



BROWN, ERDMAN & ASSOCIATES LTD.
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TELEPHONE 988-1557

WATER
- ALDERGROVE
- WELLS
- 272 + 25

9269-1 193

COMPLETION REPORT

ALDERGROVE

PRODUCTION WELL NO. 47

for

THE CORPORATION OF THE MUNICIPALITY OF LANGLEY

November 1977

R. B. Erdman

W. L. Brown, P. Eng.

77-006

1.0 INTRODUCTION

On June 15th, 1977, the Municipal Council of the Corporation of the Township of Langley authorized the calling for tenders for a Production Well to be drilled at 25th Ave. and 272nd Street in Aldergrove. On June 22nd, 1977, the tender was submitted by Columbia Water Wells Ltd. of Langley was accepted. Drilling commenced on June 30th and a successful pump test was concluded on August 29th, 1977.

2.0 WELL CONSTRUCTION

As shown on the attached well log, the production well has a completed depth of 109.5 feet and an inside diameter of 12-inches. The log also shows the sediments penetrated and as completed details.

A 20-inch diameter surface casing was set to 17 feet. Sixteen-inch diameter casing was then drilled through the aquifer which was bottomed at 109.5 feet. A Johnson stainless steel continuous wire wound well screen with a 50/1000 inch slot opening was set between 94 and 109.5 feet on a 12-inch diameter riser which extends to surface. The annular space between the well screen and casing was filled with rounded and washed pea gravel as the casing was removed. Development of the well was carried out by surging and swabbing.

The well was test pumped at 776 U.S. gallons per minute (48.5 liters per second) for a total of 7100 minutes (118 hrs. & 20 min.). The pumping level was stable at a depth of 78.4 feet below the pump base at the end of the test. The specific capacity of the well is therefore 13.43 gpm per foot of drawdown (776/784-206).

3.0 AQUIFER COEFFICIENTS

Drawdown measurements made during the pumping test indicate that the aquifer transmissivity is 41,000 U.S. gallons per day/ft. Recovery measurements indicate a transmissivity of between 31,500 and 40,000 U.S. gallons per day/ft. During the test, two notable changes occurred in the water levels. Between 1800 and 1900 minutes of pumping the water level decreased from 79.02 to 78.32 feet with no change in flow. On the recovery after 10 minutes, the water level dropped from 30.6 to 31.80 again for no apparent reason. These changes in water level might

3.0 AQUIFER COEFFICIENTS (cont'd)

be attributed to some other pump in the area being stopped during the pump test and then restarted during the recovery. While this is a possibility, no known large capacity wells are known in the area.

4.0 WATER QUALITY

The results of a chemical analysis conducted on a water sample collected near the end of the test are attached.

It will be noted that the water meets the levels set in the Canadian Drinking Water Standards for all items tested except for the level of manganese. The acceptable manganese level is 0.05 mg/l while the level reported is 0.085 mg/l.

Manganese is not considered a physiological hazard and will not impart a metallic taste to spring water in amounts less than 32 mg/l. Also if the combined levels of dissolved iron and manganese are below 0.3 mg/l there should be no staining of plumbing fixtures. The combined iron and manganese level in Aldergrove Production Well No. 4 is 0.092 mg/l.

5.0 PUMP AND WELL HEAD CONSTRUCTION

At a pumping rate of 700 U.S. gallons per minute the submergence available for protection against deterioration, drought or new wells in the area is:

Top of screen	94.0 feet
Static water level	20.6 feet
Total available drawdown	73.4 feet
Pump bowls	3
	<hr/>
Total usable drawdown	70.4 feet
Total drawdown @ 700 US gpm (700/13.43) (44 l/sec)	52 feet
Safety submergence	18.4 feet
Safety factor	35%

5.0 PUMP AND WELL HEAD CONSTRUCTION (cont'd)

The pump set in the well should have the following characteristics:

- | | |
|-----------------------|------------------------------|
| 1. type | vertical turbine |
| 2. diameter | 10" maximum OD pump bowls |
| 3. discharge | 700 U.S. gpm |
| 4. total dynamic head | 80 feet plus system pressure |
| 5. setting | suction 93 feet below ground |

The pump must not be attached to the casing. The pump base should be separated from the casing by a felt ring that will restrict any pump vibrations from being transmitted to the well. A flow control valve must be set at the pump discharge to ensure that the well is never pumped at more than 700 U.S. gpm. Higher pumping rates may cause the collapse of the well screen and sand pumping. The pump should be started against a closed system.

