILT (0,60,40,	) very fine to fine subround to	_	Bentonite Chips		
21 _	20(110323)	100.0	-		SM	round, no plasticity, no dilatancy; poorly grayish brown.					
22							Compling Mathed Capia				
Drilling	Iling Co.:       Cascade       Sampling Method: Sonic         Iler:       Carlos Anguiano       Sampling Length: Continu					ous					
Driller Assistant: Donovan Garretson, Willie Williams						-					
~ ~	Method:						▼ Static Water Level (ft bt		toc (11/27/2023)		
Drill Ri	× –	Geop		from 2	28.0 to		Top of Casing Elev: <u>58.014</u>	tt			
Remar		Well					Surface Elev: <u>58.25 ft</u> North Coor:245415.97				
			•				East Coor: 1255853.07				
Notes:			-		-	surface, btoc = beneath top of cas					
		-			-	and Easting coordinates are repo		em, and the ele	vation is reported in the NAVD		
	88 system. Soil percentages are field estimates (%gravel,%sand,%silt,%clay).										

	<b>ARC</b> Borina			/ell	Cor	nstruction Log		Sheet:	2 of	2
				vay Co		-	Logger	: Roberto Pi		
oject	Number: 3			•	•	-		: Elizabeth S		
<u>ject</u>	Name: E	<u>INSF</u>	Time	e Oil R		Total Depth: 40.0 ft bgs	Reviewer	: Christophe		erd, LG
oth et)	Sample ID	Rec. (%)	PID (ppm)	Blow Counts	USCS Graphic	Description		Construction	Details	
			0			(20.0-24.5 ft) SAND and SILT (0,60,40,0), very fine to fine, subround to				
3					SM	round, no plasticity, no dilatancy; poorly sorted; dry to moist; 10YR 5/2 - grayish brown.				
4_										
_			0				_			
5 _						(24.5-30.0 ft) Silty SAND (0,85,15,0), fine to medium, subround to round; little silt; poorly sorted; dry to moist; 10YR 5/2 - grayish brown.	•			
6		100.0		-						
7_			0	-						
′ –					SM					
в			0	-						
9_				-						
-										
0_			0	-		(30.0-38.5 ft) SAND (0,95,5,0), medium to coarse, subround to round; trace				
1 _						silt; poorly sorted; moist to wet; 10YR 5/1 - gray.				Hydrated Bentonite
2_										Chips
-			0							
3										
4										
_ +					•`SŴ•`					
5	SB-BN-03- 35(110323)	100.0	0							
6 _										
7_										
-			0	-						
8_										
9 _						(38.5-40.0 ft) SILT (0,10,90,0), no plasticity, no dilatancy; little very fine to fine sand, subround to round; poorly sorted; moist to wet; very stiff; 10YR 5/1				
			0	-	ML	- gray.				
						40 ft. bgs End of Boring				
1_										
2_										
3										
4 _										
5_										
<u> </u>										
"										
7 _										
в_										
es:			-		-	surface, btoc = beneath top of casing, ft = feet, NA = not applicat				
						. Northing and Easting coordinates are reported in the NAD 83 (20 entages are field estimates (%gravel,%sand,%silt,%clay).	011) system, a	and the elevation	on is rep	orted

9	ARC	40	)I	S			Boring/Well No.: <u>SB-BN-04</u>	<u>/MW-BN</u> -02		
Soil	Boring	ла	nd	I W	/ell	Cor	nstruction Log	Sheet: 1	of 1	
	Name:						<b>—</b>	Logger: Roberto Piemo		
						ompu	-	Id Personnel: Elizabeth Sche		
Projec	t Name:	BN	SF 1	Time	Oil R	I	Total Depth: 20.0 ft bgs	Reviewer: Christopher Sh	neperd, LG	
Depth (feet)	Sample ID		ec. %) (	PID ppm)	Blow Counts	USCS Graphic	Description	Construction Deta	ails	
							(0.0-2.5 ft) Not logged.			
L 1 _										
2									Concrete	
					Air			2-inch diameter		
_ 3 _	SB-BN-04- 2.5(110223)		-	0	Knife	SM	(2.5-3 ft) Silty SAND (0,70,30,0), fine to medium, subround to round; some silt, low plasticity, no dilatancy; poorly sorted; dry to moist; 10YR 3/3 - dark	Sch. 40 PVC Casing	Hydrated Bentonite	
							brown. (3.0-5.0 ft) Not logged.		Chips	
- 5 -	SB-BN-04-			0		<u>.</u>	(5.0-10.0 ft) Silty SAND (0,70,30,0), fine to medium, subround to round;			
	5(110223)	1					some silt, no plasticity, no dilatancy; poorly sorted; dry to moist; 10YR 4/3 - brown.			
_ 7 _		10	0.00			SM				
8 _			-	0						
9_			F	0						
								2-inch diameter Sch.		
- 10 -	SB-BN-04-			0			(10.0-18.0 ft) CLAY (0,5,95,0), medium plasticity; trace very fine to fine sand	40 PVC well	Cemex #2/12	
	10(110823)	-1	F	-			subround to round; dry to moist; hard; 10YR 5/1 - gray.	y inch slot	Mesh (12x20) Lapis Lustre Sand	
-									Sand	
_ 12 _										
_ 13 _				0						
								Sch. 40 PVC		
_ 15 _	SB-BN-04-	- 10	0.0	0				End Cap		
	15(110823)	-1	F	-						
_ 17 _			ł	0						
_ 18 _										
							(18.0-20.0 ft) Silty SAND (0,70,30,0), fine to medium, subround to round; some silt; poorly sorted; dry to moist; 10YR 5/1 - gray.		Hydrated Bentonite Chips	
						SM			Criips	
20				0			20 ft. bgs End of Boring			
_ 21 _										
22 Drilling		Cas	scad	le			Sampling Method: <u>Sonic</u>			
Driller:										
	Driller Assistant: Donovan Garretson, Willie Williams									
-	Method:						=	toc) <u>:10.75 ft btoc (11/27/2023</u>	)	
Drill Ri Remai	•		opro g: Bl	be NV-2	239		Top of Casing Elev: <u>58.597</u> Surface Elev: <u>58.95 ft</u>	<u>11</u>		
							North Coor: <u>245380.72</u>			
							East Coor: <u>1255858.01</u>			
Notes				-		-	surface, btoc = beneath top of casing, ft = feet, NA = not applica		-	
		-				-	and Easting coordinates are reported in the NAD 83 (2011) systemates (% gravel % sand % silt % clave)	em, and the elevation is reported	t in the NAVD	
	88 system. Soil percentages are field estimates (%gravel,%sand,%silt,%clay).									

