

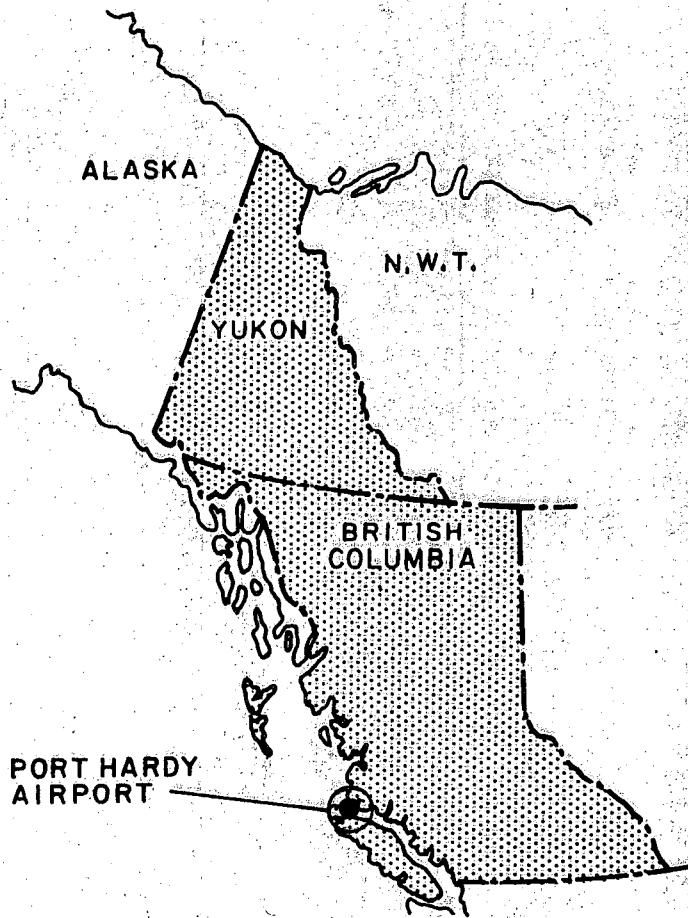
K. H. KUPKA



Environment Canada
Environment Protection Service
Federal Activities Abatement Group
Pacific Region

SEWAGE DISPOSAL AT PORT HARDY AIRPORT

September, 1973



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SEWAGE DISPOSAL AT PORT HARDY AIRPORT

September, 1973

ENVIRONMENT CANADA
ENVIRONMENTAL PROTECTION SERVICE
FEDERAL ACTIVITIES ABATEMENT GROUP
PACIFIC REGION

SEWAGE DISPOSAL AT PORT HARDY AIRPORT

Report

by

D. Cameron

September, 1973

SUMMARY

Raw sewage from the Port Hardy Airport is discharged through an outfall, across a beach at low tide, to Queen Charlotte Strait.

The discharge constitutes a potential health hazard and is aesthetically unpleasant. Joint construction of a regional sewage collection and treatment system with costs shared by MOT, DIAND, and the District of Port Hardy is recommended as the most acceptable method of solving this sewage disposal problem. As well as remedying the airport's problem, this will eventually permit reopening of a shellfish area presently closed due to discharges from a private trailer court package sewage treatment plant and Indian reserve septic tank tile field systems.

To construct a treatment plant to handle only MOT wastewater would subject the Federal Government to criticism for an inadequate splinter solution in view of the problems existing in the nearby Beaver Harbour area.

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PORT HARDY AIRPORT
SEWAGE TREATMENT ASSESSMENT REPORT

1. INTRODUCTION

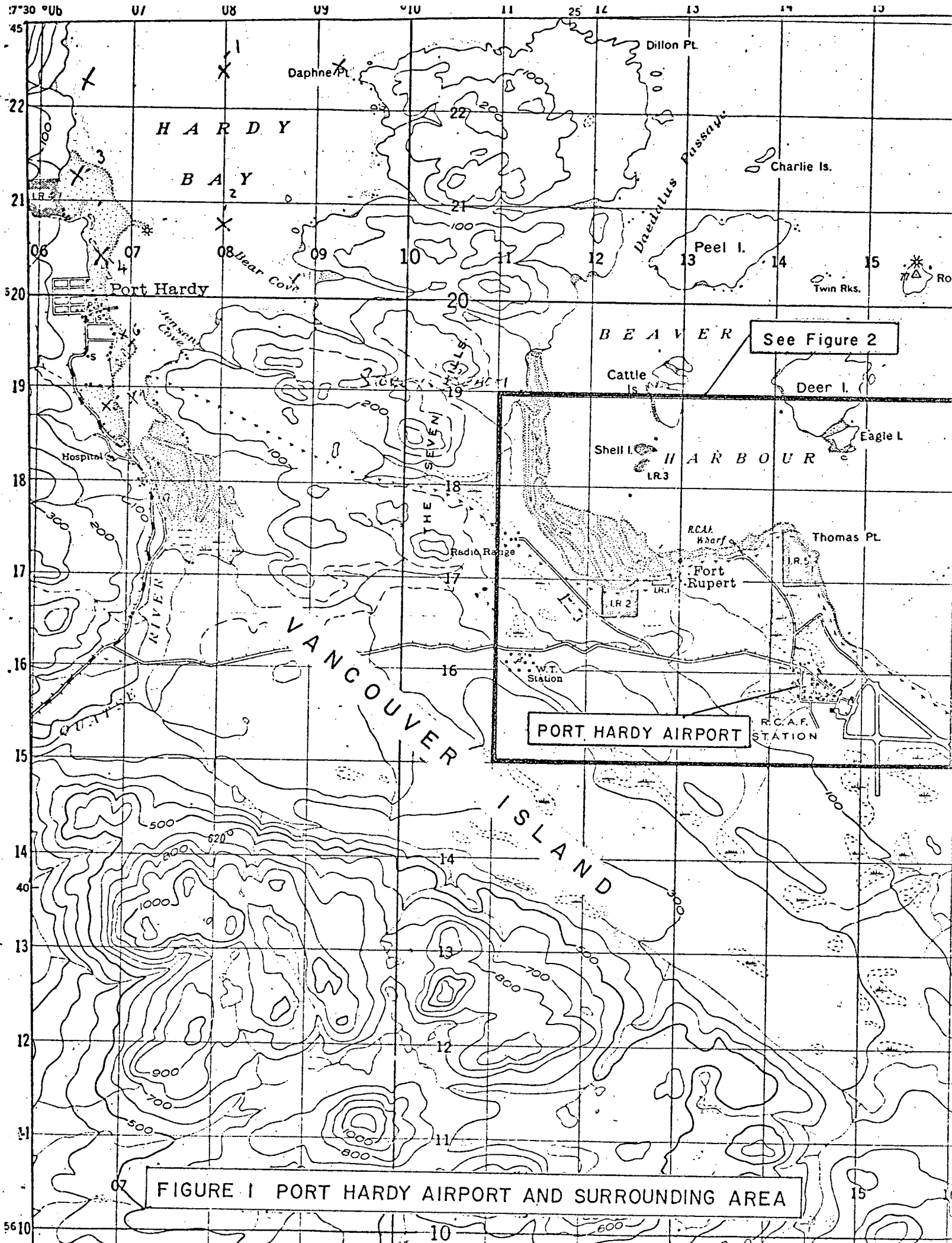
Port Hardy Airport is situated on the northern end of Vancouver Island, about 7 miles from the town of Port Hardy, B.C. (Fig. 1)

The airport, originally a Royal Canadian Air Force Station, now serves as a terminal for public and private aircraft operations. Approximately 1 to 1½ miles northwest of the airport are the Indian Reserves of Kippase and Fort Rupert. (Fig.2)

Beyond the reserves, separated by about one-half mile of undeveloped Crown Land, lies the development area of Beaver Harbour North and a private trailer court.

Beaver Harbour, as well as containing one of the few good beaches accessible to the residents of Port Hardy, is a prime shellfish growing area. The foreshores of Beaver Harbour and Shell Island are a source of commercially and recreationally harvested butter clams and horse clams. These clams are a traditional food source for the native Indians living at Beaver Harbour.

