

BOSE SOILS

Plate 10 Typical mixed coniferous and deciduous second-growth forest on Bose soils. Douglas-fir, western red cedar and red alder are most prevalent.



Location and Extent: Bose soils occupy extensive areas on the uplands in the western part of the map area, particularly on the Sunshine Coast and in Delta and Surrey Municipalities. About 5400 ha of pure map units and 8030 ha of soil complexes dominated by Bose soils are classified. The complexes are with a variety of soils but most commonly are with Capilano, Boosey, Sunshine, Summer and Whatcom soils.

Topography and Elevation: Bose soils are variable in topography and range from gently sloping and undulating to steeply sloping and strongly rolling. Slope gradients are mostly between 5 and 25 percent. Elevations mostly lie between 10 and 100 m above sea level.

Parent Material and Texture: The parent material of the Bose soils is similar to that of the Boosey soils. It consists of about 30 to 160 cm of moderately to very stony, gravelly marine lag or glaciofluvial deposits overlying moderately coarse-textured glacial till or sometimes moderately fine textured glaciomarine sediments. Gravelly sandy loam or gravelly loamy sand are the usual surface textures. These grade to gravelly sand, gravelly loamy sand, sand or gravel in the subsurface. Textures abruptly change in the subsoil to gravelly sandy loam where glacial till forms the underlay or to silty clay loam where glaciomarine deposits are present. Where glacial till forms the underlay, its upper 25 to 50 cm is usually strongly cemented.

Soil Moisture Characteristics: Bose soils are moderately well to well-drained. They are rapidly pervious in the upper, gravelly part but this changes to slowly pervious in the compact glacial till or glaciomarine underlay. They have low water holding capacity. Telluric seepage along the surface of the dense, compact subsoil is usual after prolonged, heavy rain.

General Soil Description: Bose soils have up to 10 cm of organic forest litter on the soil surface under which is a discontinuous, light gray, leached, sandy layer thinner than 4 cm. This, in turn, is underlain by a dark brown to reddish-brown, loose, gravelly zone about 60 cm thick which grades to a further 20 cm or so of yellowish-brown gravelly material. Abruptly underlying this, where glacial till is present, is a very hard, cemented, somewhat platy, sandy layer about 50 cm thick, containing common, reddish-brown to grayish-brown mottles. The cemented layer grades to compact, gray, unweathered glacial till below about 130 cm. In areas where the subsoil is of glaciomarine origin, the cemented layer is either only weakly developed or is absent and the subsoil consists of massive, silty to clayey materials. Soil reaction varies from strongly acid in the surface layers to

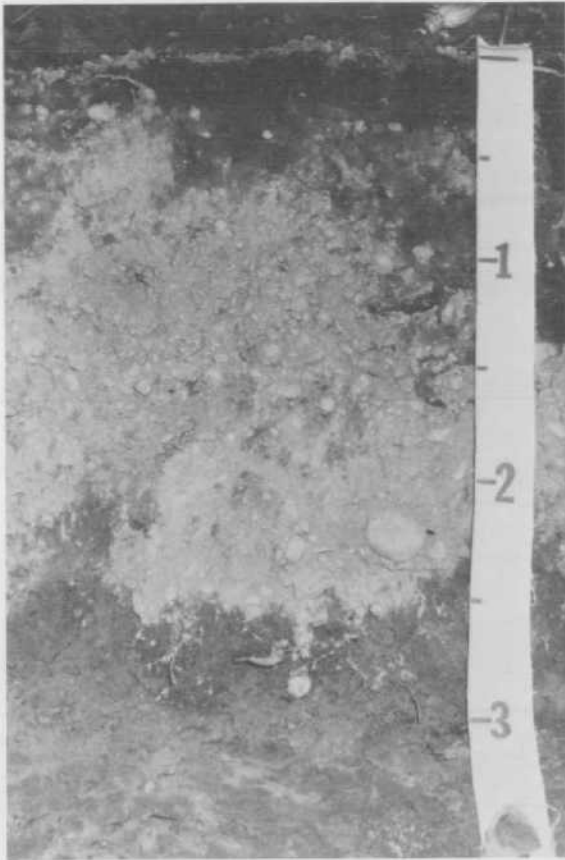


Plate 11 Bose soil profile (*Duric Humo-Ferric Podzol*). Bose soils have developed from gravelly littoral on glaciofluvial veneers overlying strongly cemented glacial till. In the photo, the contact between the two deposits is at 3 ft. (90 cm). The soil is moist near the contact due to lateral seepage above the cemented material.

moderately acid in the subsoil (1:1 H₂O). Soil classification is *Duric Humo-Ferric Podzol* in areas where the subsoil is glacial till; where the subsoil is glaciomarine deposits, the classification is *Orthic Humo-Ferric Podzol*.

