

Project Number: Borehole Location: Drilling Personnel: Drilling Methods: HSA-4 1/4-ID, Mobile B-56 Sampling Methods: Split Spoon 18" in length Field Geologist: Ching-Pi Wang Date Started: 10/24/96 Depth Water First Encountered: 21 feet Ground Surface:	Project Name: Cornet Bay Marina Drilling Company: Tacoma Pump & Drill Drill Rig Type/Number: Bit Type/Size: Hammer Wt: Drop: Assistant: Date Completed: 10/24/96 Completion Depth: 31 feet Top of Well Casing:
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Sampling			Depth (Feet bgs)	Approximate Well Construction	USCS Symbol	Lithologic Description	Remarks
Sample No.	Blow Count	Recovery (In)					
B-11-5	7/3 6	8 in	0	Bentonite Chips			Flush ground completion
			1				
			2				
			3				
			4				
			5				
			6				
			7				
B-11-10	1 2 9	8 in	9	Top of Screen			
			10				
			11				
			12				
B-11-15	7 9 10	6 in	13	CSSI 10-20'			May have perched water table at 15-17 feet bgs
			14				
			15				
			16				
B-11-20	4 15 8	18 in	17	CSSI 10-20'			
			18				
			19				
			20				
B-11-25	5 10 11	8 in	21	Sand			WL @ 21.0' on 10/28/96 @ 0815
			22				
			23				
			24				
B-11-30	5/5/6 10 in	10 in	25	Bentonite Chips			3/4 Baroid "Hole Plug"
			26				
			27				
			28				
			29				
			30				
						SAND, med-gnd, slightly silty, gray. Saturated.	

BOREHOLE LOG AND WELL CONSTRUCTION

ID Number: ~~11W-2~~
 B-12A (AKA ~~11W-2~~)
 (Renamed to B-12)

Project Number:
 Borehole Location:
 Drilling Personnel:
 Drilling Methods: HSA-4 1/4-ID, Mobile B-56
 Sampling Methods: Split Spoon 18" in length
 Field Geologist: Ching-Pi Wang
 Date Started: 10/24/96
 Depth Water First Encountered: 7.5 feet
 Ground Surface:

Project Name: Cornet Bay Marina
 Drilling Company: Tacoma Pump & Drill
 Drill Rig Type/Number:
 Bit Type/Size:
 Hammer Wt: Drop:
 Assistant:
 Date Completed: 10/25/96
 Completion Depth: 25 feet
 Top of Well Casing:

Sampling			Depth (Feet bgs)	Approximate Well Construction	USCS Symbol	Lithologic Description	Remarks
Sample No.	Blow Count	Recovery (In)					
B-12-5	2 2 2 2	3 in	0	Concrete Benonite Chips Sand Top of Screen		SILT, very sandy, with gravel, gray. Very strong petroleum odor.	Flush ground completion Note: tide is high @ 1600 hrs WL @ 7.5 feet
			1				
			2				
			3				
			4				
B-12-10	5 4 6	9 in	5	20 Slot Screen		SILT, very sandy with gravel (top 2-in of sample) Grades to SAND, fine-grd, very silty, brown & gray. Slight petroleum odor.	
			6				
			7				
			8				
			9				
B-12-15	5 5 13	10 in	10			CLAY, very sandy, gray. Lower 2" is more sandy. No detectable petroleum odor. May have hit water table.	
			11				
			12				
			13				
			14				
	4 6 6	16 in	15			CLAY, slightly sandy. No detectable petroleum odor.	
			16				
			17				
			18				
			19				
	3 4 5	NR	20			CLAY, slightly sandy, gray.	
			21				
			22				
			23				
			24				
			25				
			26				
			27				
			28				
			29				
			30				

