



To: A.P. Kohut
Senior Geological Engineer
Groundwater
Hydrology Section

Date: May 7, 1981

File: 92 F/14

Re: Groundwater Potential - Oyster River Area

Introduction:

At the request of R.A.H. Sparrow, Fish & Wildlife Branch, a site specific study of the groundwater potential in an area along the northern bank of the Oyster River (approx. 4 miles upstream of the mouth), has been completed. The following report discusses the available data, including geologic mapping, aerial photographs and observations made during a one day site inspection.

Surficial Geology:

Figure 1 has been prepared to show the distribution of surficial materials in the study area, based upon surficial mapping by Fyles (1959).

Site Investigation:

A recent site inspection confirmed the presence of the surficial materials as shown in Figure 1. Immediately downstream of the study area, the river flows over sandstone bedrock dipping slightly downstream. Alluvial sand, gravel and cobbles overlie the bedrock in this area. Within the study area alluvial sand, gravel, cobbles and patches of clay could be seen. At the upstream end of the study area, the river has incised through 10 to 15 feet of cobbly sand and gravel channel deposits overlying at least 10 feet of bluish-grey clay. Twenty feet of channel material, covered by vegetation is exposed along the northern boundary of the study area. A line of poplars and the presence of other vegetation along the toe of the channel bank indicates possible seepage. It appears that the channel deposit is sitting on clay. Upstream of the study area, more sandstone outcrops dipping downstream could be seen.

Based upon the observations during site inspection and the surficial geology by Fyles (1959), Figure 2 has been prepared to show the possible distribution of subsurface unconsolidated deposits in the study area. It appears that between the two bedrock outcrop areas upstream and downstream of the study area, that there is a shallow basin or channel which has been infilled by glacial materials. Due to a lack of subsurface data, the presence of any permeable water-bearing sand and/or gravel below the clay is not known at this time, but may exist according to mapping by Fyles (1959).

Groundwater Potential:

Based on available surficial geology mapping and a site inspection of the study area, the groundwater potential at the study site does not appear to be favorable for developing large capacity wells. However, there is a possibility that aquifer materials could occur in this local area at depth. Geophysical exploration and drilling would be required to investigate this possibility.

Recommendations:

Initially, further groundwater exploration by way of seismic refraction surveying and resistivity surveying would be recommended to determine the possible presence of a confined or infilled channel aquifer in the area. The geophysical surveys can be readily conducted along a recently constructed dirt road (River Road?) adjacent to the study area. The seismic survey if undertaken by Ministry of Transportation and Highways personnel, would cost approximately \$2,000.00 for mobilization, testing, interpretation and demobilization of equipment and crew. Alternatively, Pacific Hydrology Consultants Ltd. of Vancouver have available for rent hammer seismic equipment for \$50.00 per day. However, the latter will require a trained operator and the results may not be as accurate as that obtained by using the Highways' more sophisticated unit which utilizes explosives to produce refraction signals. Resistivity equipment and expertise may be available from the Groundwater Section at no rental cost.

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Depending upon the results of the geophysical surveys, further subsurface investigation by way of test drilling may be needed. The estimated cost, excluding supervisory costs, for the construction and testing of an 8-inch diameter well up to 150 feet deep would be approximately \$8,000.00.

Marc Zubel.