Commonly Associated Soils: Capilano, Boosey, Sunshine, Summer, Whatcom and Surrey soils often are closely associated with Bose soils, either in soil complexes or adjacent map polygons. Capilano and Sunshine soils differ from Bose soils by respectively consisting of deep gravelly and sandy deposits. Boosey soils differ by being poorly drained while Summer soils are sandy, imperfectly drained and cemented in the subsurface rather than the subsoil. Surrey soils have developed from compact glacial till and Whatcom soils have developed from silty to clayey glaciomarine deposits. Neither have a gravelly capping.

Vegetation: Cleared areas are used mostly for forage or urban purposes. Most areas are uncleared and support second-growth coast Douglas-fir, western red cedar, western hemlock, red alder, vine and bigleaf maple and some birch and willow. The understory includes salal, Oregon grape, thimbleberry and bracken. Rooting depths range to about 100 cm, being restricted below that by dense, usually cemented soil layers.

General Land Use Comments: (1) Bose soils are limited for agricultural use by low water holding capacity, and, sometimes, adverse topography. Irrigation, adequate fertilization as well as stone-picking improves their suitability for agricultural uses. (2) Soil bearing capacities for houses and similar construction are good (varies to moderate where glaciomarine deposits occur in the subsoil), however low subsoil permeability and often strongly sloping topography limit sewage effluent disposal from septic tanks. (3) Forest production is moderately good although low soil moisture holding capacities limit growth through dry periods. Data from a limited number of plots indicates that growth of coast Douglas-fir is about 7 to 9 m³ of wood/ha/yr.

BOSE

UNIT TYPE: SERIES

DATE OF SURVEY: 58 SURVEYOR: PNS KELDANA, B.C.M.A. & R.A.B.
 SAMPLING PURPOSE: DETAILED SURVEY

LOCATION		CLASSIFICATION		SLOPE
LATITUDE (N):	49 07 47			
LONGITUDE (W):	122 54 39	DURIC HUMU-FERRIC PODZOL(1978)		
PRECISION (SEC):	05		% TYPE:	6.0
ELEVATION (M):	65	STATUS: MODAL SOIL	CLASS:	COMPLEX GENTLY ROLLING

PARENT MATERIAL & LANDFORM

UPPER STRATIGRAPHIC UNIT	MIDDLE STRATIGRAPHIC UNIT
COMM. CLASTIC I: GRAVELLY GENETIC MAT.: MARINE SURFACE EXPRES.: BLANKET	GENETIC MAT.: MORAINAL SURFACE EXPRES.: SUBDUED

DRAINAGE: WELL DRAINED
 RUNOFF: SLOW
 PERVIOUSNESS: SLOW

ADDITIONAL NOTES

THE CA AND MG VALUES ARE COMBINED UNDER CA.

