



To: Mike Wei  
A/Senior Geological Engineer  
Groundwater Section  
Water Management Division

Date: March 11, 1992

File: 92F/10

**RE: PRELIMINARY ASSESSMENT OF GROUNDWATER CONDITIONS  
VACANT CROWN LAND, HORNBY ISLAND**

1. INTRODUCTION:

As requested by Carol Martin, Hornby Island Local Trustee, a preliminary office assessment of groundwater conditions within the vicinity of the vacant crown property marked "CW" has been carried out (Figure 1).

2. PROPERTY LOCATION:

The subject property is a 40 acre parcel and is situated on the northwest side of Hornby Island within two watersheds (Figure 1). These watersheds have been designated as Shingle Spit-Phipps Point Region and Manning Point - Collishaw Point Region, respectively by Chwojka (1984) in his report entitled "*A Preliminary Review of Groundwater Conditions on Hornby Island, British Columbia*". The subject property is located on the lower reaches of Mount Geoffrey and slopes gently in a northwesterly direction. The watershed acreage has been determined as totalling 1493 acres (679 Hectares - see Chwojka, 1984).

3. GROUNDWATER CONSIDERATIONS:

Well Records:

All records of wells (located within the two watersheds) have been reviewed and tabulated (Table 1). According to Chwojka (1989), a total of 78 wells and springs are located within the boundaries of these watersheds. Approximately 16 wells drilled between 1987 and 1990 by Gulf Island Well Drillers Ltd. are located within these watersheds but are presently unplotted. Chwojka (1989) reported an increase in the number of wells constructed within the Shingle Spit-Phipps Point and Manning Point-Collishaw Point as 26 percent and 62 percent respectively over the period 1984 to 1989.

mw  
F. Ch.  
apk

### Hydrogeology and Groundwater Conditions:

Surficial deposits overlying bedrock are thin and generally less than 15 feet (4.7 metres) within the area of the watersheds. Bedrock at surface is common. The bedrock type has been reported as mainly sandstone and shale layers. The water bearing zones include the contact between these bedrock types and fractures cross-cutting these layers. Well yields reported, based on short term bail tests by the driller, vary between 20 gph and 36 gpm (Table 1). Well/spring locations are shown in relation to the subject property (Figure 2). None of the wells have been reported as completed with sanitary seals. Sanitary seals normally provide some protection against any contaminated runoff from leaking down into the wells. Many wells report hydrogen sulphide in the water and a few wells report salty water. Presence of springs along the eastern boundary of the subject property indicate that groundwater from Mount Geoffrey Regional Park area discharges locally onto the property. However, the subject property also appears to be a recharge area for the region to the northwest (Figure 3). Development of the recharge area may compound water quality problems already being experienced downslope. If any contaminants were introduced to the subject property, those wells located within the impact area would be at risk.

### Probable Impact:

It is probable that not all wells located within the boundaries of these watersheds would be impacted from development of the subject property. Only those wells nearest and downslope of the subject property would be susceptible. The most likely impact area has been approximated based on proximity to the subject property and probable direction of groundwater flow (Figure 1). The degree and type of impact would depend on the development proposed. Numerous shallow wells and springs are located within the suggested impact area. Most residential development is concentrated around or near coastal areas near the discharge end of the groundwater flow system. Development on the property (recharge area) could reduce recharge to wells located downslope and impact on the water quality. Shallow wells and springs located within the suggested impact area (Figure 1) are anticipated to be most susceptible.

### Long-Term Groundwater Monitoring

It may be prudent to establish a long term monitoring well within the Shingle Spit - Phipps Point and Manning Point-Collishaw Point Watersheds. A suitable unused domestic well could be available for this purpose and would help to gain an understanding of the recharge and withdrawal effects to and from the bedrock aquifer and assist in the future planning of this area.