Project Number: Borehole Location: Drilling Personnel: Drilling Methods: HSA-4 1/4-ID, Mobile B-56 Sampling Methods: Split Spoon 18" in length Field Geologist: Ching-Pi Wang Date Started: 10/25/96 Depth Water First Encountered: 4-5 feet Ground Surface:	Project Name: Cornet Bay Marina Drilling Company: Tacoma Pump & Drill Drill Rig Type/Number: Bit Type/Size: Hammer Wt: Drop: Assistant: Date Completed: 10/25/96 Completion Depth: 20 feet Top of Well Casing:
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Sampling			Depth (feet bgs)	Approximate Well Construction	USCS Symbol	Lithologic Description	Remarks
Sample No.	Blow Count	Recovery (in)					
			0			Concrete	Flush ground completion
			1			Bentonite Chips	
			2			Sand	
			3			Strong petroleum odor from cuttings. Water in hole @ ~4-5'.	
			4			Top of Screen	
10		3 in	5			Sand and gravel, silty, saturated. Slight petroleum odor. Gray.	Note: tide is receding
6			6				
7			7				
			8				
			9				
10		6 in	10			SILT, grading to CLAY. Sandy, gray. Slight petroleum odor.	
10			11				
15			12				
			13			~20 Slot Screen	
			14				
10		18 in	15			Upper 9" SILT, sandy with sub-angular gravel, gray. Grades to CLAY, sandy with gravel. Slight petroleum odor.	
9			16				
14			17				
			18				
			19				
28		10 in	20			SAND, dense (~4 in), med-grnd, clean. Slight petroleum odor. Grades to CLAY, sandy, gray. Slight petroleum odor in clay.	
18			21				
17			22				
			23				
			24				
			25				
			26				
			27				
			28				
			29				
			30				

BORING LOCATION Deception Pass Marina, Cornet Bay, WA		Well Name <u> </u> MW-04	
DRILLING COMPANY Cascade Drilling		DRILLER Tyler Day	
DRILLING METHOD(S) Direct-Push		PROJECT NAME Ecology Cornet Bay	
ISOLATION CASING N/A		PROJECT NUMBER 1196012*00	
BLANK CASING 2" Schedule 40 PVC Pipe		ELEVATION AND DATUM bgs	
SLOTTED CASING 2" Schedule 40 PVC Pre-Pack 0.010" Slots		TOTAL DEPTH 15.0 ft. bgs	
SIZE AND TYPE OF FILTER PACK 10/20 Sand (Pre-Pack); 2/12 Sand Above		DATE STARTED 9/15/11	
SEAL Granular Bentonite		DATE COMPLETED 9/15/11	
GROUT Concrete		INITIAL WATER DEPTH (FT) 7.0	
		LOGGED BY DKM	
		SAMPLING METHODS MacroCore w/liner	
		WELL COMPLETION <input checked="" type="checkbox"/> SURFACE HOUSING <input type="checkbox"/> STAND PIPE _____ FT.	

SAMPLES			DEPTH (FEET)	SAMPLE NUMBER	WELL CONSTRUCTION	PID	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
TYPE	RECOV (FEET)	PENETR. RESIST. BLOWS/6'							
SS	3							SM	Silty SAND with gravel Tan/brown, sand, silt, gravel fill, no odor, no sheen.
								CL/ ML	Silty CLAY with sand Gray, silty clay, 10-15% sand, moderately stiff to stiff, high plasticity, moist, no odor, no sheen.
SS	3.5		5			0			Sandy SILT Brown/gray, silt with ~30% medium to fine sand, some gravel and clay, silty interbeds (typically 1-2" thick) and sandy interbeds (typically <1" thick) present locally, moderately stiff, moist to wet, slight odor and light sheen below ~13 feet, no odor and no sheen otherwise.
						0			
SS	4		10			0		ML	
						0			
				KJ-MW4-13		1.8			
			15			0.1		CL/ ML	Silty CLAY Gray, silty clay, stiff, moderately high plasticity, wet, no odor, no sheen.