PROFILE DESCRIPTION

HORIZON	THICKNESS DEPTH(CM)	HORIZON BOUNDARY	COLOR 1	TEXTURE	STRUCTURE 1	STRUCTURE 2
L	3= 0	DIFFUSE				
A E	0= 5	GRADUAL	5.0Y5.0/1.0 MATRIX MOIST 2.5Y6.0/0.0 MATRIX DRY	LOAMY SAND GRAVELLY	VERY WEAK PLATY	VERY WEAK FINE SUBANGULAR BLOCKY
B F1	5= 37	GRADUAL	7.5YR4.0/4.0 MATRIX MOIST 7.5YR5.0/4.0 MATRIX DRY	LOAMY SAND GRAVELLY	WEAK FINE SUBANGULAR BLOCKY	
B F2	35= 72	ABRUPT	7.5YR4.5/4.0 MATRIX MOIST 7.5YR6.0/4.0 MATRIX DRY	LOAMY SAND GRAVELLY	WEAK FINE SUBANGULAR BLOCKY	
B M	72=120	CLEAR	7.5YR4.0/4.0 MATRIX MOIST 7.5YR5.0/4.0 MATRIX DRY	SAND GRAVELLY	SINGLE GRAIN	
II B C	120=130	DIFFUSE	2.5Y5.0/2.0 MATRIX MOIST 2.5Y6.5/1.0 MATRIX DRY	SANDY LOAM	MASSIVE	
II BC	130=+		2.5Y6.0/0.0 MATRIX MOIST	SANDY LOAM	MASSIVE	

HORIZON	THICKNESS DEPTH(CM)	CONSISTENCE	ROOTS 1	MOTTLES 1
L	3= 0			
A E	0= 5	VERY FRIABLE	ABUNDANT	
B F1	5= 37	VERY FRIABLE	ABUNDANT	
B F2	35= 72	LOOSE	ABUNDANT	
B M	72=120	LOOSE	ABUNDANT	
II B C	120=130	VERY FIRM HARD		COMMON MEDIUM DISTINCT
II BC	130=+	VERY FIRM HARD		

PHYSICAL & CHEMICAL DATA

HORIZON=DEPTH(CM.)	PH 1	SAMPLE STATE	METHOD	VALUE	ORGANIC CARBON %	NITROGEN %	EXCHANGEABLE CATIONS BUFF.(ME/100G)		C. E. C. DETERMINED
							CA	K	
L	3= 0	2	2	4.7	47.27	.86			62.4
A E	0= 5	2	1	4.7	1.22	.03	1.10	1.68	14.4
B F1	5= 37	2	1	5.6	1.28	.05	.33	.05	21.3
B F2	35= 72	2	1	5.9	.87	.04	.41	.04	17.3
B M	72=120	2	1	5.8	.93	.03	.61	.05	15.6
II B C	120=130	2	1	5.8	.41	.02	.43	.07	17.3
II BC	130=+								

COARSE FRAGMENTS

HORIZON=DEPTH(CM.)	P1 DPM.	% VOL
L	3= 0	113.0
A E	0= 5	33.0
B F1	5= 37	15.0
B F2	35= 72	9.0
B M	72=120	14.0
II B C	120=130	32.0
II BC	130=+	40

BOSE

UNIT TYPE: SERIES

DATE OF SURVEY: 60 SURVEYOR: DNS KELOWNA, B.C.M.A. & R.A.B.
 SAMPLING PURPOSE: DETAILED SURVEY

LOCATION		CLASSIFICATION		SLOPE	
LATITUDE (N11)	49 00 11	DURIC HUMO-FERRIC PODZOL (1978)		%	10.0
LONGITUDE (W11)	122 42 24	STATUS: MODAL SOIL		TYPE:	COMPLEX
PRECISION (SEC):	05			CLASS:	MODERATELY ROLLING
ELEVATION (M):	85			ASPECT (DEG):	315

