

**Table 7-7 Summary of Pollen Analyses
EAST CONTRACT**
Brightwater Conveyance System

Boring No.	Sample Top Depth (ft)	Elevation (ft) ^a	Lab Sample Number ^b	Pollen Species Present ^c	Climatic Interpretation		Environment		Comments
					Temp ^d	Moisture ^e	Biology ^f	Geology	
BRIGHTWATER TUNNEL 1									
E-339	56.0	235.5	KT-523	Spruce, pine, hemlock, abundant organics	T	M	Lower sub-alpine	Glacial-Transitional	
E-339	117.0	174.5	KT-524	Fir, pine, hemlock	T	M			
E-339	131.0	160.5	KT-525	Mixed pine and lowland hemlock dominant, spruce, fir	W	M		Nonglacial	
E-339	207.0	84.5	KT-526						
E-349	192.0	40.3	KT-535	No pollen				Glacial	
E-349	55.0	177.3	KT-536	Hemlock, organics, pine, spruce	W	M	Mixed conifer with hemlock	Nonglacial	

Notes:

- a) Vertical datum = Metro. All locations surveyed to +/- 0.1 foot accuracy with the exception of some off alignment borings (noted as scaled on the log) which were estimated.
- b) Pollen analysis by Kathy Troost and Estella Leopold, University of Washington.
- c) Dominant pollen types noted - pollen species not counted.
- d) W=warm, T=cool, C=cold.
- e) D=dry, M=moist, W=wet, A=aquatic.
- f) Climatic interpretation based on comparison with modern analogues.
- g) For all Geologic Unit descriptions, see Figure 3-1.

Table 7-7 Summary of Pollen Analyses
CENTRAL CONTRACT
Brightwater Conveyance System

Boring No.	Sample Top Depth (ft)	Elevation (ft) ^a	Lab Sample Number ^b	Pollen Species Present ^c	Climatic Interpretation		Environment		Comments
					Temp ^d	Moisture ^e	Biology ^f	Geology	
BRIGHTWATER TUNNEL 2									
E-219	261.0	100.1	KT-565	Cedar, hemlock, ferns, bullrushes, lillies, cattails, organics	W	W-A	Mixed open forest freshwater wetland	Nonglacial	
E-219	277.0	84.1	KT-566	Broken pollen, fir, spruce, hemlock, juniper, organics	T			Glacial-Transitional	
E-220	48.0	282.0	KT-554	Rare pollen, pine, abundant organics		D	Open forest, low, dry	Nonglacial	
BRIGHTWATER TUNNEL 3									
E-111	328.0	65.0	KT-513	Rare, broken pollen, pine				Transitional	
E-116	242.0	85.4	KT-514	No pollen				Glacial	
E-117	23.0	344.4	KT-522	Few pollen, spruce, hemlock	C	M	Sub-alpine	Glacial	
E-119	67.0	99.8	KT-540	Smashed and broken pollen, pine, fir, limited organics	T-C			Transitional-Glacial?	
E-213	122.0	200.6	KT-551	No pollen				Glacial	Known Qpogl sample
E-213	135.0	187.6	KT-552	No pollen				Glacial	Known Qpogl sample
E-213	205.0	117.6	KT-553	No pollen				Glacial	Known Qpogl sample
E-216	11.0	383.7	KT-515	Rare pollen: Spruce	M			Transitional	
E-216	195.5	199.2	KT-516	Spruce, Hemlock, Abies, Alder	T		Spruce/Hemlock Forest	Transitional	

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					Temp ^d	Moisture ^e	Biology ^f	Geology	
E-217	76.0	342.8	KT-527	Spruce, pine, abundant organics	T	M	Lake deposit, likely nonglacial	Nonglacial?	

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**Table 7-7 Summary of Pollen Analyses
WEST CONTRACT
Brightwater Conveyance System**