9	ARC	٩D	IS			Boring/Well	No.: <u>SB-BN-05</u>			
Soil	Boring	a an	d V	Vell	Cor	struction Log				Sheet: 1 of 2
Client	nt Name: <u>BNSF Railway Company</u> Date Started: <u>10-30-202</u> ect Number: <u>30195976</u> Date Completed: <u>11-07-202</u>							00	Roberto Piemontese Elizabeth Scheller	
	t Name:	BNSF Time Oil RI					al Depth: 40.			Christopher Sheperd, LG
Depth (feet)	Sample ID	Rec (%)	. PID	Blow	USCS Graphic	Desc	cription			Construction Details
					Graphic	(0.0-2.5 ft) Not logged.				
L 1 _										
2										
_ 3 _	SB-BN-05-		66.9	Air Knife	¢. ŜŴ.•	(2.5-3.0 ft) SAND and GRAVEL (40,50	0.10.0), medium to	o coarse, subround	t to	
	2.5(103023)	1		-		round; some granules, subangular to s dilatancy; poorly sorted; dry to moist;	subround; little silt,	, low plasticity, no		
- 4 -						(3.0-5.0 ft) Not logged.				
_ 5 _							1 4 4 14			
6			0	-		(5.0-14.0 ft) Sandy SILT (0,30,70,0), r fine to fine sand, subround to round; p 5/1 - gray. NOTE: Brown lens from 8.0	poorly sorted; dry to	o moist; stiff; 10YF	R	
							00 to 0.20 tr ago.			
		100.								
_ 8 _			0.5	-						
9_										
_ 10 _			1.1	-	ML					
			0							l hadra de el
_ 11 _										Hydrated Bentonite Chips
_ 12 _	SB-BN-05-		0							
	12(110623)	1		-						
						(14.0-15.0 ft) CLAY (0,5,0,95), medium subround to round; dry to moist; hard;		very fine sand,		
_ 15 _		100.	0	-		(15.0-16.5 ft) SILT and SAND (0,40,60	i0,0), very fine to fi			
_ 16 _			0	_	ML	round, low plasticity, no dilatancy; poo 10YR 5/1 - gray.	orly sorted; dry to m	noist; medium stiff	;	
_ 17 _						(16.5-18 ft) Silty SAND (0,80,20,0), ve	ery fine to fine, sub	pround to round; lit	tle	
			0		SM	silt; poorly sorted; dry to moist; 10YR	5/1 - gray.			
18				1		(18.0-24.0 ft) Sandy SILT (0,30,70,0), fine to fine sand, subround to round; c	, no plasticity, no d	lilatancy; some ver	у	
_ 19 _						gray.	ary to molet, mediu			
_ 20 _	SB-BN-05-		0	-	ML					
21	20(110723)			-						
22 Drilling	J Co.:	Casc	ade	1			Sampling M	lethod: <u>Sonic</u>		
Driller:			•	uiano			Sampling Le	ength: <u>Contin</u>		
	Assistant: Method:					illie Williams				t bgs
Drill Ri	g:	<u>Geop</u>	robe				Top of Casi	ng Elev: <u>NA</u>	-	
Remar	ks: <u>Ten</u> ft bo		/ well	from 2	28.5 to	38.5 ft bgs. DTW: 28.34				
		J <b>O</b> .					North Coor: East Coor: N			
Notes:	Abbrev	ations:	bgs =	below	ground	surface, btoc = beneath top of c			cable, USCS Unifi	ied Soil Classification System,
			-		-	and Easting coordinates are rep		AD 83 (2011) sy	stem, and the ele	vation is reported in the NAVD
	88 system. Soil percentages are field estimates (%gravel,%sand,%silt,%clay).									

7/	ARCA	D	S				Boring/Well No.: <u>SB-BN-05</u>
oil	Boring	an	d V	/ell	Cor	nstruction Log	Sheet: 2 of 2
				vay C	ompar	·	Logger: Roberto Piemontese
-	t Number: 3 t Name: E			e Oil R	21	Date Completed: <u>11-07-2023</u> Fiel Total Depth: 40.0 ft bgs	d Personnel: <u>Elizabeth Scheller</u> Reviewer: Christopher Sheperd, L
epth	Sample ID	Rec.	PID	Blow	USCS	Description	Construction Details
eet)		(%)	(ppm)	Counts	Graphic	(18.0-24.0 ft) Sandy SILT (0,30,70,0), no plasticity, no dilatancy; some very	
23 _					ML	fine to fine sand, subround to round; dry to moist; medium stiff; 10YR 5/1 - gray.	
24 _							
-			0			(24.0-28.0 ft) SAND (0,90,10,0), medium, subround to round; little silt; poorly sorted; dry to moist; 10YR 5/2 - gravish brown.	
25 _							
26 _		100.0		-	.•SW.•		
27 _							
28 _							
-			0			(28.0-29.5 ft) SILT (0,20,80,0), no plasticity, no dilatancy; little very fine to fine sand, subround to round; dry to moist; stiff; 10YR 5/1 - gray.	
.9					ML		
30 _			-			(29.5-38.5 ft) SAND (0,95,5,0), fine to medium, subround to round; trace silt; poorly sorted; dry to moist; 10YR 5/1 - gray.	¥
- 31 _							Hydrat Bentor
			0	-			Chip
-							
33 _			0				
34 _					.SW.		
35 _	SB-BN-05-	100.0	,				
36 _	35(110723)		0	-			
-							
37 _			0				
38 _							
39 _						(38.5-40.0 ft) CLAY (0,5,0,95), medium plasticity; trace very fine sand, subround to round; dry to moist; hard; 10YR 5/1 - gray.	