KJ PNW ECOLOGY CORNET BAY BORING LOGS SEPT 2011.GPJ KJ PNW.GDT 8/8/13

BORING LOCATION Deception Pass Marina, Cornet Bay, WA		Well Name <u>MW-05</u>	
DRILLING COMPANY Cascade Drilling		DRILLER Tyler Day	
DRILLING METHOD(S) Direct-Push		DRILL BIT(S) SIZE 2-Inch	
ISOLATION CASING N/A		FROM <u>N/A</u> TO <u>N/A</u> FT.	
BLANK CASING 2" Schedule 40 PVC Pipe		FROM <u>0</u> TO <u>5</u> FT.	
SLOTTED CASING 2" Schedule 40 PVC Pre-Pack 0.010" Slots		FROM <u>5</u> TO <u>15</u> FT.	
SIZE AND TYPE OF FILTER PACK 10/20 Sand (Pre-Pack); 2/12 Sand Above		FROM <u>4</u> TO <u>15</u> FT.	
SEAL Granular Bentonite		FROM <u>1</u> TO <u>4</u> FT.	
GROUT Concrete		FROM <u>0</u> TO <u>1</u> FT.	
ELEVATION AND DATUM bgs		TOTAL DEPTH 20.0 ft. bgs	
DATE STARTED 9/15/11		DATE COMPLETED 9/15/11	
INITIAL WATER DEPTH (FT) 8.0			
LOGGED BY DKM			
SAMPLING METHODS MacroCore w/liner		WELL COMPLETION <input checked="" type="checkbox"/> SURFACE HOUSING <input type="checkbox"/> STAND PIPE _____ FT.	

SAMPLES			DEPTH (FEET)	SAMPLE NUMBER	WELL CONSTRUCTION	PID	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
TYPE	RECOV (FEET)	PENETR RESIST. BLOWS/6'							
SS	2		0 - 2				SW	Well-graded SAND with gravel Brown, medium to coarse sand, 20-30% gravel, fill, no odor, no sheen.	
SS	3		2 - 5				CL/ML	Silty CLAY with sand Brown-gray to gray (bottom ~6 inches), silty clay, 10-15% fine to medium sand, some gravel, moderately stiff, moderately high plasticity, moist, no odor, no sheen.	
SS	3		5 - 10				ML	Sandy SILT Gray, silt with ~30% fine to medium sand, 5-10% gravel, some clay, texture varies locally with sandy and silty interbeds (typically ~1" thick), moderately soft to moderately stiff (varies locally), medium plasticity, wet, slight odor locally, no sheen.	
SS	4.5		10 - 15	KJ-MW5-12			CL	Lean CLAY Gray, clay, moderately stiff to stiff, high plasticity, moist to wet, no odor, no sheen.	
SS			15 - 20				CL		

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BORING LOCATION Deception Pass Marina, Cornet Bay, WA		Well Name <u>MW-06</u>	
DRILLING COMPANY Cascade Drilling		DRILLER Tyler Day	
DRILLING METHOD(S) Direct-Push		DRILL BIT(S) SIZE 2-Inch	
ISOLATION CASING N/A		FROM <u>N/A</u> TO <u>N/A</u> FT.	
BLANK CASING 2" Schedule 40 PVC Pipe		FROM <u>0</u> TO <u>4.5</u> FT.	
SLOTTED CASING 2" Schedule 40 PVC Pre-Pack 0.010" Slots		FROM <u>4.5</u> TO <u>14.5</u> FT.	
SIZE AND TYPE OF FILTER PACK 10/20 Sand (Pre-Pack); 2/12 Sand Above		FROM <u>4</u> TO <u>14.5</u> FT.	
SEAL Granular Bentonite		FROM <u>1</u> TO <u>4</u> FT.	
GROUT Concrete		FROM <u>0</u> TO <u>1</u> FT.	
ELEVATION AND DATUM bgs		TOTAL DEPTH 20.0 ft. bgs	
DATE STARTED 9/15/11		DATE COMPLETED 9/15/11	
INITIAL WATER DEPTH (FT) 8.0		LOGGED BY DKM	
SAMPLING METHODS MacroCore w/liner		WELL COMPLETION <input checked="" type="checkbox"/> SURFACE HOUSING <input type="checkbox"/> STAND PIPE _____ FT.	