#### 4. CONCLUSIONS AND RECOMMENDATIONS:

- The subject property has been classified as a community watershed and is a sensitive groundwater recharge area. This property should not be developed.
- Development of the subject property could reduce recharge to wells located downslope and impact on water quality. Shallow wells and springs located within the suggested impact area are anticipated to be susceptible.
- The Shingle Spit-Phipps Point and Manning Point-Collishaw Point Watersheds are experiencing water quality problems. Development of the recharge area could compound existing water quality problems. Wells within the suggested impact area including drilled wells may be at risk if contaminants were introduced to the subject property. All drilled wells appear to be completed without sanitary surface seals.
- Consideration should be given to establishing an observation well within the boundaries of Shingle Spit-Phipps Point and Manning Point-Collishaw Point Watershed. It is possible that a suitable unused well may be available for this purpose. Long term groundwater monitoring in this area will help to gain an understanding of recharge and withdrawal effects to and from the bedrock aquifer and assist in the future local planning of this area.

#### 5. REFERENCES:

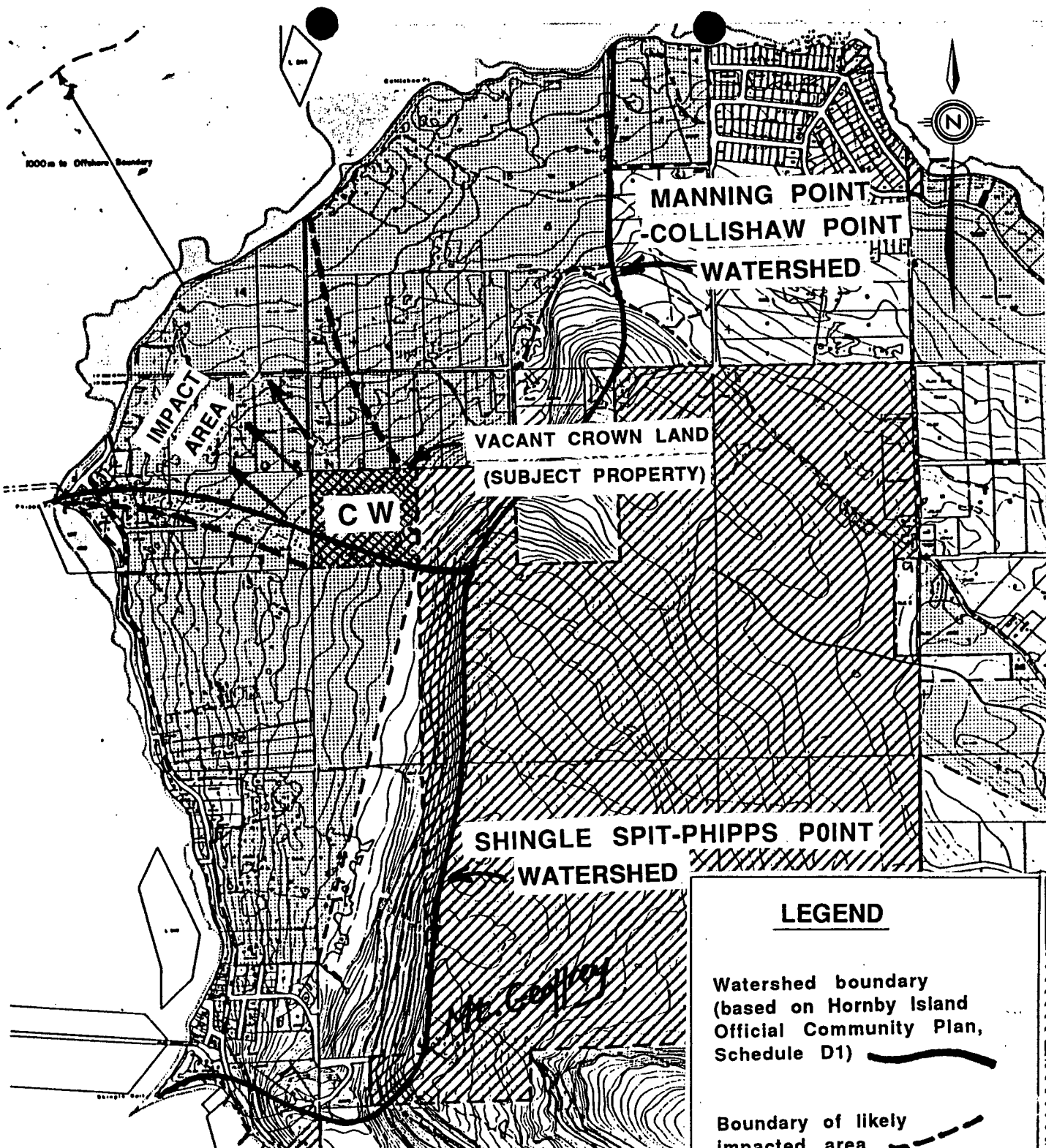
Chwojka F. 1984. *A Preliminary Review of Groundwater Conditions on Hornby Island, British Columbia*. Unpublished report, Groundwater Section, Water Management Branch, Ministry of Environment.