-0			0	_			
-						40 ft. bgs End of Boring	
1							
2_							
-3 _							
4_							
-							
15							
l6							
17 _							
- 18 _							
tes:			-		-	d surface, btoc = beneath top of casing, ft = feet, NA = not applicate. Northing and Easting coordinates are reported in the NAD 83 (20	
	-		-			<ul> <li>Northing and Easting coordinates are reported in the NAD 83 (20 entages are field estimates (%gravel,%sand,%silt,%clay).</li> </ul>	

9	ARC/	٩D	S			Boring/Well	No.: <u>SB-BN-06</u>		
Soil	Boring	an	d W	/ell	Cor	struction Log			Sheet: 1 of 2
Client		<u>BNSF</u>	Railv			y Date St	arted: <u>10-30-2023</u> leted: <u>11-02-2023</u> F	Field Personnel:	Roberto Piemontese Elizabeth Scheller
	Name:	BNSF	Time PID	Oil R	USCS	Total [	Depth: 40.0 ft bgs	Reviewer:	Christopher Sheperd, LG Construction Details
Depth (feet)	Sample ID	Rec. (%)			Graphic	Descripti	ion		
 _ 1 _ _ 2 _						(0.0-2.5 ft) Not logged.			
 - 3	SB-BN-06- 2.5(103023)		9.1	Air Knife	SM	(2.5-3.0 ft) Silty SAND (20,60,20,0), very f little granules, subangular to subround; litt poorly sorted; dry to moist; 10YR 3/3 - dar	le silt, low plasticity, no dilatancy		
- 4 -						(3.0-5.0 ft) Not logged.			
5  _ 6			0			(5.0-6.0 ft) SAND (0,90,10,0), very fine to silt, no plasticity, no dilatancy; poorly sorte			
			0			(6.0-7.0 ft) SAND (0,90,10,0), fine to med plasticity, no dilatancy; poorly sorted; dry t	ium, subround to round; little silt to moist; 10YR 5/1 - gray.	, no	
8		100.0				(7.0-10.0 ft) Sandy SILT (0,20,80,0), low p to fine sand, subround to round; dry to me		fine	
			0	-	ML				
10	SB-BN-06-		0	_		(10.0-15.75 ft) CLAY (0,5,0,95), medium p	plasticity: trace very fine to fine		
	10(110223)	Π		-		sand, subround to round; dry to moist; ha			Hydrated Bentonite Chips
12				_					
13 			0	_	CL				
			0	-					
_ 10 _		100.0				(15.75-19.0 ft) Silty SAND (0,75,25,0), fine	a to modium, subround to round		
			0	-		some silt, no plasticity, no dilatancy; poorl gray.			
					SM				
19			0	-		(19.0-26.3 ft) CLAY (0,5,0,95), medium pl	asticity; trace very fine sand.		
_ 20 _	SB-BN-06-		24.5			subround to round; dry to moist; hard; 10	/R 5/1 - gray.		
	20(110223)	100.0							
22 Drilling	Co :		de		<u>\////////////////////////////////////</u>	c	ampling Method: Sonic		
Driller:	•						ampling Length: Contin	iuous	
	Driller Assistant: Donovan Garretson, Willie Williams							-	
	Method:						Static Water Level (ft		
Drill Ri	~ <b>-</b>	Geopr porary		from	28 0 to		op of Casing Elev: <u>NA</u>		
Remar	ft bg					•	ourface Elev: <u>NA</u> Iorth Coor: <u>NA</u>		
Notes:	Ahhrevi	ations	has –	helow	around	E surface, btoc = beneath top of casin	ast Coor: <u>NA</u>	cable USCS Unifi	ied Soil Classification System
INUCES.					-	and Easting coordinates are report			
	88 system. Soil percentages are field estimates (%gravel,%sand,%silt,%clay).								

9	ARCA	D	S				Boring/Well No.: <u>SB-BN-06</u>
oil	Boring	an	d V	/ell	Cor	nstruction Log	Sheet: 2 of 2
				vay C	ompar	-	Logger: Roberto Piemontese
-	t Number: 3					•	d Personnel: <u>Elizabeth Scheller</u>
ojec epth		Rec.	PID	Blow	USCS	Total Depth: 40.0 ft bgs	Reviewer: Christopher Sheperd, LG Construction Details
eet)	Sample ID	(%)	(ppm)	Counts	Graphic	Description	
23 _			11.3			(19.0-26.3 ft) CLAY (0,5,0,95), medium plasticity; trace very fine sand, subround to round; dry to moist; hard; 10YR 5/1 - gray.	
.4					CL/		
25 _			5.9				
<u> </u>							
26		100.0	5		SW7	(26.3-26.4 ft) SAND (0,95,5,0), medium, subround to round; trace silt; poorly	
27 _						sorted; dry to moist; 10YR 5/1 - gray.	
28 _						(26.4-28.0 ft) CLAY (0,5,95,0), medium plasticity; trace very fine to fine sand, subround to round; dry to moist; hard; 10YR 5/1 - gray.	
29 _			1.4		ML	(28.0-29.8 ft) Sandy SILT (0,30,70,0), no plasticity, no dilatancy; some very fine to fine sand, subround to round; moist; very stiff; 10YR 5/1 - gray.	
30 _			-			(29.8-39.0 ft) SAND (0,95,5,0), very fine to medium, subround to round; trace silt, no plasticity, no dilatancy; poorly sorted; moist; 10YR 5/1 - gray.	¥
31 _			0				Hydrated Bentonite
32 _							Chips
_							
3 _			0				
34 _							
35 _	SB-BN-06-	100.0		-			
36 _	35(110223)		0				
_							
37 _			0				
38 _							
- 39 _							
-			0		CL	(39.0-40.0 ft) CLAY (0,5,0,95), medium plasticity; trace very fine sand, subround to round; moist; hard; 10YR 5/1 - gray.	
-0	I	1			<u> //////</u>	40 ft. bgs End of Boring	
11_							
12 _							
-  3							
-							
4							
15 _							
6_							
,							
17							
8_							
tes:	Abbrevia	tions.	bas -	below	around	d surface, btoc = beneath top of casing, ft = feet, NA = not applical	ble. USCS Unified Soil Classification
			-		-	. Northing and Easting coordinates are reported in the NAD 83 (20	
	in the NA	ND 88	3 syste	em. Sc	oil perce	entages are field estimates (%gravel,%sand,%silt,%clay).	