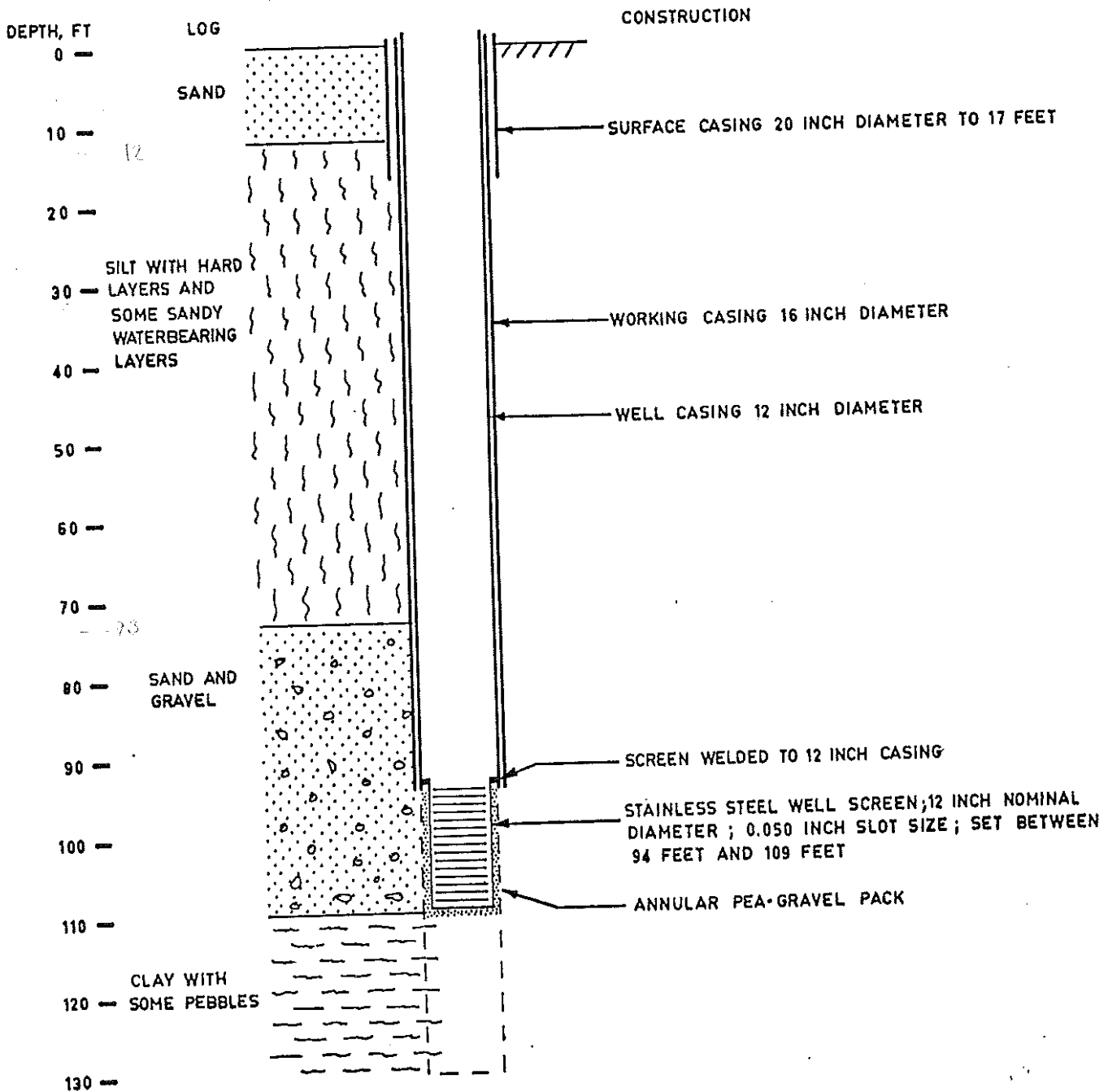
The well head must be equipped with a check valve that will stop system water from back-flushing the well. The pump should not be run in short stop and start cycles. Prelub water is not necessary but if used it must not be allowed to cascade into the well or an iron bacteria may be formed which will cause a deterioration in the well within six months.