SAMPLES			DEPTH (FEET)	SAMPLE NUMBER	WELL CONSTRUCTION	PID	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
TYPE	RECOV (FEET)	PENETR. RESIST. BLOWS/6'							
SS	3		5	KJ-MW6-4		3.8	SW	Well-graded SAND with gravel Tan/brown, sand, silt, gravel fill, no odor, no sheen.	
						2.3	CL/ ML	Silty CLAY with sand Tan/gray, silty clay, 5-15% sand, some gravel, moderately stiff, high plasticity, moist, slight odor below ~3.5 feet, no sheen.	
SS	1		10			20.1	SP/ SM	Poorly graded SAND with silt and gravel Gray, fine to medium sand with 10-15% silt and 5-15% gravel, moderately dense, moist to wet, medium to strong odor, medium to heavy sheen.	
SS	3		15	KJ-MW6-14		303	ML	Sandy SILT with gravel Gray, sandy silt, 10-15% gravel, woody material present below ~13 feet, soft, wet, medium odor, medium sheen.	
						3.0	ML	Sandy SILT Greenish-gray, silt with ~30% sand, some clay and gravel, moderately stiff, wet, slight to medium odor, light sheen.	
SS	3		20			0	CL/ ML	Silty CLAY Gray, silty clay, 5-10% sand and fine gravel, stiff, high plasticity, moist to wet, no odor, no sheen.	

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Boring & Well Construction Log

Kennedy/Jenks Consultants

BORING LOCATION Deception Pass Marina, Cornet Bay, WA		Well Name <u>MW-07</u>	
DRILLING COMPANY Cascade Drilling		DRILLER Tyler Day	
DRILLING METHOD(S) Direct-Push		DRILL BIT(S) SIZE 2-Inch	
ISOLATION CASING N/A		FROM <u>N/A</u> TO <u>N/A</u> FT.	
BLANK CASING 2" Schedule 40 PVC Pipe		FROM <u>0</u> TO <u>3.5</u> FT.	
SLOTTED CASING 2" Schedule 40 PVC Pre-Pack 0.010" Slots		FROM <u>3.5</u> TO <u>13.5</u> FT.	
SIZE AND TYPE OF FILTER PACK 10/20 Sand (Pre-Pack); 2/12 Sand Above		FROM <u>3</u> TO <u>13.5</u> FT.	
SEAL Granular Bentonite		FROM <u>1</u> TO <u>3</u> FT.	
GROUT Concrete		FROM <u>0</u> TO <u>1</u> FT.	
ELEVATION AND DATUM bgs		TOTAL DEPTH 15.0 ft. bgs	
DATE STARTED 9/15/11		DATE COMPLETED 9/15/11	
INITIAL WATER DEPTH (FT) 5.0			
LOGGED BY DKM			
SAMPLING METHODS MacroCore w/liner		WELL COMPLETION <input checked="" type="checkbox"/> SURFACE HOUSING <input type="checkbox"/> STAND PIPE _____ FT.	