9	Boring/Well No.: <u>SB-BN-07/MW-BN</u> -03										
Soil	Boring	a an	d W	/ell	Cor	struction Log	Sheet: 1 of 2				
Client Projec		<u>BNSF</u>	Railv 976	vay Co	ompar	y Date Started: <u>10-30-2023</u>	Logger: <u>Roberto Piemontese</u> eld Personnel: <u>Elizabeth Scheller</u> Reviewer: Christopher Sheperd, LG				
Depth	Sample ID	Rec.	PID	Blow	USCS	Description	Construction Details				
(feet)		(%)	(ppm)	Counts	Graphic	(0.0-2.5 ft) Not logged.					
 - 1 _  - 2 _	SB-BN-07-			Air Knife		· · · · ·	Concrete				
3  _ 4 	2.5(103023)		0	Kille	ML	<ul> <li>(2.5-3.0 ft) Gravelly SILT (30,10,60,0), low plasticity, no dilatancy; some granules, subangular to subround; little very fine to medium sand, subround to round; dry to moist; medium stiff; 10YR 3/3 - dark brown.</li> <li>(3.0-5.0 ft) Not logged.</li> </ul>					
5 6			0	-	SM	(5.0-6.5 ft) Silty SAND (0,70,30,0), very fine to medium, subround to round; some silt, no plasticity, no dilatancy; poorly sorted; dry to moist; 10YR 4/3 - brown.					
_ 7 _			0		\$. \$. \$.	(6.5-7.5 ft) SAND (0,90,10,0), fine to medium, subround to round; little silt, ne plasticity, no dilatancy; poorly sorted; dry to moist; 10YR 5/1 - gray.	0				
8 8 9		100.0	,		SM	(7.5-10.0 ft) SAND and SILT (0,60,40,0), fine to medium, subround to round; poorly sorted; dry to moist; 10YR 5/1 - gray.	;				
_ 10 _			0	-							
	SB-BN-07- 10(110623)		0			(10.0-17.0 ft) SILT (0,10,90,0), no plasticity, no dilatancy; little very fine to fine sand; dry to moist; very stiff; 10YR 5/1 - gray.	 2-inch diameter				
							Sch. 40 PVC Casing Hydrated				
_ 13 _			0	-			Bentonite Chips				
_ 14 _											
_ 15 _		100.0									
_ 16 _											
_ 17 _			0			(17.0-19.0 ft) Silty SAND (0,70,30,0), fine to medium, subround to round;					
18					SM	some silt; poorly sorted; dry to moist; 10YR 5/1 - gray.					
_ 19 _			0	-		(19.0-19.5 ft) SAND (0,90,10,0), fine to medium, subround to round; little silt					
_ 20 _	SB-BN-07- 20(110623)		0			no plasticity, no dilatancy; poorly sorted; dry to moist; 10YR 5/1 - gray. (19.5-23.75 ft) CLAY (0,10,0,90), medium plasticity; little very fine to fine sand, subround to round; dry to moist; hard; 10YR 5/1 - gray.					
_ 21 _	20(110023)	100.0			CL	cana, cabrouna to round, ary to molet, nata, no n o/n * yrdy.					
22						Compling Mathedu Court-					
Drilling Co.:       Cascade       Sampling Method: Sonic         Driller:       Carlos Anguiano       Sampling Length: Continuous							ous				
Driller Assistant: Donovan Garretson, Willie Williams							er (ft bgs): <u>30 ft bgs</u>				
~ ~	Method:					=	toc) <u>28.5 ft btoc (11/27/2023)</u>				
Drill Ri Remar		<u>Geop</u> ı   Tag:		240		Top of Casing Elev: <u>59.454</u> Surface Elev: <u>59.72 ft</u>	ft				
		-				North Coor: 245370.86					
						East Coor: <u>1255914.93</u>					
Notes			-		-	surface, btoc = beneath top of casing, ft = feet, NA = not applicate and Easting coordinates are reported in the NAD 83 (2011) system and Easting coordinates are reported in the NAD 83 (2011) system and Easting coordinates are reported in the NAD 83 (2011) system and Easting coordinates are reported in the NAD 83 (2011) system and Easting coordinates are reported in the NAD 83 (2011) system and Easting coordinates are reported in the NAD 83 (2011) system and Easting coordinates are reported in the NAD 83 (2011) system and Easting coordinates are reported in the NAD 83 (2011) system and Easting coordinates are reported in the NAD 83 (2011) system and Easting coordinates are reported in the NAD 83 (2011) system and Easting coordinates are reported in the NAD 83 (2011) system and Easting coordinates are reported in the NAD 83 (2011) system and Easting coordinates are reported in the NAD 83 (2011) system and Easting coordinates are reported in the NAD 83 (2011) system and Easting coordinates are reported in the NAD 83 (2011) system and Easting coordinates are reported in the NAD 83 (2011) system and Easting coordinates are reported in the NAD 83 (2011) system and Easting coordinates are reported in the NAD 83 (2011) system and Easting coordinates are reported in the NAD 83 (2011) system and Easting coordinates are reported in the NAD 83 (2011) system and Easting coordinates are reported in the NAD 83 (2011) system and Easting coordinates are reported in the NAD 83 (2011) system and Easting coordinates are reported in the NAD 83 (2011) system and Easting coordinates are reported in the NAD 83 (2011) system and Easting coordinates are reported in the NAD 83 (2011) system and Easting coordinates are reported in the NAD 83 (2011) system and Easting coordinates are reported in the NAD 83 (2011) system and the NAD 83 (201	-				
	PVC = Polyvinyl Chloride. Northing and Easting coordinates are reported in the NAD 83 (2011) system, and the elevation is reported in the NAVD 88 system. Soil percentages are field estimates (%gravel,%sand,%silt,%clay).										