Boring No.	Sample Top Depth (ft)	Elevation (ft) ^a	Lab Sample Number ^b	Pollen Species Present ^c	Climatic Interpretation		Environment		Comments
					Temp ^d	Moisture ^e	Biology ^f	Geology	
BRIGHTWATER TUNNEL 4									
E-101	75.0	56.2	KT-501	Pine and spruce			Cold Forest	Transitional-Glacial	
E-102	40.0	251.2	KT-537	No pollen, rare organics	C			Glacial	Known Qvlc sample
E-102	100.0	191.2	KT-502	No pollen				Glacial	
E-102	170.0	121.2	KT-503	No-rare pollen	C		Spruce, ponderosa		Paleosol sample
E-102	235.0	56.2	KT-504	Spruce, pine, alder	C	M	Cold Forest	Transitional-Glacial	
E-102	245.0	46.2	KT-505	Pine (lodgepole), spruce	C	M	Cold Transitional Forest	Transitional	
E-103	200.0	204.3	KT-538	Rare, smashed pollen, spruce, fir, juniper, little organics			Open lowland forest		No modern climate/environment analogue
E-103	244.0	160.3	KT-539	Abies, juniper, limited organics			Lowland forest		
E-104	319.0	82.3	KT-506	Spruce, abies, pine birch	T	M	Moderately cold spruce forest	Transitional	
E-105	254.0	295.0	KT-517	No pollen	C			Glacial	
E-105	318.0	231.0	KT-518	Rare pollen, non-aperturate (small shrubs and grasses), rare spruce	W	D	Low elevation dry steppe	Nonglacial	
E-105	352.0	197.0	KT-519	Rare pollen, pine		D?	Low elevation?	Glacial	
E-105	426.0	123.0	KT-520	Rare pollen		D?	Low elevation?	Glacial	
E-105	526.0	23.0	KT-521	Pare pollen, pine		D?	Low elevation?	Glacial	
E-107	244.0	305.5	KT-507	Spruce, pine	C	M	Cold spruce	Transitional	
E-107	268.0	281.5	KT-508	Pine, spruce, hemlock	C	M	Pine	Transitional	

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E-107	332.0	217.5	KT-509	Rare pollen: spruce and hemlock	C	M	Spruce, hemlock forest	Transitional	
E-107	353.0	196.5	KT-510	Spruce & hemlock low/high	C	M		Transitional	
E-107	452.0	97.5	KT-511	No pollen: CaF crystals			Possibly marine		
E-107	534.0	15.5	KT-512	No pollen: CaF crystals			Possibly marine		
E-108	134.0	319.1	KT-556	Abundant organics, broken and smashed pollen, alder, lillies, moss, bullrush, grass, juniper, hemlock, fir, pine, spruce	W	W-A	Brackish or fresh water bog, open mixed forest	Nonglacial	
E-108	168.0	285.1	KT-557	Abundant organics, less wet pollen than above sample	W	M	Mixed deciduous and conifer forest	Nonglacial	
E-108	188.0	265.1	KT-558	Some organics, less pollen than above	W	M	Mixed deciduous and conifer forest	Nonglacial	
E-108	256.0	197.1	KT-559	Little organics and rare pollen	T-W	M	Mixed deciduous and conifer forest	Nonglacial	
E-108	292.0	161.1	KT-562	Little organics and broken pollen	C		Open grassland or steppe	Glacial	
E-108	308.0	145.1	KT-563	Some organics, lillies, ferns, rushes, some conifer	W	W-A	Fresh water wetland	Nonglacial	
E-108	342.0	111.1	KT-564	Abundant organics, lillies, ferns Douglas fir	W	W-A	Mixed open forested wetland	Nonglacial	

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E-110	107.5	337.2	KT-528	Rare pollen, abundant soil fungi and organics	W			Nonglacial	Paleosol
E-110	133.0	311.7	KT-529	Rare pollen				Glacial	
E-110	318.0	126.7	KT-530	Pine dominant, Douglas fir, hemlock	T	M	Lowland Subalpine	Transitional	
E-110	332.0	112.7	KT-531	Pine dominant, some non-apurturate, spruce, fir	T	M	Open forest		
E-110	435.0	9.7	KT-532	Pine, fir, cottonwood, ferns, abundant organics	C	M-D	Cold, late glacial forest	Transitional	Countable
E-202	140.0	259.1	KT-541	No pollen, no organics				Glacial	
E-206	290.0	276.1	KT-543						
E-207	257.5	251.0	KT-542	Some organics, few pollen, pine, spruce	T	D-M	Low to middle elevation forest	Nonglacial-Transitional	
E-208	310.0	141.0	KT-544	Smashed and broken pollen, pine, spruce					
E-208	365.0	86.0	KT-545	Rare pollen, spruce, pine	T	M			Sandy sample
E-208	410.0	41.0	KT-546	No pollen				Glacial	
E-210	245.0	164.5	KT-547	No pollen, trace organics				Glacial	
E-210	270.0	139.5	KT-548	Miocene pollen, carbon, juniper, pine, fern, abundant organics				Nonglacial	Contains reworked Miocene pollen
E-210	318.0	91.5	KT-549	No pollen				Glacial	
E-210	335.0	74.5	KT-550	No pollen				Glacial	
MW-4	226.0	257.3	KT-535	Rare pollen, hemlock					

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MW-6	79.0	331.3	KT-543	Rare pollen, Douglas fir?, spores					

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