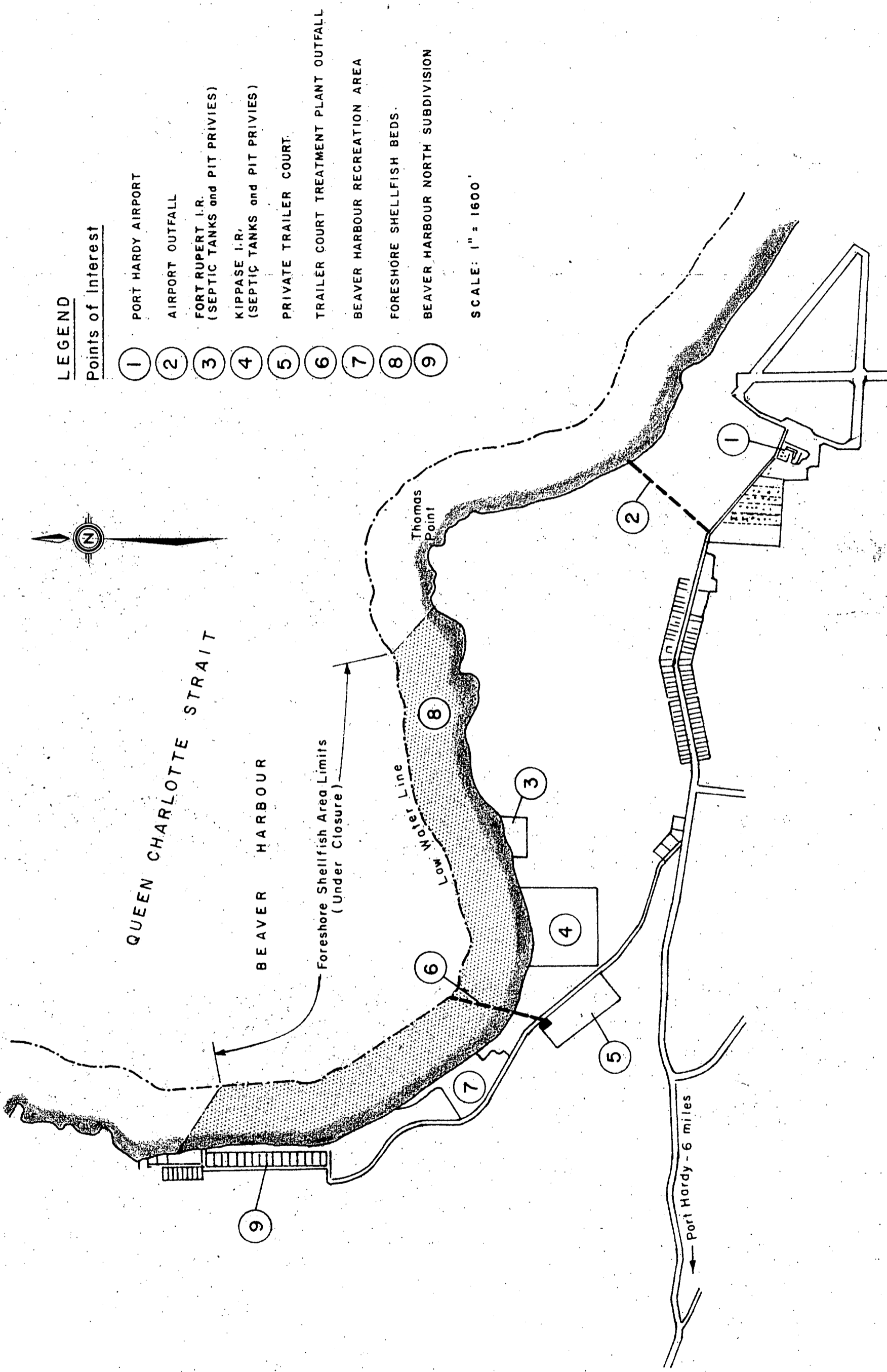
There is presently a housing shortage in the area which will soon become more acute as the Ministry of Transport proceeds with its policy of phasing out on-airport housing. Some relief for this shortage could be realized by private development such as that outlined in the Ministry of Transport letter appended to this report. (Appendix A)



See Figure 2

PORT HARDY AIRPORT

FIGURE 1 PORT HARDY AIRPORT AND SURROUNDING AREA



LEGEND

Points of Interest

- ① PORT HARDY AIRPORT
- ② AIRPORT OUTFALL
- ③ FORT RUPERT I.R.
(SEPTIC TANKS and PIT PRIVIES)
- ④ KIPPASE I.R.
(SEPTIC TANKS and PIT PRIVIES)
- ⑤ PRIVATE TRAILER COURT
- ⑥ TRAILER COURT TREATMENT PLANT OUTFALL
- ⑦ BEAVER HARBOUR RECREATION AREA
- ⑧ FORESHORE SHELLFISH BEDS
- ⑨ BEAVER HARBOUR NORTH SUBDIVISION

SCALE: 1" = 1600'

FIGURE 2. EXISTING TREATMENT FACILITIES.

This preliminary assessment review was prepared by the Federal Activity Abatement Group of Environment Canada - Pacific Region, in cooperation with the Ministry of Transport in order to qualify the airport facilities for funding under the Federal Facilities Clean-Up Fund.

The Clean-Up Fund was authorized by the Federal Government in 1972 to help assure that existing Federal installations conform to provincial and federal environmental laws and standards.

2. DESCRIPTION OF SEWAGE DISPOSAL FACILITIES

2.1 Airport Sewage Disposal

The present method of sewage disposal for the airport consists of a gravity collection system with discharge of untreated sewage to the Queen Charlotte Strait (Figures 1 and 3). Roof drains from many of the buildings are connected to the sanitary sewer systems resulting in a highly diluted discharge during periods of rainfall. There also appears to be an abnormal amount of infiltration in the 12" outfall line from the airport road manhole to the shoreline manhole.

Present flows in the system are estimated at 30,000 gpd based on water consumption records.

Noted below are the various factors contributing to the daily total flow:

Full-time airport population	360
Off-airport population connected to the system	54
Meals served by airport cafeteria/day	60 to 100
1972 passenger traffic (5500/month)	180

The airport's full-time population will eventually be phased out as other housing becomes available. Several buildings already have been removed.

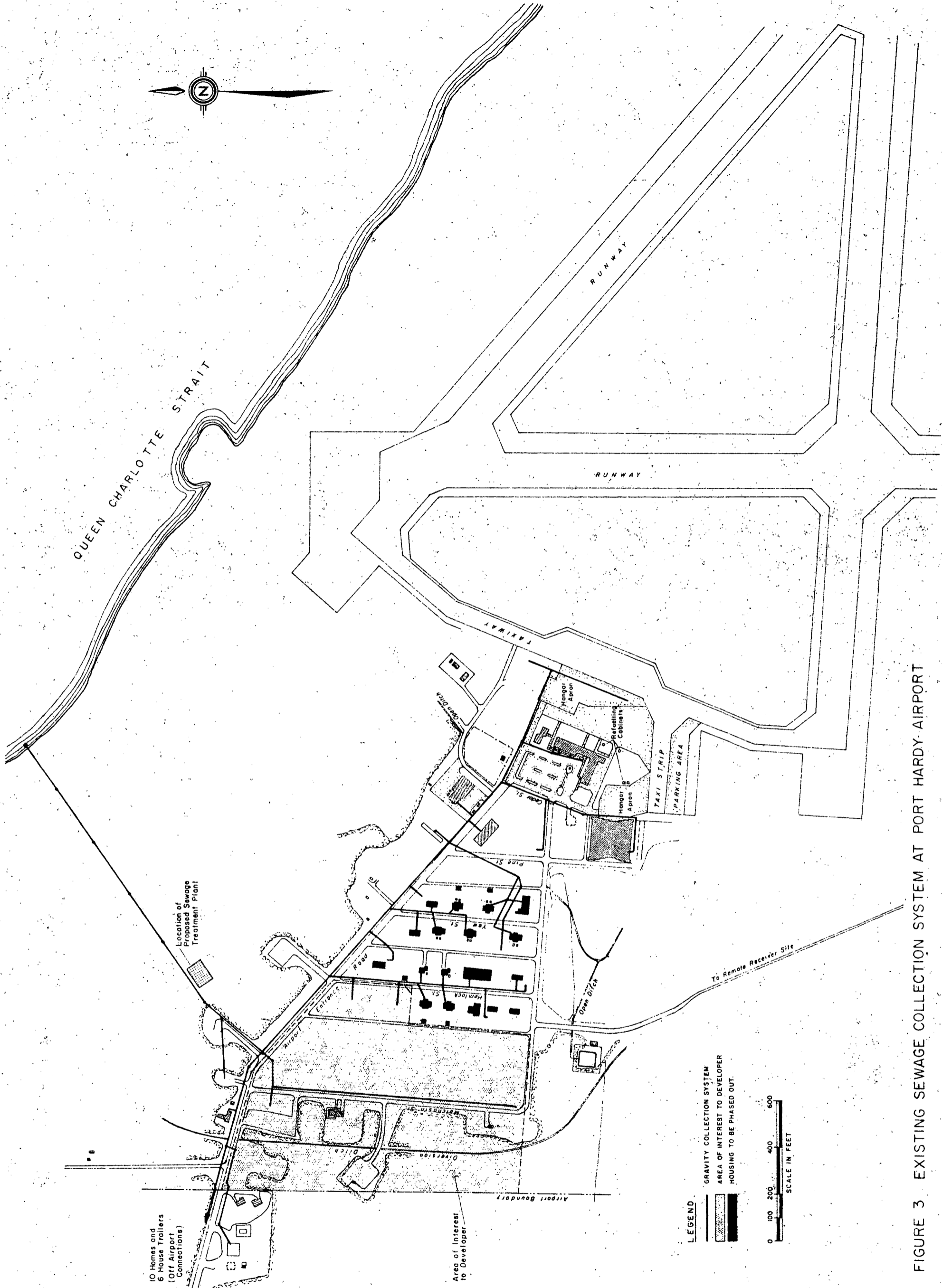


FIGURE 3 EXISTING SEWAGE COLLECTION SYSTEM AT PORT HARDY AIRPORT

2.1 (Continued)

The passenger traffic is expected to experience a 25% growth rate for 1973. The water supply system, operated by the District of Port Hardy has a capacity of 50,000 gpd with a guaranteed 30,000 gpd for the airport.