Chwojka F. 1989. *Groundwater Conditions on Hornby Island. British Columbia 1989 Update and Review*. Unpublished report, Groundwater Section, Water Management Branch, Ministry of Environment.

*W. S. Hodge*

W. S. Hodge  
Senior Technician  
Groundwater Section  
Water Management Division

WSH/bk  
W7154



**Province of British Columbia**  
**Ministry of Environment**  
**WATER MANAGEMENT BRANCH**

TO ACCOMPANY REPORT ON  
**Prelim. Assessment of Groundwater  
 Conditions - Vacant Crown Land,  
 Hornby Island**

SCALE: VERT. 1:10,000

HOR.

DATE

March 1992

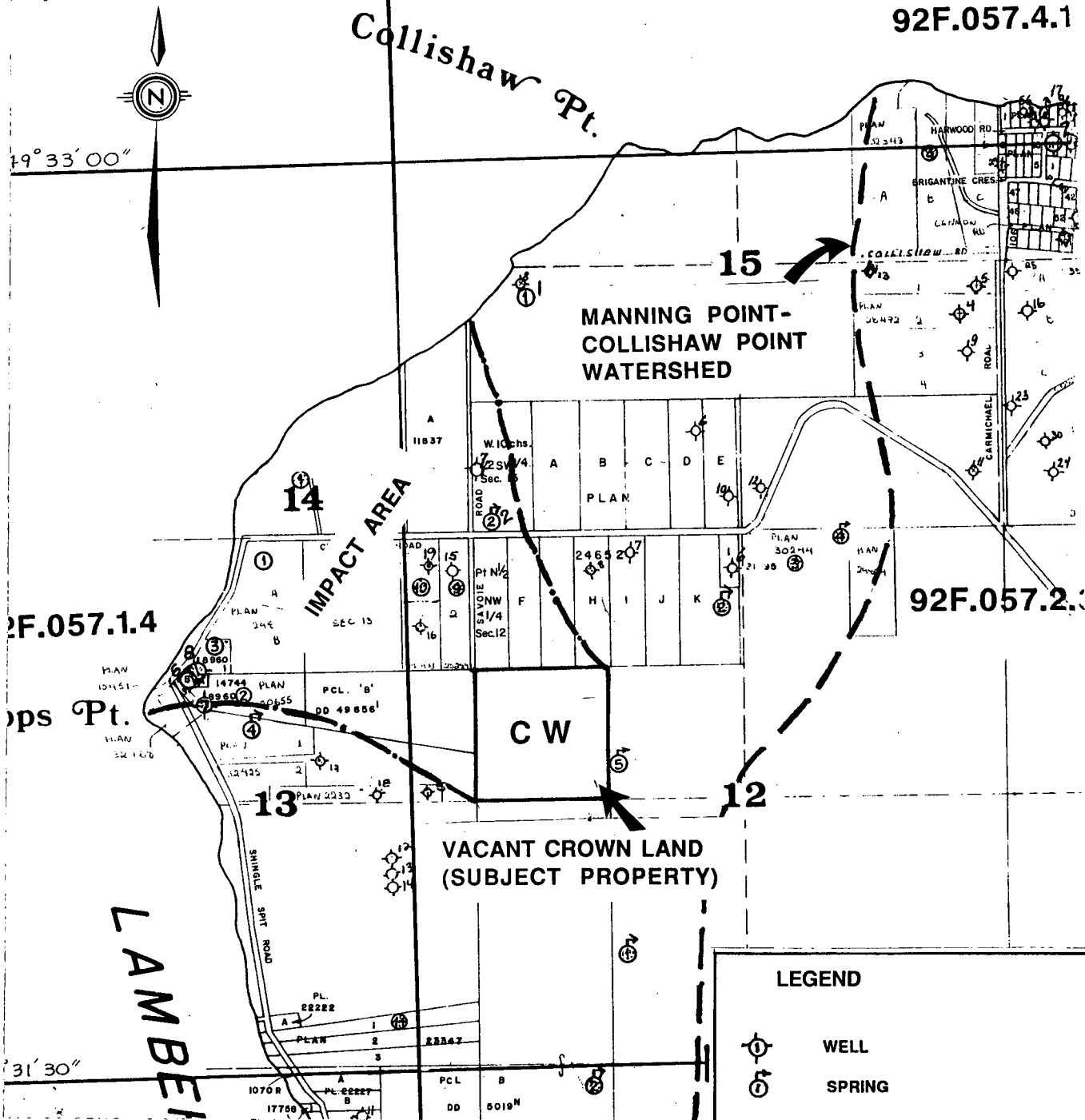
ENGINEER

FILE No. 92 F/10

DWG. No.

Figure 1

92F.057.4.1



**Province of British Columbia**  
**Ministry of Environment**  
**WATER MANAGEMENT BRANCH**

TO ACCOMPANY REPORT ON  
**Prelim. Assessment of Groundwater Conditions - Vacant Crown Land, Hornby Island**

SCALE: VERT. 1" = 1545'