Marc Zubel
Geological Engineer
Groundwater
Hydrology Section

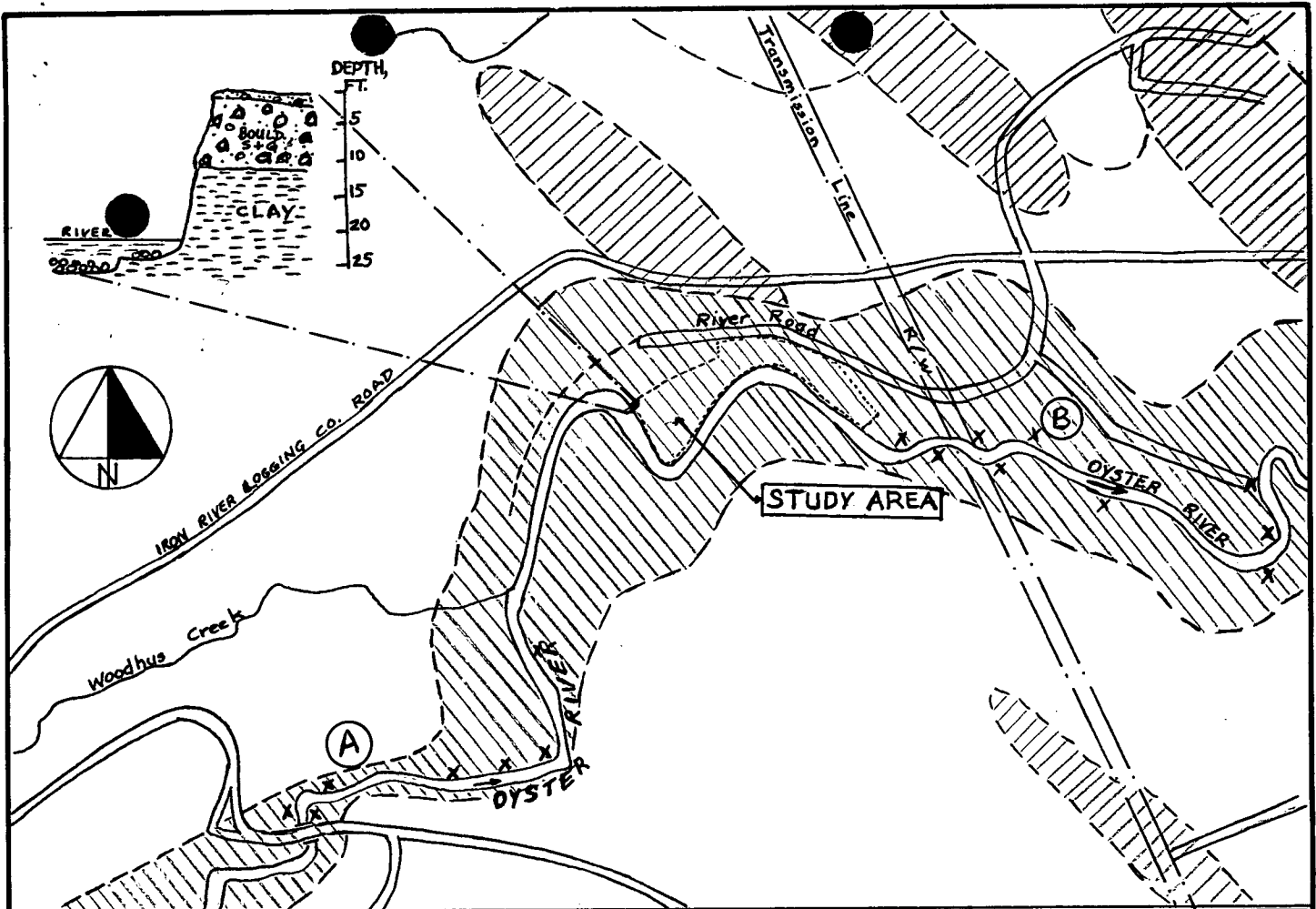
Attach.

References:

Fyles, J.G. 1959, "Surficial Geology-Oyster River, B.C.,"
Map 49-1959, Geological Survey of Canada.

MZ/dp

Oct. 28/86 Copy of this memo & attached top 2 diagrams & photos prepared for Ron Topham, Planning & Assessment B1.



SURFICIAL GEOLOGY (after Fyles, 1959)



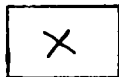
DELTAIC DEPOSITS : sands and gravels



MARINE - VENEER DEPOSITS OVERLYING TILL



ALLUVIAL DEPOSITS (boulders, gravels and sands) OVERLYING TILL



BEDROCK EXPOSURES (Sandstone)



Province of British Columbia
 Ministry of Environment
 INVENTORY AND ENGINEERING BRANCH