PARENT MATERIAL & LANDFORM

UPPER STRATIGRAPHIC UNIT

COMM. CLASTIC 1: GRAVELLY
 GENETIC MAT. 1: MARINE
 SURFACE EXPRES. 1: VENEER

MIDDLE STRATIGRAPHIC UNIT

SPEC. CLASTIC 1: CLAYEY
 GENETIC MAT. 1: MARINE
 DESCRIPTOR 1: GLACIAL

DRAINAGE: MODERATELY WELL DRAINED
 RUNOFF: SLOW
 PERVIOUSNESS: SLOW

PROFILE DESCRIPTION

HORIZON	THICKNESS DEPTH(CM)	HORIZON BOUNDARY	COLOUR 1	TEXTURE	STRUCTURE 1	STRUCTURE 2
LH	3- 0	ABRUPT				
B F1	0- 22	GRADUAL	5.0YR3.0/3.0 MATRIX MOIST 7.5YR4.0/4.0 MATRIX DRY	SANDY LOAM GRAVELLY	VERY WEAK FINE TO MEDIUM GRANULAR	
B F2	22- 60	GRADUAL	5.0YR3.0/3.0 MATRIX MOIST 7.5YR4.0/4.0 MATRIX DRY	SANDY LOAM GRAVELLY	VERY WEAK FINE TO MEDIUM GRANULAR	
B M	60- 85	ABRUPT	10.0YR4.5/3.0 MATRIX MOIST 10.0YR6.0/3.0 MATRIX DRY	SAND GRAVELLY	MASSIVE	SINGLE GRAIN
II BC 1	85-100		5.0Y5.0/2.0 MATRIX MOIST 2.5Y7.0/2.0 MATRIX DRY	LOAM	MASSIVE	
II BC 2	100-+		2.5Y4.0/2.0 MATRIX MOIST 2.5Y6.0/2.0 MATRIX DRY	CLAY LOAM	MASSIVE	STRONG MEDIUM TO COARSE ANGULAR BLOCKY

HORIZON	THICKNESS DEPTH(CM)	CONSISTENCE	ROOTS 1	MOTTLES 1	CEMENTATION AGENT/DESCRIP.
LH	3- 0				
B F1	0- 22	VERY FRIABLE SOFT	ABUNDANT		
B F2	22- 60	VERY FRIABLE SOFT	ABUNDANT		
B M	60- 85	LOOSE SLIGHTLY HARD	FEW		WEAKLY CEMENTED DISCONTINUOUS
II BC 1	85-100	FRIABLE HARD	VERY FEW	FEW DISTINCT	
II BC 2	100-+	FIRM VERY HARD		FEW DISTINCT	

PHYSICAL & CHEMICAL DATA

HORIZON-DEPTH(CM.)	COARSE FRAGMENTS			
	% VOL	GRAVEL %	COBBLE %	STONE %
LH	3- 0			
B F1	0- 22	50	20	10
B F2	22- 60	50	20	10
B M	60- 85	50	30	10
II BC 1	85-100	30	20	10
II BC 2	100-+			

BOSE

UNIT TYPE: SERIES

DATE OF SURVLY: 72 SURVEYOR: HAL UBC

LOCATION		CLASSIFICATION	
LATITUDE (N):	49 16 18	DURIC HJMO=FERRIC PODZOL(1978)	
LONGITUDE (W):	123 14 03	STATUS:	MODAL SOIL
PRECISION (SEC):	05		
ELEVATION (M):	80		

PARENT MATERIAL & LANDFORM

UPPER STRATIGRAPHIC UNIT	MIDDLE STRATIGRAPHIC UNIT
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CDM: CLASTIC I: GRAVELLY	GENETIC MAT.: MORAINAL
GENETIC MAT.: MARINE	
SURFACE EXPRES.: VENEER	

PHYSICAL & CHEMICAL DATA

HORIZON=DEPTH(CM.)	PH 1	SAMPLE STATE	METHOD	VALUE	BULK DENSITY	MOISTURE STATUS	
						% FIELD MOISTURE	% FIELD MOISTURE
A P 0- 15				4.7	.80	18.8	
B F1 15- 41		2	4		1.50	8.7	
B F2 41- 71							
B M1 71- 81					1.60	6.0	
B M2 81- 91							
I1 BC 1 91-102					1.84	9.1	
I1 BC 2 102-127					2.13	8.8	

Horizon	Depth cm	Particle Density gm/cc			Shrinkage Limit %			Optimum Moisture %	Particle Size %							
		Air Dry	Oven Dry	Max. Dry	Air Dry	Oven Dry			>5.1 cm	<5.1 cm	<2.5 cm	<5 mm	<1 mm	<0.074 mm	<0.05 mm	<0.002 mm
Ap	0- 15									100.0	92.4	72.6	61.4		35.0	4.0
Bf1	15- 41									100.0	83.7	50.9	39.5		10.0	1.0
Bf2	41- 71															
Bm1	71- 81								4.4	95.6	81.8	57.0	44.9		9.0	1.0
Bm2	81- 91															
I1BC1	91-102									100.0	100.0	94.3	90.7		44.0	5.0
I1BC2	102-127									100.0	100.0	95.2	87.7		44.0	6.0