HOR. —

DATE

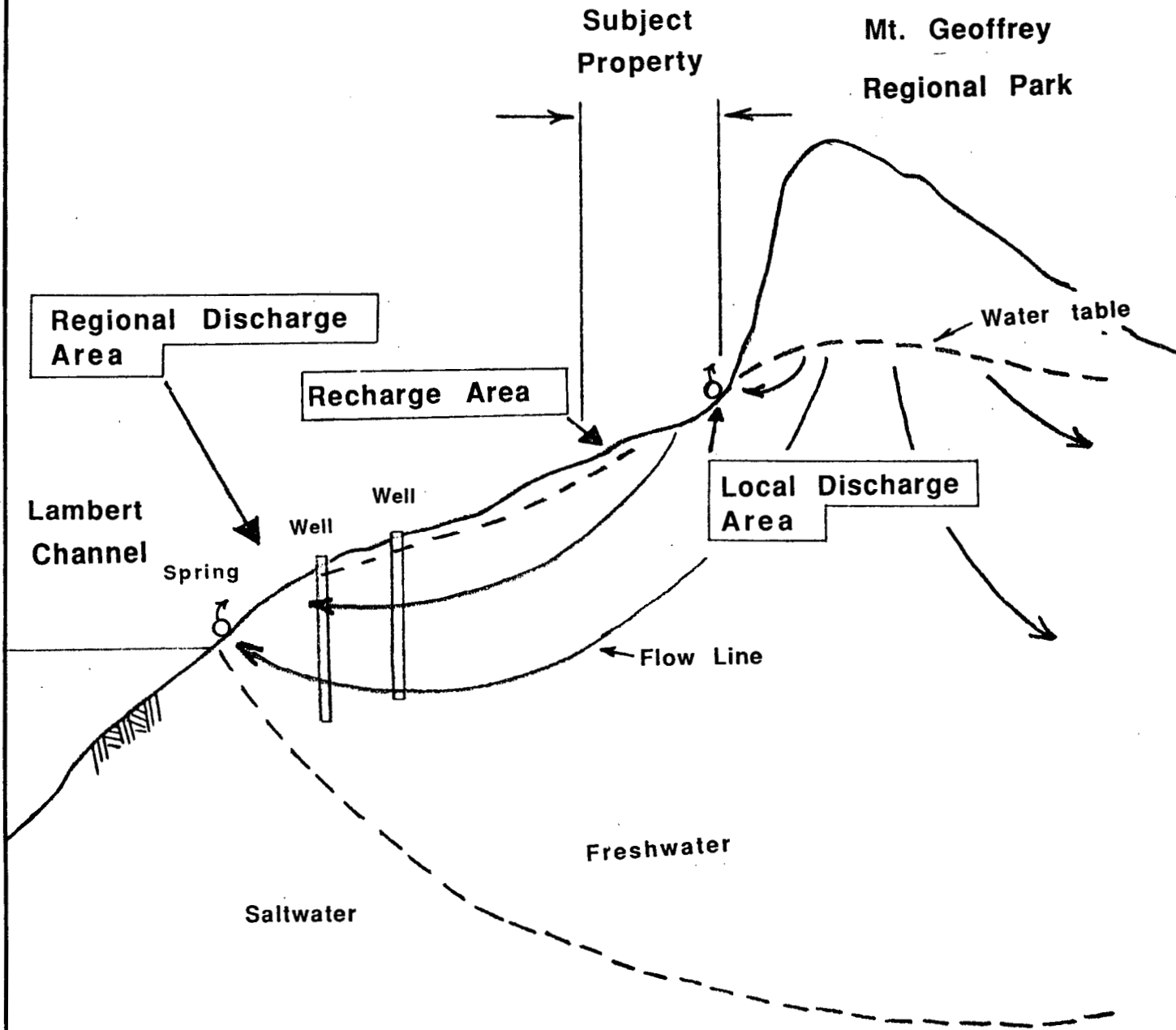
March 1992

ENGINEER

FILE No. 92 F/10 DWG. No. Figure 2

N W

S E



**Schematic Hydrogeologic Section through  
Manning Point - Collishaw Point and Shingle  
Spit - Phipps Point Watersheds**



**Province of British Columbia**  
Ministry of Environment  
WATER MANAGEMENT BRANCH

TO ACCOMPANY REPORT ON  
Prelim. Assessment of Groundwater  
Conditions - Vacant Crown Land,  
Hornby Island

SCALE: VERT. N.T.S.

DATE

March 1992

ENGINEER

FILE No. 92 F/10

DWG. No. Figure 3

VAN CAL 15712

10/03/92.

TABLE 1

age 1.

Ministry of Environment - Water Management Branch - Groundwater Section  
Groundwater Database System  
Data Summary - with Legal Descriptions and Old Coordinates