There is no provision at present for control of fuel spills or for de-icer collection. The spilled fuel and de-icer enter the storm sewer system and eventually discharge to Queen Charlotte Strait via a natural watercourse. Fuel spills occur on the average of 2 per year with the largest being approximately 60 gallons.

Industrial wastes are limited to infrequent discharges of used oil to sewers. The line from Hanger No.2 had to be desludged due to crankcase oil build-up on one occasion. The newer MOT garage is equipped with a sludge tank for similar wastes.

Studies carried out by DOE personnel in 1971 indicated that the effluent from the airport collection system had no effect on high coliform concentrations being experienced in the Beaver Harbour area but did result in localized contamination around the outfall. The outfall line should be corrected for infiltration and extended.

2.2. Beaver Harbour Area Sewage Disposal.

The Indian Reserve buildings at Kippase and Fort Rupert on Beaver Harbour are served by septic tanks and tile fields and pit privies. A creek flowing through the village of Fort Rupert into Beaver Harbour has been found to have high coliform concentrations. The area in which the reserves are located has a very high water table in the spring of the year.

- 7 -

2.2 (Continued)

The private trailer court to the west of Kippase Indian Reserve presently is occupied by approximately 100 units. It has its own collection system and package treatment plant. The final effluent is discharged to Beaver Harbour at the point shown in Figure 2. DOE attempted to block the trailer court's application for approval for this treatment plant on the grounds that the effluent could cause contamination of the shellfish area of Beaver Harbour and Shell Island.

The development area of Beaver Harbour North consists of single family dwellings having private sewage disposal facilities (septic tanks and tile fields). There are a large number of lots laid out for further development, already serviced by roads and water and, according to the District of Port Hardy officials, suited for septic tanks and tile fields.

High total coliform concentrations attributed to the contribution from septic tanks and pit privies on the two Indian Reserves and the package treatment plant serving the private trailer court have resulted in the closure of the Beaver Harbour Shellfish areas.

In 1971 the District of Port Hardy commissioned a planning study entitled "District of Port Hardy Beaver Harbour Planning Study - 1971" in an attempt to determine development policies to deal with existing problems and proposed development. McCarter, Nairne and Partners carried out this study with assistance in the water and sewer portion provided by Associated Engineering Services Ltd.

Although the majority of the information in that study is still applicable to 1973, the cost estimates and fund-sharing formulas presented would require considerable up-dating in view of the increased construction costs and changes in government funding procedures since that time.

3. REMEDIAL MEASURE ALTERNATIVES

3.1 Discussions

To construct a treatment plant to handle only the wastes from airport property would do nothing to improve conditions in the real problem area of Beaver Harbour and would subject the Federal Government to criticism for an inadequate splinter solution. Furthermore, MOT would then be faced with operation and maintenance of the plant.

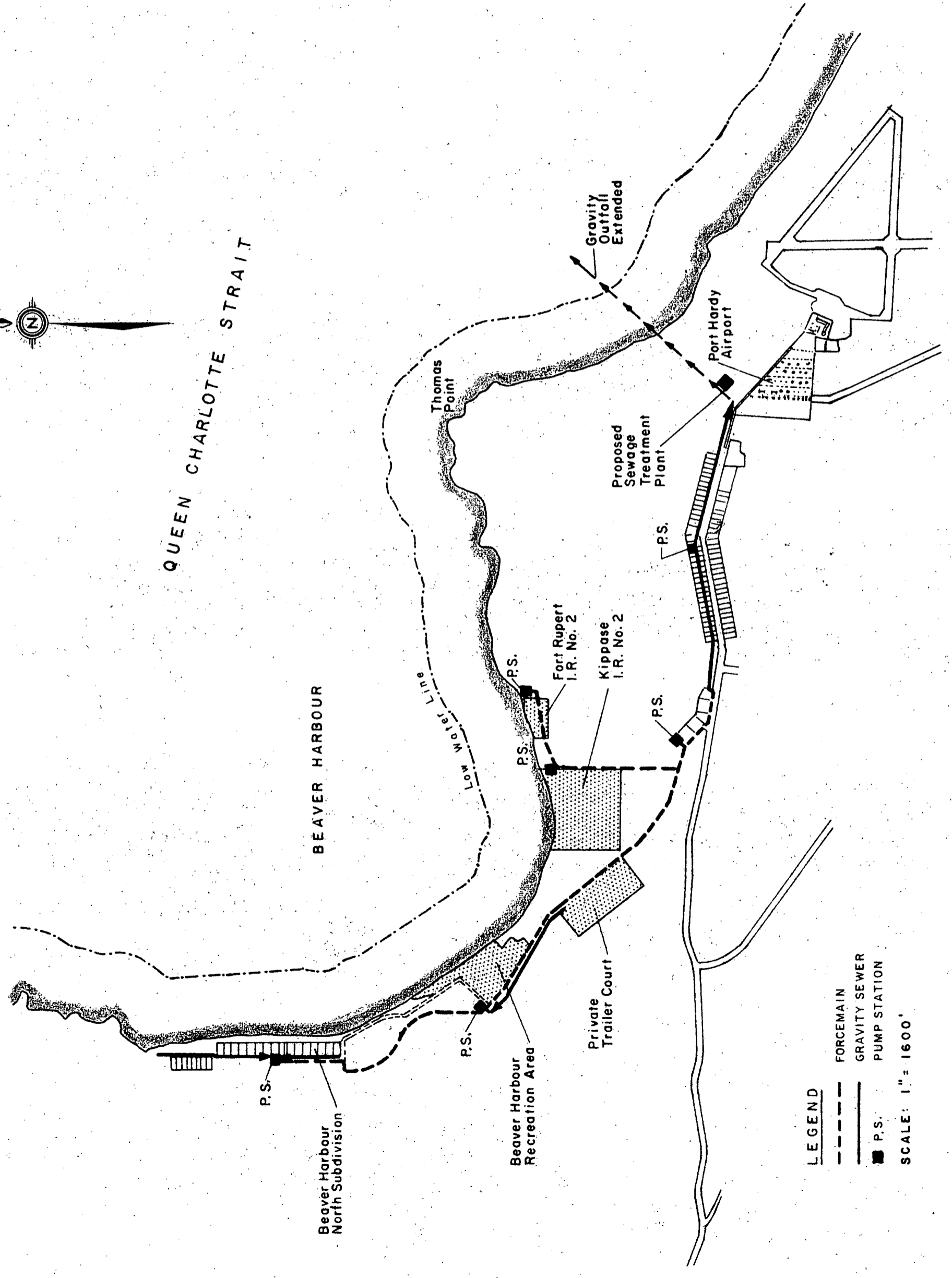
It is clear that if conditions in Beaver Harbour, as well as economic conditions for those depending on shellfish for their livelihood, are to be improved, a regional system of sewage collection must be constructed to service present and future development in the area. The collection of the trailer court effluent and all other wastewater from the Beaver Harbour area (Indian Reserves and unsewered lots) for treatment and disposal by a regional system would in time result in the reopening of the shellfish beds and remove any potential nuisance conditions in the recreation area waters. The associated treatment and discharge facilities should be located in the vicinity of the existing airport outfall line.

The Beaver Harbour Planning Study proposed a system along the lines of that shown in Figure 4. Their findings in relation to the water and sewerage facilities are appended complete with their 1971 cost breakdown.

District of Port Hardy officials are definitely interested in a regional system but are concerned with the high cost of implementation. The 1971 figures will have to be updated and cost-sharing formulas developed to determine the economic feasibility of such a project for all parties concerned - MOT, DIAND and District of Port Hardy. Since the District of Port Hardy has recently taken over operation of the water system for the study area it would be expected that they would also become the owners and operators of the sewage treatment plant. If such a plan cannot be developed, MOT must take the only other course available namely, a treatment plant to serve MOT buildings only and a reconstructed outfall line extended to depths providing a minimum water cover of 10 feet.



QUEEN CHARLOTTE STRAIT



- LEGEND**
- FORCEMAIN
 - GRAVITY SEWER
 - P.S. PUMP STATION

SCALE: 1" = 1600'

FIGURE 4 PROPOSED LAYOUT OF REGIONAL COLLECTION AND TREATMENT SYSTEM.

3.2 Cost Estimates

The following cost estimates are presented for the two possible solutions to the Port Hardy Airport sewage disposal problem: The resulting cost comparison is based on a 20-year period and 8% interest rate - converting all values to present worth.