7/	ARCA	D	S			Boring/Well No.: <u>SB-BN-07/MW-BN</u> -0
Soil	Boring	and	d We	ell Cor	struction Log	Sheet: 2 of 2
	Name: <u>E</u> Number: <u>3</u>			y Compan	-	Logger: <u>Roberto Piemontese</u>
-			Time C	il RI	Date Completed: <u>11-06-2023</u> Fiel Total Depth: 40.0 ft bgs	Reviewer: Christopher Sheperd, L
epth eet)	Sample ID	Rec. (%)	PID B (ppm) Co	low USCS ounts Graphic	Description	Construction Details
23 _ 24 _ 25 _			21.5		<ul> <li>(19.5-23.75 ft) CLAY (0,10,0,90), medium plasticity; little very fine to fine sand, subround to round; dry to moist; hard; 10YR 5/1 - gray.</li> <li>(23.75-24.25 ft) SAND (0,90,10,0), fine to medium, subround to round; little silt; poorly sorted; dry to moist; 10YR 6/3 - pale brown.</li> <li>(24.25-27.0 ft) CLAY (0,5,0,95), medium plasticity; trace very fine sand, subround to round; dry to moist; hard; 10YR 5/1 - gray.</li> </ul>	Hydrati Benton Chips J. 2-inch diameter Sch. 40 PVC Casing
26 27 28 29		100.0	0	SM CL ML	<ul> <li>(27.0-27.5 ft) Silty SAND (0,70,30,0), very fine to medium, subround to round; some silt, no plasticity, no dilatancy; poorly sorted; dry to moist; 10YR 5/1 - gray.</li> <li>(27.5-28.5 ft) CLAY (0,5,0,95), medium plasticity; trace very fine to medium sand, subround to round; dry to moist; hard; 10YR 5/1 - gray.</li> </ul>	
30 _ 31 _ 32 _ -			0		<ul> <li>(28.5-29.0 ft) Sandy SILT (0,30,70,0), no plasticity, no dilatancy; some very fine to medium sand, subround to round; dry to moist; medium stiff; 10YR 5/1 - gray.</li> <li>(29.0-38.5 ft) SAND (0,90,10,0), fine to medium, subround to round; little silt, no plasticity, no dilatancy; poorly sorted; moist; 10YR 5/1 - gray.</li> </ul>	2-inch diameter Sch. 40 PVC well − − − − − − − − − − − − − − − − − −
33 34 35 36	SB-BN-07- 35(110623)	100.0	0	ŚŴ		screen 0.01 inch slot
- 37 _ 38 _ 39 _ -			0		(38.5-40.0 ft) CLAY (0,5,0,95), medium plasticity; trace very fine to fine sand, subround to round; moist; hard; 10YR 5/1 - gray.	Hydrate Benton
40 41 _ 42 _ 43 _ 44 _			· · · · · ·		40 ft. bgs End of Boring	Chips
- 45 _ 46 _ 47 _ 48 _						
otes:	System,	PVC =	Polyvin	yl Chloride.	surface, btoc = beneath top of casing, ft = feet, NA = not applical Northing and Easting coordinates are reported in the NAD 83 (20 ntages are field estimates (%gravel,%sand,%silt,%clay).	

9	ARC	٩D	S				Boring/Well No.: <u>SB-BN-08/MW-BN</u> -04		
Soil	Boring	an	d W	/ell	Cor	nstruction Log	Sheet: 1 of 2		
Client		BNSF					Logger: Roberto Piemontese		
Project	t Number:						eld Personnel: Elizabeth Scheller		
Project	t Name:	BNSF	Time	Oil R		Total Depth: 40.0 ft bgs	Reviewer: Christopher Sheperd, LG		
Depth (feet)	Sample ID	Rec. (%)	PID (ppm)	Blow Counts	USCS Graphic	Description	Construction Details		
						(0.0-2.5 ft) Not logged.			
- 1 -									
2							Concrete		
[ ]				Air			2-inch diameter		
_ 3 _	SB-BN-08- 2.5(103023)		253	Knife	//ĊĹ//	(2.5-3.0 ft) CLAY (10,0,0,90), low plasticity; little silt; little granules, subangular to subround; dry to moist; soft; 10BG 5/1 - greenish gray.	Sch. 40 PVC Hydrated Casing Bentonite		
4						(3.0-5.0 ft) Not logged.	Chips		
[ ]									
_ 5 _			-			(E 0 C 5 H) Condu CII T (0 20 70 0) no plasticity no dilatanany come you fin			
6					ML	(5.0-6.5 ft) Sandy SILT (0,30,70,0), no plasticity, no dilatancy; some very fin- to fine sand, subround to round; dry to moist; medium stiff; 10YR 4/1 - dark			
			0			gray.			
_ 7 _						(6.5-8.5 ft) Sandy SILT (0,15,85,0), no plasticity, no dilatancy; little very fine to fine sand, subround to round; dry to moist; stiff; 10YR 4/1 - dark gray.			
		100.0	0	-	ML				
- 8 -				-					
[ 9 ]						(8.5-11.0 ft) SAND (0,95,5,0), medium, subround to round; trace silt; poorly sorted; dry to moist; 10YR 5/1 - gray.			
			1.7	-	SW.		2-inch diameter Sch. Cemex #2/12		
_ 10 _	SB-BN-08-		0	-			40 PVC well Mesh (12x20) screen 0.01 Lapis Lustre		
	10(110123)	1					inch slot Sand		
						(11.0-19.0 ft) SILT and SAND (0,40,60,0), very fine to fine, no plasticity, no dilatancy; poorly sorted; dry to moist; very stiff; 10YR 5/1 - gray.			
_ 12 _									
_ 13 _			0						
_ 14 _			0	-					
_ 15 _		100.0		-	ML		Sch. 40 PVC End Cap		
		100.0	ή						
_ 16 _			0	-					
_ 17 _				-					
				-					
_ 18 _			0	-					
_ 19 _							Hydrated		
			0	1	\$\$Ŵ.*	(19.0-19.5 ft) SAND (0,95,5,0), fine to medium, subround to round; trace silt	; Bentonite Chips		
_ 20	Sb-BN-08-		-		ML	poorly sorted; dry to moist; 10R 7/1 - light gray. (19.5-20.5 ft) Sandy SILT (0,30,70,0), no plasticity, no dilatancy; some very			
	20(110123)	1				fine sand, subround to round; dry to moist; stiff; 10YR 4/1 - dark gray.			