BCGS Map Area m Chem	Well No.	Lot No.	Plan No.	Blk No.	TP	SC	RG	D.L.	Z	X	Y	Old Well No.	L.D.	Owner's Name	Site Address	Date Constructed (dmy)	Well Depth (ft.)	Well Diam. (in.)	Drill Contr No.	Const. Method	Well Yield Yield	Yld. Unt.	Depth to Water (ft.)	Depth to Bedrk (ft.)	Aquif Litho	Screen Interval (ft.)	G.W. Rpt	Chem Lab	Che Fld		
Site No.																															
092F.057.1.2.2	001	2	32878			4			00	00	00	000	33	JOST GUMPER	MOUNT RD	09-09-85	300.0	6.0	043	DRI	0.5 GPM		224	3	BED						
092F.057.1.2.4	001	3	23698			4			00	00	00	002	33	PARNELL		01-01-50	240.0	0.0	076	DRI			UNK	UNK	UNC					Y	
1400741																															
092F.057.1.2.4	002	1	15992			4			00	00	00	003	33	?NIEL	SHINGLE PT RD	01-01-50	12.0	0.0	UNK	DUG			UNK	UNK	UNC					Y	
092F.057.1.2.4	003	8	24913			4			00	00	00	004	33	NIXON	SHINGLE SPIT RESORT	07-04-72	176.0	6.0	014	DRI	25.0 GPM		30	0	BED						
092F.057.1.2.4	004	14	15456			4			00	00	00	005	33	FLAVELLE (GORDON)		26-04-76	160.0	6.0	014	DRI	15.0 GPM		30	0	BED						
092F.057.1.2.4	005					4			00	00	00	006	33	DEPT OF HIGHWAYS		08-05-72	96.0	6.0	046	DRI	7.0 GPM		4	8	BED						
092F.057.1.2.4	006	13	15456			4			00	00	00	007	33	WYNDHAM		01-01-72	152.0	0.0	014	DRI	36.0 GPM		UNK	UNK	UNC					Y	
1400740																															
092F.057.1.2.4	007	14	15456			4			00	00	00	008	33	FLAVELLE		01-01-50	14.0	0.0	UNK	DUG			6	UNK	UNC					Y	
092F.057.1.2.4	008	1	15992			4			00	00	00	009	33	MCLACHLIN		01-01-73	20.0	0.0	UNK	DUG			UNK	UNK	UNC						
092F.057.1.2.4	009	19				4			00	00	00	010	33	YAKOBOWICH		01-01-74	37.0	0.0	043				UNK	UNK	UNC						
092F.057.1.2.4	010	A	10241			4			00	00	00	011	33	R T SINCLAIR TEMPLE		08-01-75	95.0	0.0	043	DRI	20.0 GPM		UNK	UNK	2	BED					
092F.057.1.2.4	011	A	24913			4			00	00	00	012	33	N E WOODARD		01-06-78	186.0	6.0	046	DRI			26	9	BED						
092F.057.1.2.4	012	C	18474			4			00	00	00	016	33	MCDONALD	CENTRAL RD	02-06-74	75.0	0.0	043	DRI	0.5 GPM		UNK	UNK	0	BED					