SAMPLES			DEPTH (FEET)	SAMPLE NUMBER	WELL CONSTRUCTION	PID	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
TYPE	RECOV (FEET)	PENETR. RESIST. BLOWS/6'							
SS	2.5					0		ML	Sandy SILT with gravel Brown/gray/tan, sandy silt with gravel overall, texture varies locally with sandy, silty, and gravelly intervals, fill, no odor, no sheen.
			5	KJ-MW7-5		0		SM	Silty SAND Gray, silty sand, some gravel, loose, moist to wet, no odor, no sheen.
SS	4.5					0		CL/ ML	Silty CLAY with sand Greenish-gray to tan gray (below ~7.5 feet), silty clay, 10-15% sand, some gravel, increased sand below ~9.5 feet, moderately stiff to stiff, medium plasticity, moist to wet, no odor, no sheen.
			10			0.1		SM	Silty SAND with gravel Gray, silty sand with 10-15% gravel, moderately dense, wet, no odor, no sheen.
SS	4.5					0		CL	Lean CLAY Gray, clay, some silt, stiff, high plasticity, moist to wet, no odor, no sheen.
			15						

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Boring & Well Construction Log

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BORING LOCATION Deception Pass Marina, Cornet Bay, WA		Well Name <u>MW-08</u>	
DRILLING COMPANY ESN Northwest		DRILLER Carlos	
DRILLING METHOD(S) Direct-Push		DRILL BIT(S) SIZE 2-Inch	
ISOLATION CASING N/A		FROM <u>N/A</u> TO <u>N/A</u> FT.	
BLANK CASING 2" Schedule 40 PVC Pipe		FROM <u>0</u> TO <u>3.5</u> FT.	
SLOTTED CASING 2" Schedule 40 PVC Pre-Pack 0.010" Slots		FROM <u>3.5</u> TO <u>13.5</u> FT.	
SIZE AND TYPE OF FILTER PACK 10/20 Sand (Pre-Pack); 2/12 Sand Above		FROM <u>3</u> TO <u>13.5</u> FT.	
SEAL Granular Bentonite		FROM <u>1</u> TO <u>3</u> FT.	
GROUT Concrete		FROM <u>0</u> TO <u>1</u> FT.	
ELEVATION AND DATUM bgs		TOTAL DEPTH 16.0 ft. bgs	
DATE STARTED 11/9/11		DATE COMPLETED 11/9/11	
INITIAL WATER DEPTH (FT) 6.0			
LOGGED BY DKM			
SAMPLING METHODS MacroCore w/liner		WELL COMPLETION <input checked="" type="checkbox"/> SURFACE HOUSING <input type="checkbox"/> STAND PIPE _____ FT.	

SAMPLES			DEPTH (FEET)	SAMPLE NUMBER	WELL CONSTRUCTION	PID	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
TYPE	RECOV (FEET)	PENETR. RESIST. BLOWS/6							
SS	2		0				ML	Sandy SILT Grass and sandy silt topsoil.	
SS	2.5		5	KJ-MW8-7			SP/ SM	Poorly graded SAND with silt Tan/brown grading to medium/dark gray below ~6 feet, medium sand with up to 10% rounded gravel, coarser sand below ~5 feet, 5-10% silt overall but up to 15% silt below ~5 feet, moderately loose, moist to wet below ~6 feet, slight odor below ~6 feet, no odor otherwise, no sheen.	
SS	3		10	KJ-MW8-10			SM	Silty SAND Gray, fine sand with ~30% silt overall, locally >50% silt in 1-2 inch layers or pods, moderately dense, wet, medium odor dissipates below ~9 feet, no odor below ~11 feet, no sheen.	
SS	1		15				ML	SILT Gray/tan, silt, possibly some clay, moderately soft, wet, no odor, no sheen.	

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Boring & Well Construction Log

Kennedy/Jenks Consultants

BORING LOCATION Deception Pass Marina, Cornet Bay, WA		Well Name MW-09	
DRILLING COMPANY ESN Northwest		DRILLER Carlos	
DRILLING METHOD(S) Direct-Push		DRILL BIT(S) SIZE 2-inch	
ISOLATION CASING N/A		Project Name Ecology Cornet Bay	
BLANK CASING 2" Schedule 40 PVC Pipe		Project Number 1196012*00	
SLOTTED CASING 2" Schedule 40 PVC Pre-Pack 0.010" Slots		ELEVATION AND DATUM bgs	
SIZE AND TYPE OF FILTER PACK 10/20 Sand (Pre-Pack); 2/12 Sand Above		TOTAL DEPTH 13.0 ft. bgs	
SEAL Granular Bentonite		DATE STARTED 11/9/11	
GROUT Concrete		DATE COMPLETED 11/9/11	
		INITIAL WATER DEPTH (FT) 4.0	
		LOGGED BY DKM	
		SAMPLING METHODS MacroCore w/lner	
		WELL COMPLETION <input checked="" type="checkbox"/> SURFACE HOUSING <input type="checkbox"/> STAND PIPE _____ FT.	