		100.0	"		ML	(20.5-24.5 ft) SILT and SAND (0,40,60,0), very fine to fine, no plasticity, no dilatancy; poorly sorted; dry to moist; stiff; 10YR 5/1 - gray.			
22									
-	Drilling Co.:       Cascade       Sampling Method: Sonic         Driller:       Carlos Anguiano       Sampling Length: Continuous								
Driller:			•		on \//	Illie Williams Sampling Length: <u>Continu</u> ▼ First Encountered Wate			
	Method:					=	toc) <u>:NA</u>		
Drill Ri		Geopr				Claire Water Level (if b Top of Casing Elev: <u>59.551</u>			
Remar	ks: <u>Terr</u>	porary	well			0 38.0 ft bgs. DTW: 29.0 Surface Elev: 59.83 ft			
	ft bg	ls. Wel	l Tag	: BNV	-207	North Coor: 245356.53			
						East Coor: <u>1255950.27</u>			
Notes:			-		-	surface, btoc = beneath top of casing, ft = feet, NA = not application $\overline{D}$			
						and Easting coordinates are reported in the NAD 83 (2011) system	tem, and the elevation is reported in the NAVD		
88 system. Soil percentages are field estimates (%gravel,%sand,%silt,%clay).									

9	ARC/	٩D	S				Boring/Well No.: <u>SB-BN-08/MW-BN</u> -04
Soil	Boring	g an	d W	/ell (	Cor	nstruction Log	Sheet: 2 of 2
Client I	Name:	BNSF	Railv			Date Started: <u>10-30-2023</u>	Logger: Roberto Piemontese
	Number: Name:	<u>30195</u> BNSF		Oil R		Date Completed: <u>11-01-2023</u> Fie Total Depth: 40.0 ft bgs	ld Personnel: <u>Elizabeth Scheller</u> Reviewer: Christopher Sheperd, LG
Depth (feet)	Sample ID	Rec.	PID		USCS	Description	Construction Details
 _ 23 _					ML	(20.5-24.5 ft) SILT and SAND (0,40,60,0), very fine to fine, no plasticity, no dilatancy; poorly sorted; dry to moist; stiff; 10YR 5/1 - gray.	
_ 24 _			0				
_ 25 _						(24.5-30.0 ft) Silty SAND (0,80,20,0), fine to medium, subround to round; litt silt; poorly sorted; dry to moist; 10YR 5/1 - gray.	e
_ 26 _		100.0					
_ 27 _			0		SM		
28  _ 29			0				
30						(30.0-38.5 ft) SAND (0,95,5,0), medium, subround to round; trace silt; poorly	<b>_</b>
_ 31 _				4		sorted; wet; 10YR 5/1 - gray.	Hydrated Bentonite Chips
_ 32 _			0				
33 34				4			
		100.0			ŜŴ.		
36	SB-BN-08- 35(110123)	100.0	0				
37							
_ 38 _			0				
_ 39 _					ML	(38.5-40.0 ft) Sandy SILT (0,20,80,0), no plasticity, no dilatancy; little very fine sand, subround to round; dry to moist; hard; 10YR 5/1 - gray.	
40						40 ft. bgs End of Boring	
41 -							
_ 43 _							
 _ 44 _							
 _ 45 _							
46							
_ 47 _							
_ 48 _							
Notes:	System	n, PVC =	= Poly	vinyl Cł	nloride	d surface, btoc = beneath top of casing, ft = feet, NA = not application . Northing and Easting coordinates are reported in the NAD 83 (2	
	in the N	NAVD 88	3 syste	em. Soi	l perce	entages are field estimates (%gravel,%sand,%silt,%clay).	

9	ARC	٩D	S					Boring/Well	No.: SB-BN-09
Soil	Boring	an a	d W	/ell	Cor	struction Log			Sheet: 1 of 1
Client		BNSF					11-02-2023	Logger:	Roberto Piemontese
Projec	t Number:	<u>30195</u>	976	-		Date Completed:			Elizabeth Scheller
	t Name:	BNSF				Total Depth:	20.0 ft bgs	Reviewer:	Christopher Sheperd, LG Construction Details
Depth (feet)	Sample ID	Rec. (%)	PID (ppm)	Blow Counts	USCS Graphic	Description			Construction Details
						(0.0-2.5 ft) Not logged.			
_ 2 _				A :					
	SB-BN-09- 2.5(110223)		0	Air Knife	//ci//	(2.5-3 ft) Sandy CLAY (0,15,0,85), low plasticity; litt	tle very fine sand; dry to		
$\left  \right $		1				moist; very stiff; 10YR 5/1 - gray. (3.0-5.0 ft) Not logged.			
4 _									
_ 5 _	SB-BN-09-		0			(5-12 ft) CLAY (0,10,0,90), low to medium plasticity	v: little verv fine sand: drv		
6	5(110223)	┨				to moist; hard; 10YR 4/1 - dark gray.	,,,,,,,		
		100.0	0						
- 8 -									
_ 9 _				-					
_ 10 _			0						Hydrated
	SB-BN-09- 10(110323)		1						Bentonite Chips
_ 11 _			0						
_ 12 _					ML				
_ 13 _						(12.0-12.5 ft) Sandy SILT (0,30,70,0), no plasticity, fine to fine sand, subround to round; dry to moist; s	stiff; 10YR 4/1 - dark gray.		
			0		ML	(12.5-13.0 ft) CLAY (0,10,0,90), low to medium plas dry to moist; hard; 10YR 4/1 - dark gray.			
14_						(13.0-14.0 ft) Sandy SILT (0,30,70,0), no plasticity, fine to fine sand, subround to round; dry to moist; s	stiff; 10YR 4/1 - dark gray.		
_ 15	SB-BN-09-	100.0				(14.0-17.0 ft) CLAY (0,10,0,90), low to medium plast dry to moist; hard; 10YR 4/1 - dark gray.	sticity; little very fine sand;		
16	15(110323)	-17		-	CL				
			0		ML	(17.0-18.0 ft) SILT and SAND (0,40,60,0), very fine round, no plasticity, no dilatancy; poorly sorted; dry			
_ 18 _						dark gray.			