092F.057.1.2.4	013	15	15456			4			00	00	00	017	33	GEORGE MCLAUGHLIN	SHINGLE SPIT ROAD	10-10-81	127.0	6.0	043	DRI	3.0 USQM		UNK	30	BED					Y	
092F.057.1.2.4	014	2	15992			4			00	00	00	018	33	RON HELLIWELL	SHINGLE SPIT ROAD	14-10-81	73.0	6.0	043	DRI	2.0 USQM		73	28	BED					Y	
092F.057.1.2.4	015	B	18474			4			00	00	00	019	33	JACK EDY	SHINGLE SPIT ROAD	30-10-83	100.0	6.0	043	DRI	5.0 GPM		15	7	BED						
092F.057.1.2.4	016	6	28762			4			00	00	00	000	33	JAMES C CURRIE		12-01-86	120.0	6.0	043	DRI	1.0 GPM		16	13	BED						
092F.057.1.2.4	017	A	18474			4			00	00	00	023	33	ROBERT NEIL	SHINGLE SPIT ROAD	04-11-84	120.0	6.0	043	DRI	5.0 GPM		110	1	BED						
092F.057.1.4.2	001					13			00	00	00	002	33	A SAVOIE		01-01-50	10.0	0.0	UNK	DUG			UNK	UNK	5	BED					
092F.057.1.4.2	002					13			00	00	00	003	33	A SAVOIE		01-01-50	12.0	0.0	UNK	DUG			UNK	UNK	UNK	BED					
092F.057.1.4.2	003	REM				13			00	00	00	004	33	DONNELLY		01-01-50	8.0	0.0	UNK				UNK	UNK	UNK	UNC					
092F.057.1.4.2	004	B	14744			13			00	00	00	006	33	LIDSTONE		24-11-72	83.0	6.0	014	DRI	5.0 GPM		12	0	BED						
092F.057.1.4.2	005	B	196561			13			00	00	00	007	33	A SAVOIE		01-01-68	110.0	0.0	076	DRI	6.0 GPM		12	UNK	UNC					Y	
092F.057.1.4.2	006	A	14744			13			00	00	00	008	33	ALLEN JONES		12-05-72	85.0	6.0	046	DRI	5.0 GPM		25	12	BED					Y	
092F.057.1.4.2	007	1	23347			13			00	00	00	011	33	L SMITH		01-01-50	20.0	0.0	UNK				UNK	UNK	UNK	UNC					Y
092F.057.1.4.2	008					13			00	00	00	012	33	JEFF RUBINOFF		04-08-75	35.0	6.0	043	DRI	2.80 GPM		UNK	UNK	0	BED					
092F.057.1.4.2	009					13			00	00	00	013	33	JEFF RUBINOFF		04-08-75	35.0	6.0	043	DRI	30.0 GPM		UNK	UNK	0	BED					
092F.057.1.4.2	010					13			00	00	00	014	33	JEFF RUBINOFF		04-08-75	86.0	6.0	043	DRI	30.0 GPM		UNK	UNK	0	BED					
092F.057.1.4.2	011					13			00	00	00	017	33	BRAD STORMWELL	SHINGLE SPIT RD	26-10-81	38.0	6.0	043	DRI	15.0 USQM		15	15	BED					Y	
092F.057.1.4.2	012	A	22322			13			00	00	00	018	33	DAN MILLER	SHINGLE SPIT RD	27-05-82	40.0	6.0	043	DRI	10.0 GPM		15	7	BED						