(a) Scheme I - Treatment and Disposal of Airport Sewage only

Construction

12-inch gravity outfall line (including excavation and backfilling) 1650' @ \$20/ft.	= \$ 33,000
12-inch gravity outfall line (encased in concrete) 450' @ \$30/ft.	= 13,500
Outfall structure	= 5,000
Extended aeration treatment plant construction costs (30,000 Igpd) @ \$3.94/gallon/day	= 118,200
Disconnect roof drains (30 @ \$200)	= 6,000
Five manholes cast in situ @ \$500	= <u>2,500</u>
Total Cost	178,200
Add 20% for contingencies	<u>35,640</u>
Total Estimated Cost	213,840
Say	215,000
Present Worth	\$215,000

Annual Operation and Maintenance

1 operator @ 2.5 hrs/day	\$ 2,400
Power costs (aerators)	1,000
Sludge disposal (trucking) \$50/3000 gal.....	750
Chemical costs (chlorine, test chemicals, etc.).....	<u>350</u>
Total Operation & Maintenance Costs	\$ 4,500
Present worth	44,180

3.2. (Continued)

(b) Scheme II - Treatment and Disposal of Airport Sewage
in a Regional Treatment Plant

Construction

Connection of existing airport collection system to proposed regional system	\$1,500
Disconnect roof drains (30 @ \$200).....	<u>6,000</u>
Total Cost	\$7,500
Add 20% for contingencies	<u>150</u>
Total estimated cost	\$7,650
Present Worth	\$7,650

Anticipated Annual Charges

* Annual service charge levied by District of Port Hardy	\$ 17,500
Present Worth.....	171,815

Cost Comparisons

TABLE I

Option	Cap. Cost 74/75	Oper. Cost 74/75	Total Cost 74/75	Present Worth 20 years - 8%		
				Cap.	Oper.	Total
Scheme I	215,000	4,500	219,500	215,000	44,180	259,180
Scheme II	7650	17,500	23,150	7,650	171,815	179,465

* \$17,500 annual charge adjusted from the 1971 Beaver Harbour planning study estimates.

4. CONCLUSIONS AND RECOMMENDATIONS

It is concluded that:

1. The discharge of raw sewage from Port Hardy Airport to Queen Charlotte Strait does not satisfy the objectives of the Federal Activities Program.
2. Sewage from the airport must be given a minimum of secondary treatment prior to disposal.
3. Regional sewerage is the preferable method of sewage treatment and disposal.

It is recommended that:

1. Joint construction of a regional sewage treatment system with costs shared by MOT, DIAND and District of Port Hardy be chosen for disposal of the airport sewage.
2. Roof drains from airport buildings be disconnected from the sanitary sewer system.

5. CONTACTS

The following people were involved in the investigation of Port Hardy Airport or were contacted for information in connection with this assessment review:

DOE - D. Cameron of EPS (visit to Port Hardy Airport, Aug. 13 & 14, 1973)

MOT - G. McDonald

- G.E. Wilson - Airport Manager, Port Hardy Airport

District of Port Hardy - D. Jones, Administrator

- S. Webb, Acting Mayor

- B. Welshwood

APPENDIX "A"



YOUR FILE
VOTRE RÉF:

IN REPLY QUOTE 1705-P149 (PAOD)
RÉF. À RAPPELER:

DEPARTMENT OF TRANSPORT
MINISTÈRE DES TRANSPORTS

739 W. Hastings St.,
Vancouver 1, B.C.

7 August 1973

Mr. K. Kupka, Chief,
Federal Activities Abatement Group,
Environmental Protection Service,
Dept. of the Environment,
1090 W. Pender Street,
Vancouver, B.C.

Dear Mr. Kupka:

Re: Sewage Upgrading at Port Hardy Airport

Recognizing the fact that D.O.E. and M.O.T. are committing funds for a secondary sewage treatment plant at Port Hardy Airport as part of a continuing program designed to clean up Federal installations with respect to sewage, we would appreciate your opinion on the following proposal.

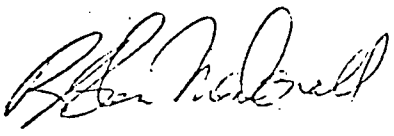
There is a private developer who wants to build a fifty room hotel and fifty unit apartment complex on or near the airport. He has indicated a willingness to pay approximately \$10,000 per acre for this land. The proposal is that the Provincial Government and the District of Port Hardy be approached regarding joint contributions by M.O.T., D.O.E., the developer, the Province and the District to build a sewage treatment plant and its sewer network of sufficient size to handle the load from the Airport, the apartment/hotel complex, and the areas of Beaver Harbour and Fort Rupert.

Such a system would be of use to all residents as well as create a large number of serviced lots which could then qualify for N.H.A. mortgage funds. This should provide some measure of relief to the current housing shortage in the Port Hardy area.

We are at present prepared to coordinate the proposed negotiations if the concept meets your approval.

For your information and consideration.

Yours truly,



G. E. Bulger,
Manager, Designated Airports.

WATER AND SEWER STUDY
FOR
BEAVER HARBOUR
IN THE
DISTRICT OF PORT HARDY, B. C.

Prepared for
McCARTER, NAIRNE & PARTNERS

By
Associated Engineering Services Ltd.
1661 West 8th Avenue
Vancouver 9, B. C.

August 1971

WATERWORKS AND SEWERAGE SYSTEMS

GENERAL

Development Areas

The residential areas for which municipal water and sewerage works have been investigated on a preliminary basis are the developing centres of Beaver Harbour, including the Port Hardy Airport and the populated areas of the Indian Reserves of Kippase and Fort Rupert. These areas form three development centres which are separated by about one-half mile of undeveloped Crown land. The areas are referred to as Beaver Harbour North, Beaver Harbour South, and Airport Road.

Population

The present estimated population of the three areas is 700. It is understood that with the provision of services, the population could be expected to double. A design population of 1500, therefore, has been used for purposes of this study, and represents the residential potential outside the airport.

WATERWORKS

1. Existing Systems

The only major waterworks system in the area serves the Port Hardy Airport. This system was installed originally during the war years. It is reported that the wood stave pipelines have since been replaced and the system is generally in good condition.

The source of supply is the Keogh River where the water enters the pumphouse through a screened intake. The water is pumped through a six-inch supply main to a 10,000-gallon reservoir located approximately half the distance along the route to the airport. This reservoir is used as a balancing reservoir and contains the control equipment to operate the pumps at the intake pumphouse.

At the airport, the water is treated primarily for color removal. Pressure is maintained on the distribution system by means of pumping from a large storage reservoir (300,000 gallons) to a pneumatic tank. The treatment plant has a capacity of 30 gallons per minute (US). The distribution system is composed of six and eight-inch diameter asbestos cement pipe.

The system now serves the airport together with a number of connections along Airport Road. Since 1965, the water consumption has almost doubled and much of the water during high demand periods receives only chlorination. The untreated water is blended with the water receiving treatment.

2. Sources of Supply

a) Surface Water

The two major sources of surface water supply available to the area are the Keogh River and the Quatse River. Both rivers contain highly colored swamp water and require treatment before being considered satisfactory for use in a domestic water supply system.

The Quatse is approximately six miles from Beaver Harbour South and it is estimated that a supply line from this river would cost \$350,000. Although no flow records are available on either river, it is believed that the Quatse has sufficient flow to meet the needs if a supply pipeline were economical.

The Keogh, however, is reported to have very low flows during certain periods of the year, and would require special storage works and/or intakes to obtain sufficient water from the river. It is also reported that while surface flows might become very small, seepage continues through the underlying gravel beds past the present airport intake works, and reappears some distance downstream.

The Keogh River, therefore, is the only practical surface water source for the communities providing further examinations confirm that sufficient water is available for this use. Presently, the Department of Transport has the only licence on the river, which allows 250,000 gallons per day to be drawn from the river. This amount would be sufficient to supply the projected needs of the communities of Beaver Harbour in addition to the airport's requirements.

b) Groundwater

Most of the individual water supply systems are from local shallow wells with varying degrees of success. Many of the wells become brackish after a short period of use and sometimes are abandoned. In addition, the existing wells are generally of limited capacity.

In view of this information regarding the past record of wells, a groundwater geologist was engaged to determine, on a preliminary basis, the possibility of finding successful wells of sufficient capacity to meet the total needs of the area. The report of Robinson, Roberts and Brown Ltd. is attached and indicates that groundwater is indeed a potential source of water for the Beaver Harbour communities.

The report indicates that a satisfactory well to serve the area of Beaver Harbour North might be located 3000 feet north of the community. Since this site is presently unaccessible, it would appear that Beaver Harbour North could best be served from wells in Beaver Harbour South (referred to as central population area in the geologist's report). The Beaver Harbour South area shows the greatest promise for a successful well, or wells, as may be required.

A satisfactory well to serve the Airport Road development and Port Hardy Airport would appear possible. This well could be located near the airport and reduce the need for extensive supply pipelines.