_ 19 _					. SW.	(18.0-20.0 ft) SAND (0,90,10,0), fine to medium, su poorly sorted; dry to moist; 10YR 5/1 - gray.	ubround to round, little slit,		
20			0						
						20 ft. bgs End of Boring			
21 									
22 Drilling	. Co :	Casa	de			<b>O</b> arra Ba	a Mothod: Conic		
Drilling Driller:		Casca Carlos		uiano		-	ng Method: <u>Sonic</u> ng Length: <u>Continuou</u>	S	
Driller	Driller Assistant: Donovan Garretson, Willie Williams							(ft bgs): <u>NA</u>	
Drilling Drill Ri	Method:	Roto-S				⊻ Stati Top of C	ic Water Level (ft btoo Casing Elev: <u>NA</u>	,	
Remar	~ т			from	10.0 to		Elev: <u>NA</u>		
						North Co	oor: <u>NA</u>		
Notos	Abbrox	ationa	hae -	helow	around	East Co			ind Soil Classification System
Notes			-		-	surface, btoc = beneath top of casing, ft = f and Easting coordinates are reported in the			
						eld estimates (%gravel,%sand,%silt,%clay).			· · · · · · · · · · · · · · · · · · ·

9	ARC/	٩D	S	Boring/Well No.: <u>SB-BN-10/MW-BN</u> -05					
Soil	Boring	an	d W	Sheet: 1 of 2					
	Soil Boring and Well Construction Log       Sheet: 1 of 2         Client Name:       BNSF Railway Company         Date Started:       10-30-2023         Logger:       Roberto Piemontese								
	t Number:			, .	on par		eld Personnel: Elizabeth Scheller		
		BNSF		e Oil R	1	Total Depth: 40.0 ft bgs	Reviewer: Christopher Sheperd, LG		
Depth (feet)	Sample ID	Rec. (%)	PID (ppm)	Blow Counts	USCS Graphic	Description	Construction Details		
						(0.0-2.5 ft) Not logged.			
<u> </u>									
2							2-inch		
<b> </b>	SB-BN-10-		45.4	Air Knife			diameter Hydrated		
- 3 -	2.5(103023)	┦	15.1	Rime	SM	(2.5-3.0 ft) SAND and SILT with gravel (10,50,40,0), medium, subround to round, low plasticity; little granules, subround to round; poorly sorted; dry to	Sch. 40 PVC Chips		
4						moist; 10YR 4/3 - brown. (3.0-5.0 ft) Not logged.			
						(S.O-S.O R) Not logged.	지 않는 것이 없어. 이번 것이 같아요.		
_ 5 _			0			(E 0 7 0 ft) Silks OLAV (0 10 15 75) modium plasticity little silk little fine			
6	SB-BN-10-			-		(5.0-7.0 ft) Silty CLAY (0,10,15,75), medium plasticity; little silt; little fine sand; dry to moist; hard; 10YR 5/3 - brown.			
	5(110723)								
_ 7 _		-		-			[] [] [] [] [] [] [] [] [] [] [] [] []		
		100.0	55.5	-	SŴ.	(7.0-8.0 ft) SAND (0,90,10,0), fine to medium, subround to round; little silt; poorly sorted; dry to moist; 10YR 5/1 - gray.			
- 8 -						(8.0-10.0 ft) Sandy CLAY (0,20,0,80), medium plasticity; little very fine to fin			
[ 9 ]				-		sand, subround to round; dry to moist; medium stiff; 10YR 5/3 - brown.			
			977	-			diameter Sch.		
_ 10 _	SB-BN-10-		0	-		(10.0-13.0 ft) SILT and SAND (0,40,60,0), very fine to fine, subround to	40 PVC well Mesh (12x20) screen 0.01 Lapis Lustre		
	10(110723)	┨	-	1		round, no plasticity, no dilatancy; poorly sorted; dry to moist; stiff; 10YR 5/1 gray.			
					ML	gray.			
_ 12									
_ 13 _	SB-BN-10-								
	12(110723)				$\overline{\Lambda}$	(13.0-15.0 ft) No Recovery.			
_ 14		-			X				
					$ / \setminus$		Sch. 40 PVC		
		80.0	0	1		(15.0-18.0 ft) CLAY (0,10,0,90), medium plasticity; little very fine to fine sam subround to round: dry to moist: hard: 10YR 5/1 - gray.	d, End Cap		
_ 16 _						subround to round; dry to moist; nard; 10YR 5/1 - gray.			
					CL/				
_ 17 _			0						
_ 18 _									
						(18.0-19.8 ft) SAND (0,90,10,0), fine to medium, subround to round; little silt no plasticity, no dilatancy; poorly sorted; dry to moist; 10YR 5/1 - gray.	t,		
_ 19 _			16.8	1	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$		Hydrated		
_ 20 _				]	ŻĊĿŻ	(19.8-20.0 ft) CLAY (0,10,0,90), medium plasticity; little very fine to fine same	Bentonite Chips		
- 1	SB-BN-10- 20(110723	A	0	-	SM	subround to round; dry to moist; very stiff; 10YR 5/1 - gray.			
_ 21 _		100.0			ML	(20.0-20.5 ft) Silty SAND (0,70,30,0), fine to medium, subround to round; some silt, no plasticity, no dilatancy; poorly sorted; dry to moist; 10YR 5/1 -			
22					SM	gray.			
Drilling	Co.:	Casca	de			Sampling Method: Sonic			
Driller:		Carlos	•			Sampling Length: Continu			
	Assistant:		er (ft bgs): <u>28.5 ft bgs</u>						
Drilling Drill Ri	Method:	Roto-S Geopr				otoc) <u>NA</u>			
Remar	· –			from	27.0 to	Top of Casing Elev: <u>59.555</u> o 37.0 ft bgs. DTW: 30.5 Surface Elev: <u>59.85 ft</u>	/ 1(		
l		s. Wel							
						North Coor: <u>245337.31</u> East Coor: <u>1255978.78</u>			
Notes:	<u>Abbrevi</u>	ations:	bgs =	below	ground	surface, btoc = beneath top of casing, ft = feet, NA = not application	able, USCS Unified Soil Classification System,		
						and Easting coordinates are reported in the NAD 83 (2011) sys			
	<u>88 syste</u>	em. Soi	perce	entage	s are fi	eld estimates (%gravel,%sand,%silt,%clay).			