092F.057.1.4.4	001					13			00	00	00	001	33	TRIMBLE		01-01-50	8.0	0.0	UNK	DUG	80.0 GPH		3	2	BED						
092F.057.1.4.4	002					14			00	00	00	001	33	C A SEON		01-01-40	8.0	0.0	UNK				UNK	UNK	UNC					Y	
1400644																															
092F.057.2.1.3	001					4			00	00	00	001	33	SPIT CAFE & RESORT		01-01-50	0.0	0.0	UNK				UNK	UNK	UNK	UNC					
092F.057.2.1.3	002	C				4			00	00	00	001	33	J PARNELL	CLIFF HANGER	10-04-72	76.0	6.0	014	DRI	12.0 GPM		40	0	BED						
092F.057.2.1.3	003	B	05019N			4			00	00	00	002	33	SMITH		01-01-50	0.0	0.0	UNK				UNK	UNK	UNK	UNC					
1400753																															
092F.057.2.1.3	004					4			00	00	00	003	33	KENNEDY		01-01-50	0.0	0.0	UNK				UNK	UNK	UNK	UNC					Y
092F.057.2.1.3	005	6	32878			4			00	00	00	004	33	BOB PHILLIPS		01-01-78	66.0	0.0	043				UNK	UNK	UNK	UNC					
092F.057.2.1.3	006	7				4			00	00	00	005	33	BOB PHILLIPS		01-06-78	285.0	0.0	043	DRI			UNK	UNK	2	UNC					
092F.057.2.1.3	007	7	32878			4			00	00	00	006	33	BOB PHILLIPS		01-07-78	300.0	6.0	043	DRI			UNK	UNK	3	BED					
092F.057.2.1.3	008	4	28762			4			00	00	00	013	33	BOB PHILLIPS		04-07-75	90.0	0.0	043	DRI	7.0 GPM		UNK	UNK	UNK	UNC					
092F.057.2.1.3	009	2	28762			4			00	00	00	014	33	BOB PHILLIPS		01-10-71	100.0	0.0	043	DRI	4.0 GPM		UNK	UNK	57	BED					
092F.057.2.1.3	010	17	23698			4			00	00	00	015	33	MAUREEN WOOD	CENTRAL RD	01-02-79	96.0	6.0	043	DRI	3.0 GPM		15	14	BED						
092F.057.2.1.3	011								00	00	00	000	33	JOYCE SMITH	SHINGLE SPIT RD	28-01-85	120.0	6.0	043	DRI			UNK	UNK	19	BED					
092F.057.2.3.1	001					12			00	00	00	001	33	RUBINOFF		01-01-50	0.0	0.0	UNK				UNK	UNK	UNK	UNC					Y
092F.057.2.3.1	002					12			00	00	00	005	33	DONELLY		01-01-50	0.0	0.0	UNK				UNK	UNK	UNK	UNC					
092F.057.2.3.1	003					13			00	00	00	005	33	J A MILEK		29-10-70	144.0	6.0	046	DRI	40.0 GPH		14	12	BED					Y	
1400724																															
092F.057.2.3.1	004	1	25289			13			00	00	00	016	33	JIM MCLEOD	CENTRAL RD	01-07-81	142.0	6.0	043	DRI	40.0 GPH		UNK	10	BED					Y	