The water quality that might be expected from these wells is unpredictable. It is assumed for purposes of this study that the quality would be sufficiently acceptable without the need for a treatment plant.

3. Proposed Systems

a) Alternative I (Keogh River)

The present Port Hardy Airport water supply and treatment system could be expanded to better serve the airport demand and provide the needs of the three Beaver Harbour communities. A new intake would be necessary together with new pumping facilities at the Keogh River. (It is assumed for this alternative that the required amount of water is available in the Keogh River.) A new treatment plant would also be necessary because the present treatment works are not readily expandable. This alternative is shown on Figure 1.

A new water distribution main along Airport Road would be required and connected to the airport system. This main could be constructed in stages. Stage 1 would serve the Airport Road development extending from the airport to "Kays Corner." Stage 2 would serve the Beaver Harbour South development which includes the Indian Reserves, and Stage 3 would serve Beaver Harbour North. Since the water supply and treatment works would require sizing for the ultimate capacity from the outset, it is likely all three stages should be constructed simultaneously. This would allow revenue to be generated for the entire system and produce the most economical system.

It is assumed that the trailer court, Indian Reserves, and the DOT would remain responsible for their respective internal distribution systems.

The methodology employed in devising the least expensive municipal system is to rely upon expanding existing works wherever possible. It is assumed that the present owners of these works will make them available for a nominal sum (\$1.00) to the Municipality for this purpose. The Municipality would in turn provide the owners with a continuous supply of water. The major items which fall into this category are the supply, storage, and treatment systems of the DOT and the storage reservoir at the trailer court. The Municipality would, however, charge the Port Hardy Airport and the trailer court an amount proportional to their respective consumption and which, when added to the total revenue, would equal the municipal annual expenses.

The estimated costs which follow have been based on all three stages constructed simultaneously. These costs do not include service connections to the property line. It is usual for these costs to be paid by the individual at the time of applying for a connection.

Estimated Construction Costs

New intake and pumphouse	\$ 25,000	
Distribution mains, hydrants valves, etc. (stages 1, 2, and 3)	150,000	
New treatment plant	<u>110,000</u>	
	\$285,000	
Plus 25% engineering, supervision and contingencies	<u>71,000</u>	
TOTAL		<u>\$356,000</u>

Estimated Annual Costs

Amortization of capital debt (8% - 20 years)	\$ 35,600	
Annual operating costs	<u>12,000</u>	
TOTAL		<u>\$ 47,600</u>

Estimated Annual Revenue

The maximum estimated charges which it is felt could reasonably be levied against the users is as follows:

*Port Hardy Airport	\$ 15,000	
Indian Affairs	2,500	
Trailer court (200 trailers @ \$48 per year)	9,600	
School	500	
Community Centre	500	
Department of Highways	500	
Frontage (14,000 ft @ 50¢/ft/year)	7,000	
User rate (75 @ \$60 per year)	<u>4,500</u>	
TOTAL		<u>\$ 40,100</u>
Deficit		\$ 7,500

*The estimated direct annual costs of operating the airport system is \$9000 per year. It is felt, however, that the expanded system would provide better service to the airport and could therefore be charged an additional premium. In addition, the DOT would not be involved in future new works to replace such items as the present intake, etc.

b) Alternative II

This alternative, shown on Figure 2, for a waterworks system is based on the successful development of groundwater as the source of supply. It is assumed that two major wells could be completed to serve the developing communities. One well would be located in Beaver Harbour South to serve both Beaver Harbour South and Beaver Harbour North, and the two Indian Reserves. The second well (or group of wells) would be located near the Port Hardy Airport and service the airport and the Airport Road development. The actual location of these wells remains to be established. However, it is assumed that they would be positioned along the route of the distribution mains.

The proposed system to serve Beaver Harbour North, Beaver Harbour South, and the Indian Reserves assumes that, as in Alternative I, the storage reservoir serving the trailer court could be obtained by the Municipality for the nominal amount of \$1.00.

Again, as for Alternative I, it is assumed that the internal distribution mains required in the Indian Reserves, and the trailer court, would be completed by the respective owners.

The following are the estimated construction costs for the system supplied by Well No. 1.

Development costs of well (100 gpm)	\$ 15,000
Pumphouse and pump	15,000
Distribution mains, hydrants, valves, etc.	76,000
	<u>106,000</u>
Plus 25% engineering, supervision and contingencies	<u>26,500</u>
TOTAL	<u>\$132,500</u>

The proposed system to serve the airport and Airport Road would include a second well with a capacity of 100 gallons per minute. It is assumed again that this well could be located along the route of the distribution main on Airport Road and thereby minimize the cost.

This system would be connected to the existing Port Hardy Airport system and would allow the Department of Transport to abandon the existing treatment plant, supply main to the existing balancing reservoir, and intake. Alternatively, these works could be maintained for emergency use. The existing 300,000-gallon ground storage reservoir would be retained for fire purposes.

The estimated cost of the works is as follows for the waterworks system for well No. 2:

Development costs of well (100 gpm)	\$ 12,000
Pumphouse and pump	12,000
Miscellaneous piping (existing pumphouse)	8,000
Distribution mains	<u>45,000</u>
	\$ <u>77,000</u>
Plus 25% engineering, supervision and contingencies	<u>19,000</u>
TOTAL	\$ <u>96,000</u>

Construction Cost Summary

Well No. 1 waterworks system	\$132,500
Well No. 2 waterworks system	<u>96,000</u>
TOTAL	\$ <u>228,500</u>

Estimated Annual Costs

Amortization of capital debt (8% - 20 years)	\$ 22,800
Annual operating costs	<u>8,000</u>
TOTAL	\$ <u>30,800</u>

Estimated Annual Revenue

Port Hardy Airport	\$ 12,000
Indian Affairs	2,000
Trailer court (200 trailers @ \$36 per year)	7,200
School	400
Community Centre	400
Department of Highways	400
Frontage (14,000 ft @ 36¢/ft/year)	5,000
User rate (75 @ \$48 per year)	<u>3,600</u>
TOTAL	\$ <u>31,000</u>
Surplus	\$ 200

4. Conclusions and Recommendations

There is little doubt that the successful development of satisfactory wells as a source of supply would provide the least costly water supply and distribution system to serve the area. This system, however, requires the support of the Department of Transport, the Department of

Indian Affairs and Northern Development, and the trailer court owners, as well as the ratepayers. Discussions should be held with these agencies to solicit their participation.

It is recommended that following the agreement of the above parties and the approval of the ratepayers, an exploratory well drilling program be initiated to confirm the existence of a satisfactory supply.

SANITARY SEWERAGE WORKS

1. Existing Systems

The only sanitary sewage collection system in the area serves the Port Hardy Airport. This system was constructed in 1942 and discharges through an open outfall to Queen Charlotte Strait. The outfall structure is exposed during low tide.

It is reported that many storm water drains such as from roof leaders and tile drains are connected to this system.

Apart from the airport system, disposal is by individual septic tanks discharging to tile fields or leaching pits.

2. Proposed Sewerage Works

a) Sewage Disposal

The logical receiving waters for disposal of sewage is Queen Charlotte Strait. This could be done through a long outfall discharging at a point where adequate dispersion would take place, or alternatively, by onshore treatment and disposal through a shorter outfall discharging at 20 to 30 feet below low water.

A suitable location for adequate dispersal can only be determined from float studies to determine prevailing tidal and current conditions. Since this information is presently not available, it is assumed, for purposes of this study, that disposal to deep water (20 feet) would be approved following the equivalent of primary treatment. Such approval could only be obtained following an application to the Pollution Control Branch.

It is understood that the Department of Fisheries would object to the construction of an outfall into Beaver Harbour itself. It is likely, therefore, that an application to do so would not be approved. It is thus proposed that the present outfall location at the airport be expanded to serve the entire development including Beaver Harbour North and Beaver Harbour South. The sewage from these communities would be pumped to the present airport system, with the treatment plant located along the alignment of the present airport outfall.

b) Proposed Sewerage System

The proposed sewerage system is shown on Figure 3. The layout provides for staged construction. The system is laid out so that wastes from each of the developing communities, including the Indian Reserves, can be accepted.

It is proposed that the Municipality would construct and operate the treatment plant and extension to the present airport outfall. The treatment plant would be sized to serve the present Port Hardy Airport in addition to the developing communities.

The sewerage system would require four pump stations (in addition to those located on Indian Reserves) as well as in-plant pumping at the sewage treatment plant.

Estimated Costs

The estimated construction costs are shown below and are broken down to illustrate the separate costs for each stage. Individual service connections are not included as was the case for the water system.

Stage 1 (Airport Road)

Gravity mains	\$ 64,800	
Pump station	15,000	
Force mains	<u>14,000</u>	
	\$ 93,800	
Plus 25% engineering, supervision and contingencies	<u>24,000</u>	
TOTAL		\$117,800

*Stage 2 (Beaver Harbour South)

Gravity Mains	\$ 42,000	
Pump stations	35,000	
Force mains	<u>49,000</u>	
	\$126,000	
Plus 25% engineering, supervision and contingencies	<u>31,200</u>	
TOTAL		\$157,200

*Indian Reserve pumping stations and force mains not included.