TO ACCOMPANY REPORT ON

**GROUNDWATER POTENTIAL
 OYSTER RIVER AREA**

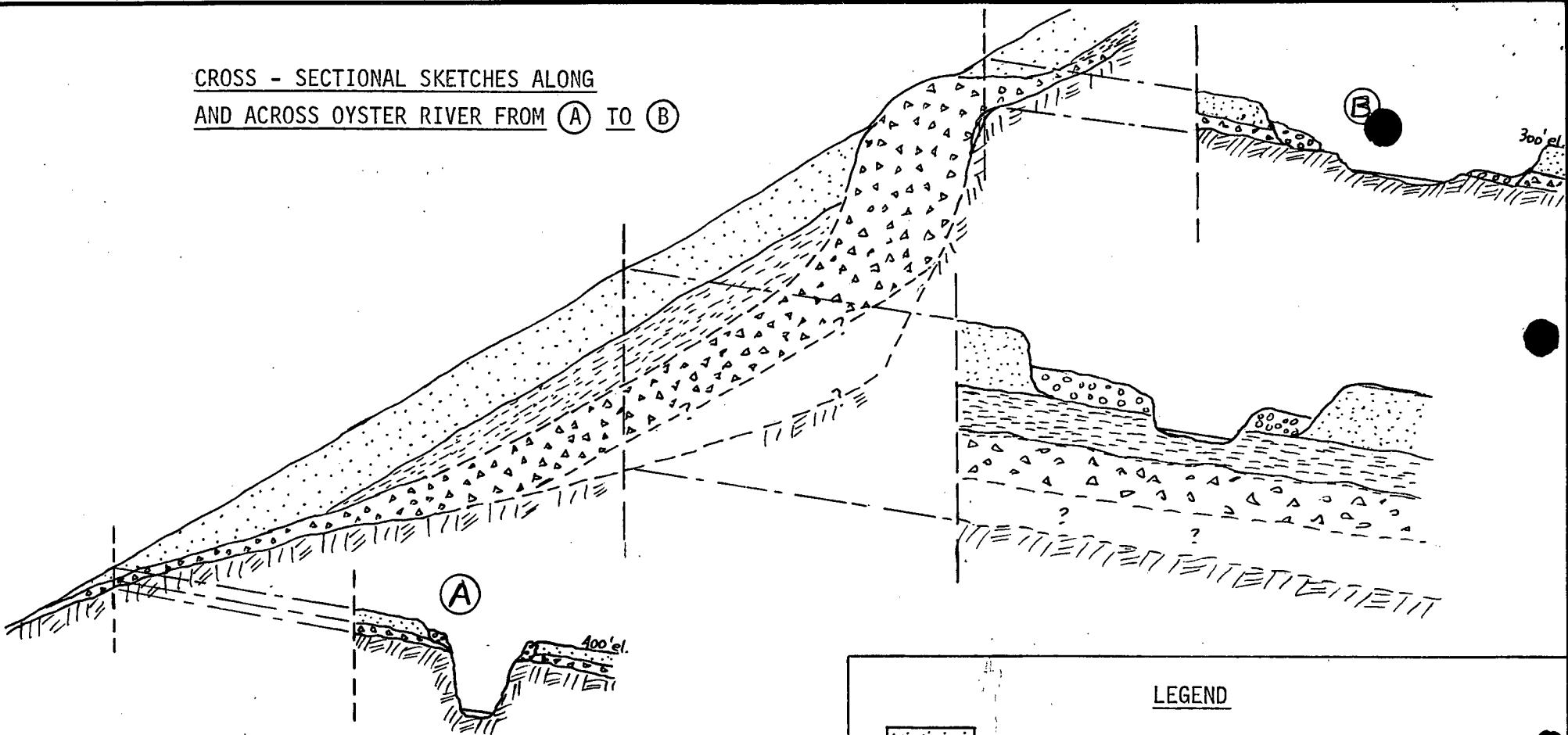
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DATE
 APRIL 1981


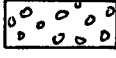
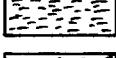
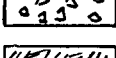
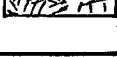
M. ZUBEL ENGINEER


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CROSS - SECTIONAL SKETCHES ALONG
AND ACROSS OYSTER RIVER FROM (A) TO (B)



LEGEND

-  DELTAIC DEPOSITS: sands and gravels
-  FLOODPLAIN & CHANNEL DEPOSITS: sand gravel and cobbles
-  MARINE (GLACIO-MARINE) DEPOSITS: clay
-  GROUND MORaine DEPOSITS: till
-  SEDIMENTARY BEDROCK

 **Province of British Columbia**
Ministry of the Environment
ENVIRONMENTAL AND ENGINEERING SERVICE
WATER INVESTIGATIONS BRANCH

TO ACCOMPANY REPORT ON
GROUNDWATER POTENTIAL
OYSTER RIVER AREA

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FILE No. 92 F/14	DWG. No. 2