6.0 RECOMMENDATIONS AND CONCLUSIONS

- 6.1 The rated capacity of the well is 700 U.S. gpm.
- 6.2 A turbine type pump should be set with suction at 93 feet.
- 6.3 The water is potable.
- 6.4 The well must not be

- Vibrated
- Raw-hided
- Overpumped
- Back-flushed

WTN 36528



TOWNSHIP OF LANGLEY	 INTERNATIONAL GROUNDWATER CONSULTANTS LTD. NORTH VANCOUVER, BRITISH COLUMBIA		
ALDERGROVE BRITISH COLUMBIA	PRODUCTION WELL 25 AVENUE 272 STREET	BY: HWR	DATE: 7-11-77
		JOB: 77-006	DWG.: 1



UGL test ltd.

1650 PANDORA STREET, VANCOUVER, B.C. V5L 1L6 • TELEPHONE 254-7278 • TELEX 04-54210

Report On Water Sample for Chemical Analysis File No. 2857 C
Reported to Brown, Erdman and Associates Ltd. Report No. _____
1401 Bewicke Avenue Date September 16, 1977
North Vancouver, B.C.

We have tested the sample of water submitted by you on August 29, 1977 and report as follows:

SAMPLE IDENTIFICATION:

The sample was submitted in a plastic bottle labelled -
"Aldergrove Aug. 28/77 @ 1450 7000 Min."

METHOD OF TESTING:

The sample was tested in accordance with the procedures set down in "Standard Methods for the Examination of Water and Wastewater" - 14th Edition, published by the American Public Health Association, 1976.

RESULTS OF TESTING:

(on following page)

RESULTS OF TESTING:

pH		7.70	
Conductivity		157.	micromhos/cm
Turbidity		0.1	J.T.U.
Hardness (Calc. CaCO ₃)		66.3	ppm
Colour		L 5.	c.u.

Dissolved Anions

Alkalinity			
Bicarbonates	HCO ₃	90.9	ppm
Carbonates	CO ₃	NIL	ppm
Chlorides	Cl ³	2.5	ppm
Sulfates	SO	11.1	ppm
Nitrates	N ⁴	L 0.01	ppm
Phosphates	PO ₄	L 0.01	ppm
Fluoride	F ⁴	0.082	ppm

Dissolved Cations

Calcium	Ca	17.5	ppm
Magnesium	Mg	5.5	ppm
Potassium	K	1.72	ppm
Sodium	Na	4.2	ppm
Iron	Fe	L 0.03	ppm
Copper	Cu	L 0.001	ppm
Lead	Pb	0.003	ppm
Manganese	Mn	0.085	ppm
Zinc	Zn	0.007	ppm

Total Iron		0.007	ppm
Total Manganese		0.090	ppm
Total Suspended Solids *		1.5	ppm
Total Dissolved Solids		134.	ppm

L - Less than

* - Sample filtered on a 0.45 micron membrane.

REMARKS:

The water as represented by the sample submitted can be characterized as a moderate with respect to hardness. It is noted that the water failed to meet Canadian Drinking Water Standards for dissolved manganese (limit - 0.05 ppm).

CAN TEST LTD.,

Handwritten signature

A. Maynard, M.Sc.,
Chemist