Stage 3 (Beaver Harbour North)

Gravity mains	\$ 36,000	
Pump station	15,000	
Force mains	<u>21,000</u>	
	\$ 72,000	
Plus 25% engineering, supervision and contingencies	<u>18,000</u>	
TOTAL		\$ 90,000

Sewage Treatment and Disposal Works

Conventional activated sludge plant	\$225,000	
Extension to present outfall	<u>25,000</u>	
	\$250,000	
Plus 25% engineering, supervision and contingencies	<u>62,000</u>	
TOTAL		\$312,000

TOTAL - Stages 1, 2, 3 and treatment plant
and disposal works: \$677,000

3. Financial Assistance

Both the senior levels of government provide financial assistance for sewage treatment projects. Under Part VI-B of the National Housing Act, two-thirds of the cost of qualifying works will be loaned to the municipality. The municipality is later forgiven 25 percent of the loan amount, such that the cost of the works is reduced by one-sixth.

The province enacted legislation (Bill 11) in 1967 which provided assistance for the repayment of debts incurred for qualifying works (sewage treatment plant, outfalls, and some sewer trunk works). This assistance is in the form of annual grants to the municipality calculated as 75 percent of the debt amount exceeding the proceeds of two mills on the total taxable assessment. As the municipality grows, the value of two mills will increase and the grants eventually disappear. However, this legislation provides valuable assistance to municipalities who have low assessments and are faced with expensive sewage trunk and treatment projects.

It is assumed for purposes of this report that the present sewage treatment works in Port Hardy has created a debt sufficient to exceed the value of two mills on the taxable assessments. Seventy-five percent of the total annual repayment amount for qualifying works would be thus covered by the provincial grant for qualifying works constructed in the Beaver Harbour area. Again, as the assessment of the municipality increases, this assistance will decrease.

The following annual repayment schedules take into account the above governmental assistance for serving all three stages:

a)	Estimated construction cost	\$677,000	
	Less CMHC forgiveness - 1/6 of qualifying works	<u>77,000</u>	
	NET CONSTRUCTION COST		<u>\$600,000</u>
b)	Estimated annual costs annual amortization	\$ 60,000	
	Annual operating and maintenance costs	<u>12,000</u>	
	TOTAL ANNUAL COSTS		\$ 72,000
c)	Estimate of annual revenue -		
	Proceeds from Bill 11	\$ 29,000	
	Annual airport sewer charge	15,000	
	Annual Indian Reserve sewer charge	3,000	
	Trailer court - 200 trailers @ \$48 per year	9,600	
	School	400	
	Community centre	400	
	Department of Highways	400	
	Frontage - 14,000 ft @ 50¢/ft/year	7,000	
	User rate - 75 @ \$60 per year	<u>4,500</u>	
	TOTAL ANNUAL REVENUE		<u>\$ 69,300</u>
	Deficit		\$ 2,700

It is normal for District Municipalities to consider the application of a special mill rate on the assessed value of land taxable within the benefitting area to offset the costs of trunks and treatment that, of necessity, are designed to serve future populations. The application of such a mill rate ensures that a contribution is made by the owners of vacant land who otherwise might not contribute to the sewer cost.

It is not known at this time what the land assessment might be within the sewerage area whose limits incidentally could coincide with an urban development area. If, for purposes of illustration, it is assumed the assessed value of taxable land in the Beaver Harbour area is \$300,000, the mill rate necessary to overcome the above deficit is 13.5 mills.

To further illustrate what the total annual cost for sewerage service might be to a homeowner, the following set of conditions have been selected:

Assessed value of lot	\$1000
Sewer frontage	100 feet

Handwritten notes:
 Total = \$72,000
 Revenue = \$69,300
 Deficit = \$2,700
 and by lead to determine

If the sewer rates suggested above are applied to this set of conditions, the annual cost to the householder is as follows:

User rate	\$ 60.00
Frontage	50.00
Property tax (13.5 mills)	<u>13.50</u>
TOTAL	<u>\$123.50</u>

The application of such a mill rate to land assessment is recommended because it would have the tendency to offset the declining effects of Bill 11 as the assessment of the municipality increases. If the annual land assessment increase in the Beaver Harbour area is insufficient to generate the required revenue, an increase in user rate or frontage tax, or both, might be necessary.

4. Conclusions and Recommendations

The provision of sewerage works appears to be within the financial capability of the community providing the assumptions that have been made prove to be valid. The application of grants from senior governments remains to be confirmed. In the case of Bill 11, a special submission to the Department of Finance is generally necessary to ensure approval of the trunks and treatment works as qualifying under the Act. A bylaw would be necessary to establish the specified area for sewerage works. In addition, the agreement of the Department of Transport and the Department of Indian Affairs would be necessary.

It is recommended that these items be investigated further to more fully assess the feasibility of sewerage for Beaver Harbour.