	ARC/ Boring			/ell	Cor	nstruction Log	Bo	oring/Well No.: <u>SB-BN-10/MW-BN</u> -05 Sheet: 2 of 2
ent l oject	Name: t Number:	BNSF	Railv 976	vay Co	ompar	Date Started: <u>10-30-2023</u> Date Completed: <u>11-07-2023</u> Fiel	d Pei	Logger: <u>Roberto Piemontese</u> rsonnel: <u>Elizabeth Scheller</u>
epth eet)	t Name: Sample ID	Rec. (%)	PID	Blow	USCS Graphic	Total Depth: 40.0 ft bgs Description		eviewer: Christopher Sheperd, LG Construction Details
23	SB-BN-10- 22(110723)				SM	<ul> <li>(20.5-21.0 ft) Sandy SILT (0,30,70,0), no plasticity, no dilatancy; some very fine to fine sand, subround to round; poorly sorted; dry to moist; stiff; 10YR 5/1 - gray.</li> <li>(21.0-25.0 ft) SAND and SILT (0,60,40,0), very fine to medium, subround to round, no plasticity, no dilatancy; poorly sorted; dry to moist; 10YR 5/1 - gray.</li> </ul>		
25 26 27 28 29		100.0	0			(25.0-38.0 ft) SAND (0,90,10,0), fine to medium, subround to round; little silt, no plasticity, no dilatancy; poorly sorted; dry to moist; 10YR 5/1 - gray.		
30 31 32 33			0		SW.			— Hydratec Bentonite Chips
- 34 _ 35 _ 36 _ 37 _ -	SB-BN-10- 33(110723) SB-BN-10- 35(110723)	- 100.C	0					
38 39 40			0		CL	(38.0-40.0 ft) CLAY (0,10,0,90), medium plasticity; little very fine to fine sand, subround to round; dry to moist; very stiff; 10YR 5/1 - gray.		
- - - - - - - - - - - - - -						40 ft. bgs End of Boring		
+7 +8	Abbrow	ationa	bas	bolow		deurface block bonath ton of accing ft fact NA material		ISCS Unified Sell Close Francisco
tes:	System	, PVC :	= Poly	vinyl C	hloride	d surface, btoc = beneath top of casing, ft = feet, NA = not applicate . Northing and Easting coordinates are reported in the NAD 83 (20) entages are field estimates (%gravel,%sand,%silt,%clay).		

9	ARC/	٩D	S	Boring/Well No.: <u>SB-BN-11</u>				
Soil	Boring	an a	d W	Sheet: 1 of 1				
Client I					ompar		Logger: Roberto Piemontese	
1 -	Number:					· · · · · · · · · · · · · · · · · · ·	d Personnel: Elizabeth Scheller	
Depth	Name:	BNSF Rec.	PID	Blow		Total Depth: 20.0 ft bgs	Reviewer: Christopher Sheperd, LG Construction Details	
(feet)	Sample ID	(%)			Graphic	Description		
						(0.0-2.5 ft) Not logged.		
- 2 -				Air				
- 3 -	SB-BN-11- 2.5(103023)		143	Knife	CĹ/	(2.5-3 ft) Sandy CLAY (0,15,0,85), medium plasticity; little silt; dry to moist; medium stiff; 10BG 5/1 - greenish gray.		
4						(3.0-5.0 ft) Not logged.		
5								
	SB-BN-11- 5(103023)		28.1	-	CL/	(5.0-5.5 ft) Silty CLAY (0,10,15,75), medium plasticity; little silt; little fine sand; dry to moist; medium stilf; 10BG 5/1 - greenish gray.		
6 _					CL	(5.5-6.5 ft) CLAY (0,10,0,90), low plasticity; little very fine sand, subround to round; dry to moist; very stiff; 10YR 4/3 - brown.		
[ 7 ]						(6.5-9.0 ft) CLAY (0,10,0,90), low to medium plasticity; little very fine sand; dry to moist; stiff; 10R 7/1 - light gray.	-1	
8_		100.0			CL	ury to moist, sun, for // i - light gray.		
_ 9 _								
			399.1		SM	(9.0-10.0 ft) Silty SAND (0,80,20,0), fine to medium, subround to round; little silt; poorly sorted; dry to moist; 10R 7/1 - light gray.	Hydrated	
	SB-BN-11- 10(110123)		3.5			(10.0-17.5 ft) Sandy SILT (0,20,80,0), low plasticity, no dilatancy; little very	Bentonite	
L 11 _	10(110120)	11				fine to fine sand; dry to moist; very stiff; 10R 7/1 - light gray.		
_ 12 _								
_ 13 _								
			4.7	-	ML			
14			3.5	-				
_ 15	SB-BN-11-	100.0	0	-				
_ 16 _	15(110123)	Π						
_ 17 _								
			0	-		(17.5-19.0 ft) SAND (0,95,5,0), fine to medium, subround to round; trace silt;		
			0.1		ŜŴ.	poorly sorted; dry to moist; 10R 7/1 - light gray.		
_ 19 _ -       -				-		(19-20 ft) Sandy SILT (0,30,70,0), no plasticity, no dilatancy; some very fine		
20			0			to fine sand; dry to moist; very stiff; 10R 7/1 - light gray. 20 ft. bgs End of Boring		
_ 21 _								
22								
u v	Drilling Co.: Cascade Sampling Method: Sonic							
Driller: Driller		Carlos Donov	•			Sampling Length: <u>Continuo</u> <u>illie Williams</u> ▼ First Encountered Wate		
Drilling	Drilling Method: Roto-Sonic							
Drill Ri Remar	~ <b>-</b>	<u>Geop</u> porary		from 5	5.0 to '	Top of Casing Elev: <u>NA</u>		
		. ,						
Net	<u></u>	otiona	has	holow	are	East Coor: $\underline{NA}$	ala LICCE Linified Seil Classification Custom	
Notes:			-		-	surface, btoc = beneath top of casing, ft = feet, NA = not applicat and Easting coordinates are reported in the NAD 83 (2011) system	-	
					-	eld estimates (%gravel,%sand,%silt,%clay).		