SAMPLES			DEPTH (FEET)	SAMPLE NUMBER	WELL CONSTRUCTION	PID	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS	
TYPE	RECOV (FEET)	PENETR. RESIST. BLOWS/6'								
SS	3		5	KJ-MW9-5		0		SM	Silty SAND with gravel Tan/brown, sand, silt, gravel fill, no odor, no sheen.	
									SM	Silty SAND Gray, medium to fine sand with ~30% silt, minor clay and gravel, moderately dense, moist, no odor, no sheen.
									ML	SILT Brown, silt with woody material, soft, moist to wet, no odor, no sheen.
									SM	Silty SAND Brown to gray, silty fine sand, some gravel, soft, wet, no odor, no sheen.
			10			0		ML/ CL	Clayey SILT with sand Gray/green, clayey silt with up to 15% sand and fine gravel, some thin (1-2 inch) sandy interbeds locally, stiff to very stiff, moist, no odor, no sheen.	
SS	3.5									
U						0				

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Boring & Well Construction Log

Kennedy/Jenks Consultants

BORING LOCATION Deception Pass Marina, Cornet Bay, WA		Well Name MW-10	
DRILLING COMPANY ESN Northwest		DRILLER Carlos	
DRILLING METHOD(S) Direct-Push		DRILL BIT(S) SIZE 2-Inch	
ISOLATION CASING N/A		FROM TO FT. N/A N/A	
BLANK CASING 2" Schedule 40 PVC Pipe		FROM TO FT. 0 3	
SLOTTED CASING 2" Schedule 40 PVC Pre-Pack 0.010" Slots		FROM TO FT. 3 13	
SIZE AND TYPE OF FILTER PACK 10/20 Sand (Pre-Pack); 2/12 Sand Above		FROM TO FT. 2.5 13	
SEAL Granular Bentonite		FROM TO FT. 1 2.5	
GROUT Concrete		FROM TO FT. 0 1	
ELEVATION AND DATUM bgs		TOTAL DEPTH 13.0 ft. bgs	
DATE STARTED 11/9/11		DATE COMPLETED 11/9/11	
INITIAL WATER DEPTH (FT) 5.0			
LOGGED BY DKM			
SAMPLING METHODS MacroCore w/liner		WELL COMPLETION <input checked="" type="checkbox"/> SURFACE HOUSING <input type="checkbox"/> STAND PIPE _____ FT.	

SAMPLES			DEPTH (FEET)	SAMPLE NUMBER	WELL CONSTRUCTION	PID	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS					
TYPE	RECOV. (FEET)	PENETR. RESIST. BLOWS/6"												
SS	2			KJ-MW10-6		0		SM	Silty SAND with gravel Tan/brown, sand, silt, gravel fill, no odor, no sheen.					
													Well-graded GRAVEL with sand Gray, gravel and sand fill, minor silt, moderately dense, moist to wet below ~5 feet, no odor, no sheen.	
SS	3		5							0				
SS	0		10							0			ML	Sandy SILT Reddish-brown (upper ~6 inches) to gray-brown, silt with up to 30% fine sand, minor gravel, woody material in upper ~6 inches, some shell fragments, moderately soft, wet, no odor, no sheen.
U													SW	Well-graded SAND with gravel Gray, sand and gravel, dense, wet, no odor, no sheen.

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