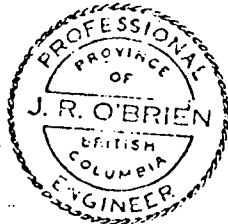
Respectfully submitted,

D. D. Weston

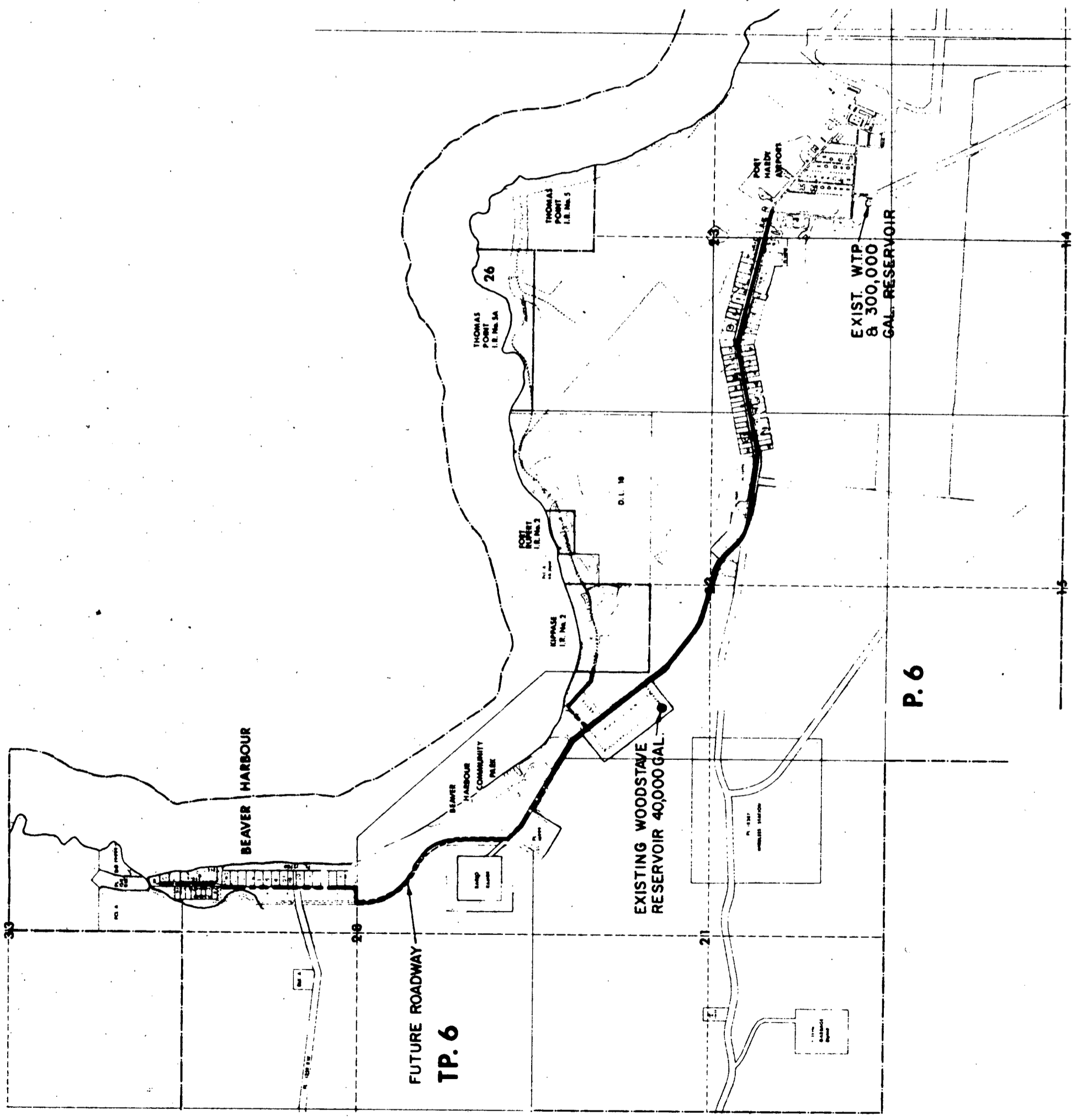


D. D. Weston, P.Eng.

J. R. O'Brien



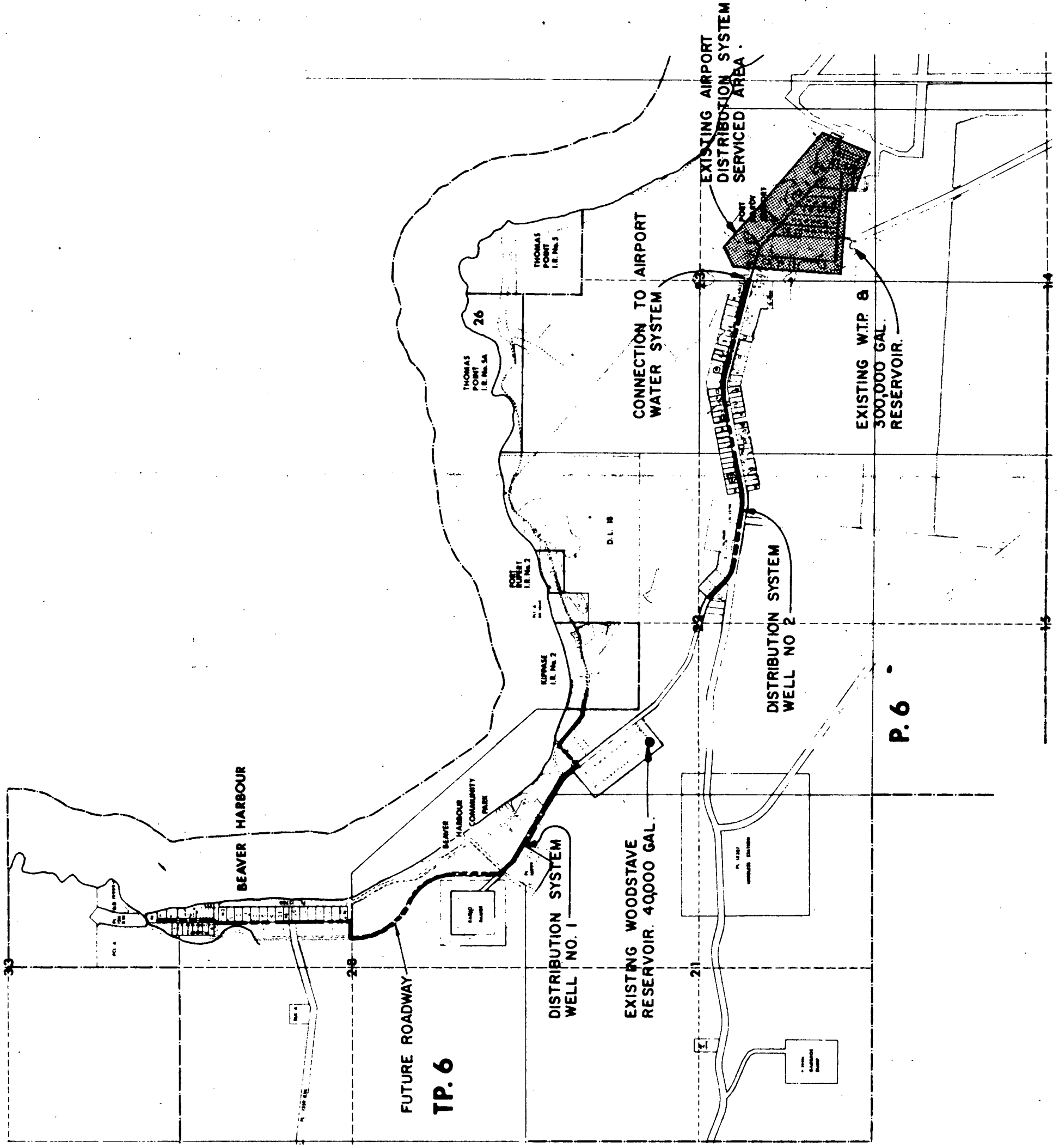
J. R. O'Brien, P.Eng.



LEGEND

- 6" WATERMAIN
- 8" WATERMAIN

FIG. 1 PRELIMINARY LAYOUT WATER DISTRIBUTION ALTERNATIVE 1



LEGEND
 - - - - - 6" WATERMAIN

FIG.2 PRELIMINARY LAYOUT WATER DISTRIBUTION ALTERNATIVE. 2

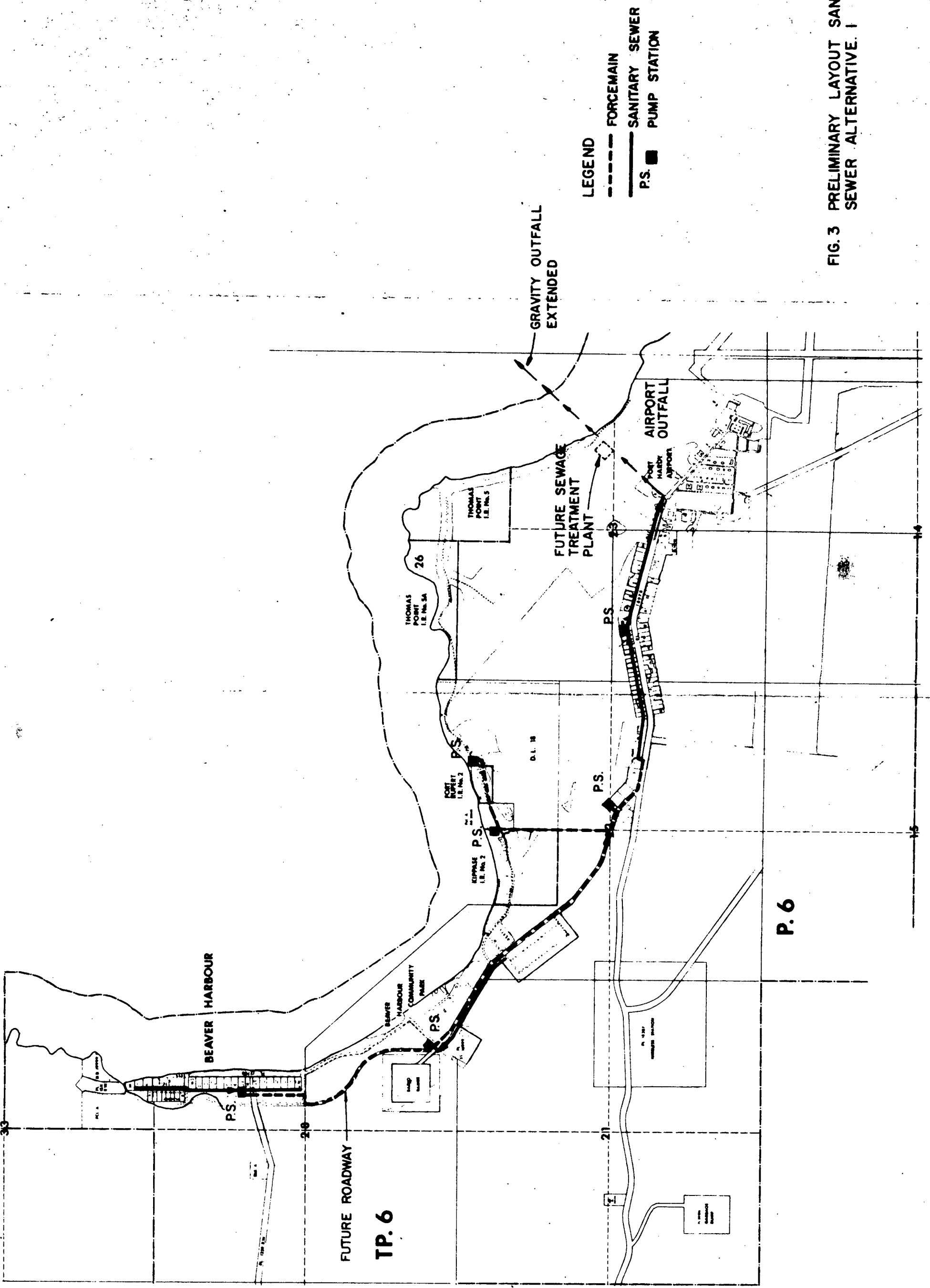


FIG. 3 PRELIMINARY LAYOUT SANITARY SEWER ALTERNATIVE. 1

A P P E N D I X "B"