TABLE 1

10/03/92.  
age 2

Ministry of Environment - Water Management Branch - Groundwater Section  
Groundwater Database System  
Data Summary - with Legal Descriptions and Old Coordinates

BCGS Map Area m Chem	Well No.	Lot No.	Plan No.	Blk No.	TP	SC	RG	D.L.	Z	X	Y	Old Well No.	L.D.	Owner's Name	Site Address	Date Constructed (dmy)	Well Depth (ft.)	Well Diam. (in.)	Drill Contr No.	Const. Method	Well Yield Unt.	Yld. GPM	Depth to Water (ft.)	Depth to Bedrk (ft.)	Aquif Litho	Screen Interval (ft.)	G.W. Rpt	Chem Lab	Che Fld	
Site No.																														
092F.057.2.3.3	002					15			00	00	00	002	33	SMITH		01-01-50	0.0	0.0	UNK				UNK	UNK	UNC					
092F.057.2.3.3	003					12			00	00	00	002	33	MILLER SPRING ESTATE		01-01-50	6.0	0.0	UNK	DUG			UNK	UNK	UNC					
092F.057.2.3.3	004					12			00	00	00	003	33	YEOMAN	CENTRAL RD	01-01-50	17.0	0.0	UNK	DUG			UNK	UNK	UNC					Y
092F.057.2.3.3	005					15			00	00	00	003	33	F SAVOIE		01-01-50	0.0	0.0	UNK				UNK	UNK	UNC					
092F.057.2.3.3	006	2	28472			15			00	00	00	004	33	CHRIS PHILLIPS		01-11-77	66.0	6.0	043	DRI	15.0	GPM	12	3	BED					
092F.057.2.3.3	007					12			00	00	00	004	33	YEOMAN		01-01-50	4.0	0.0	UNK				UNK	UNK	UNC					
092F.057.2.3.3	008	1	28472			15			00	00	00	005	33	BERNARD DE AQUAR		01-08-75	129.0	0.0	043	DRI	3.0	GPM	UNK	0	BED					
092F.057.2.3.3	009	D	24652			15			00	00	00	006	33	HINDS	CENTRAL RD	01-09-79	102.0	6.0	043	DRI			UNK	57	BED					
092F.057.2.3.3	010	1	21895			12			00	00	00	006	33	MEL DALZIEL	CENTRAL RD	10-03-80	200.0	6.0	043	DRI	4.0	GPM	UNK	170	BED					
092F.057.2.3.3	011	1	24652			12			00	00	00	007	33	RON MATTSON		01-06-79	140.0	0.0	043	DRI	10.0	GPM	5	30	BED					
092F.057.2.3.3	012		24652			15			00	00	00	007	33	M PETHICK	SAVOIE RD	01-07-79	60.0	6.0	043	DRI	2.0	GPM	UNK	14	BED					
092F.057.2.3.3	013					15			00	00	00	008	33	GEORGE SAVOIE	SAVOIE RD	25-01-80	120.0	6.0	043	DRI	2.0	GPM	20	UNK	UNC					
092F.057.2.3.3	014	H	24652			12			00	00	00	008	33	DON CARTWRIGHT	CENTRAL RD	09-10-81	200.0	6.0	043	DRI	15.0	USGM	UNK	60	BED					Y
092F.057.2.3.3	015	2	25289			13			00	00	00	009	33	ED COLIN		01-01-50	10.0	0.0	UNK				UNK	UNK	UNC					Y
092F.057.2.3.3	016	3	28472			15			00	00	00	009	33	JOE REEVES	CARMICHAEL RD	22-10-80	198.0	6.0	043	DRI	1.0	GPM	168	2	BED					
092F.057.2.3.3	017	E	24652			15			00	00	00	010	33	G BASSET	CENTRAL RD	23-08-79	205.0	6.0	043	DRI	5.0	GPM	100	100	BED					
092F.057.2.3.3	018	1	25289			13			00	00	00	010	33	E MARTIN		01-01-50	8.0	0.0	UNK				UNK	UNK	UNC					Y
092F.057.2.3.3	019					15			00	00	00	011	33	LASKIN RICHARD	CENTRAL RD	01-07-79	66.0	6.0	043	DRI	30.0	GPM	6	5	BED					
092F.057.2.3.3	020					15			00	00	00	012	33	NICK CATON		15-08-79	262.0	6.0	043	DRI			UNK	5	UNC					
092F.057.2.3.3	021	1	28472			15			00	00	00	013	33	ROGER TRIMBLE	CARMICHAEL RD	10-10-83	93.0	0.0	043	DRI	5.0	GPM	10	3	BED					
092F.057.2.3.3	022	2	25289			13			00	00	00	015	33	ED COLIN	CENTRAL RD	01-07-79	40.0	6.0	043		10.0	GPM	UNK	10	BED					
092F.057.2.3.3	023	1	25289			13			00	00	00	019	33	RICHARD MARTIN		20-08-83	33.0	6.0	043	DRI	5.0	GPM	8	6	BED					

DISCLAIMER: The Province disclaims all responsibility for the accuracy of this information. This information should not be used as a basis for making financial or any other commitments.