FACILITIES SURVEY
GENERAL INFORMATION

	DATE	SENSITIVITY	SEVERITY	CAPACITY
SEWAGE				
SOLID WASTE				
AIR				

IDENTIFICATION INFORMATION

NAME OF FACILITY Port Hardy Airport			ADDRESS Port Hardy, B.C.		LONG 127°	LAT 50°
REGION Pacific	OWNED BY	OPERATED BY				
DEPARTMENT MOT/DOE	SERVICE / BRANCH Airports/AES	CONTACT Mr. G.E. Wilson	TITLE Airport Manager	ADDRESS Port Hardy Box 460	TELEPHONE 949-6424	
NATURE OR FUNCTION OF FACILITY Airport Including AES Weather Station		YEAR COMPLETED	NO. OF BLDGS	BLDG. DIMENSIONS	POPULATION AVERAGE MAXIMUM 33	

MUNICIPAL LOCATION INFORMATION

POPULATION OF REGION OR MUNICIPALITY	LAND USE OR ZONING AROUND FACILITY Residential Crown Land	DISTINCTIVE GEOGRAPHIC FEATURES	SPECIAL CIRCUMSTANCES (Industrial Activity etc.)
--------------------------------------	---	---------------------------------	--

MUNICIPAL SEWAGE TREATMENT

TYPE	ADDITIONAL TREATMENT PLANNED	ANTICIPATED DATE OF COMPLETION	COMMENTS
------	------------------------------	--------------------------------	----------

MUNICIPAL SOLID WASTE PROGRAM

LANDFILL SITE LOCATION 2½ miles west of airport	TYPE OF LANDFILL OPERATION Burning in season and incline fill	CHANGES PLANNED	DATE OF CHANGES	COMMENTS
---	---	-----------------	-----------------	----------

COMPLAINTS, PROBLEMS INVOLVING PUBLIC SENSITIVITY
(Additional information on appropriate pages)

ANY DISEASES, POTENTIAL ECONOMIC OR OTHER PROBLEMS SUFFERED BY THE COMMUNITY DUE TO WATER, AIR OR SOLID WASTE POLLUTION.

A shellfish area on nearby Beaver Harbour has been closed due to high coliform concentrations attributed to septic tank and tile fields on Indian Reserves and to effluent from private trailer court package treatment plant.

VIOLATIONS OF FED. PROV. OR MUN. REGULATIONS

COMMENTS



Environment Canada

Environnement Canada

DATE OF LAST ENTRY

SEWAGE

REFERENCE TO REPORTS, FILES, ETC.

IDENTIFICATION INFORMATION

NAME OF FACILITY Port Hardy Airport			ADDRESS Port Hardy, B.C.
CONTACT Mr. G.E. Wilson,	TITLE Airport Manager	ADDRESS Port Hardy Box 460	TELEPHONE 994-6424

GENERAL INFORMATION

TYPE OF SEWAGE TREATMENT Nil	EQUIVALENT POPULATION			PERIODS OF MAX. POPULATION N/A	DAILY FLOW (I.G.P.D.)		
	NORMAL 13	MAXIMUM	MINIMUM		AVERAGE 30,000	MAX. HOURLY (Average)	MIN. HOURLY (Average)
TYPE OF SEWAGE WASTE <input checked="" type="checkbox"/> DOMESTIC <input type="checkbox"/> OTHER..... Specify		STRENGTH OF RAW SEWAGE <input type="checkbox"/> > 250 ppm BOD <input type="checkbox"/> 150 - 250 ppm BOD <input type="checkbox"/> 60 - 150 ppm BOD <input checked="" type="checkbox"/> < 60 ppm BOD			SEWAGE / WATER CONSUMPT. RATIO	COMMENTS Flow based on water consumption.	

NAME OF CHIEF OPERATOR	IS HE CERTIFIED? <input type="checkbox"/> YES <input type="checkbox"/> NO	YEAR SEWAGE TREATMENT SYSTEM INSTALLED	OPERATIONAL TESTS PERFORMED AND RECORDS KEPT BY OPERATOR	NO. OF HOURS PER DAY OF OPERATION SUPERVISION
------------------------	--	--	--	---

IF SYSTEM IS NOT CONNECTED TO MUNICIPAL SYSTEM GIVE DISTANCE TO NEAREST HOOK UP = 6.5 miles	INDICATE QUANTITIES AND PERIODS OF SEWAGE BYPASSING OR OVERFLOWING TREATMENT PLANT	IS THERE A FLOW MEASURING DEVICE <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO Calc. from water consumption	EFFLUENT SAMPLES SENT TO REG'N AGENCY <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		WHAT AGENCY	FREQUENCY
---	--	--	---	--	-------------	-----------

MANUFACTURER	TYPE AND MODEL	DESIGNED CAPACITY
--------------	----------------	-------------------

LAGOONS		RETENTION TIME DAYS	SURFACE AREA ACRES	DEPTH FT.	DISCHARGE	
<input type="checkbox"/> Aerated <input type="checkbox"/> Submersible	<input type="checkbox"/> Anaerobic <input type="checkbox"/>				<input type="checkbox"/> Series <input type="checkbox"/> Parallel	<input type="checkbox"/> Continuous <input type="checkbox"/> Intermittent

SEPTIC TANKS		TILE FIELD LGTH FT.	WATER TABLE DEPTH FT.	SOIL TYPE	PROXIMITY TO BODY OF WATER OR WELLS FT.	FREQUENCY OF SLUDGE REMOVAL
CAPACITY GALS.	NO. CHAMBERS					

COMMENTS

SPECIAL PROVISIONS FOR TOXIC WASTES OR CONTAMINANTS

CHLORINATION <input type="checkbox"/> Not applicable <input checked="" type="checkbox"/> Applicable	SLUDGE TREATMENT AND DISPOSAL	
CAPACITY CHLORINE CONTACT CHAMBER I. GALS.	CHLORINE CONTACT TIME (MIN'S) MIN AVERAGE	MEDIAN Cl ₂ RESIDUAL (ppm)
DIGESTERS <input type="checkbox"/> Heated <input type="checkbox"/> Not Heated <input type="checkbox"/> Not Applicable		SLUDGE DRYING (EQS?) <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
DISPOSAL		

MEDIAN EFFLUENT QUALITY			
BOD	SUSPENDED SOLIDS	pH	NITROGEN COMPOUNDS
PHOSPHATES	COLIFORMS (per 100 ml)	FECAL COLIFORM (per 100 ml)	

STORM SEWERS

DISCHARGE COMPLIES WITH EFFLUENT GUIDELINES YES NO

COMMENTS: Discharge to natural drainage system and the Queen Charlotte Strait

RECEIVING BODY OF WATER

NAME: Queen Charlotte Strait

FLOW (cfs)		USES
MAXIMUM	MINIMUM	
N/A	N/A	<input type="checkbox"/> Potable Water <input checked="" type="checkbox"/> Swimming <input checked="" type="checkbox"/> Comm. Fishing <input type="checkbox"/> Non Contact Recreation <input checked="" type="checkbox"/> <u>some pleasure fishing</u>

Other uses: Log Booming, Freighting and Water, Transport

EFFECT OF EFFLUENT: NEGLIGIBLE, LOCALIZED (V), MODERATE, EXTENSIVE

ARE THERE RECEIVING WATER STANDARDS FOR THIS BODY OF WATER: YES NO

ARE THERE VIOLATIONS OF THESE STANDARDS: YES NO

ADDITIONAL INFORMATION

- In apron areas: No fuel separators (2 spills/yr. - largest 60 gal.)
- : No de-icer collectors (use very light)
- : Urea on runways - depending on the year (71/72 50 tons; 72/73 25 tons.)
- Airport's full-time population will eventually be phased out.
- Passenger traffic expected to increase 25%/annum (PWA GUESTIMATE)

DATE OF LAST ENTRY



Environment Canada
Environmental Protection

Environnement Canada
Protection de l'Environnement

REFERENCE TO FILES REPORTS ETC.

SOLID WASTES

IDENTIFICATION INFORMATION

NAME OF FACILITY PORT HARDY AIRPORT, PORT HARDY, B.C. (MOT)		ADDRESS
CONTACT	ADDRESS	TELEPHONE

ON SITE PROCESSING FACILITIES			APPLICABLE?	<input type="checkbox"/> YES	<input type="checkbox"/> NO
EQUIPMENT	TYPE OF REFUSE PROCESSED	QUANTITY/DAY	DISPOSAL OF RESIDUES		
INCINERATOR	Domestic incinerators				
SHREDDER					
GRINDER					
COMPACTOR					
BALER					
OPEN BURNING					

REFUSE				COLLECTION AGENCY			NO OF COLLECT-IONS PER WEEK	COLLECTION VEHICLES		
TYPE	QTY. PER YEAR	<input type="checkbox"/> MEASURED <input type="checkbox"/> ESTIMATED		MUN.	FED.	PRIVATE (Specify)		VOL/VEH. (cu yds)	TYPE AND NUMBER	
HOUSEHOLD	41 cans/wk	Cu. Yds. TONS				Contracted:	1	V		
COMMERCIAL		Cu. Yds. TONS					2	V		
INSTITUTIONAL		Cu. Yds. TONS								
AGRICULTURAL		Cu. Yds. TONS								
INDUSTRIAL		Cu. Yds. TONS								

REFUSE NOT COLLECTED		MATERIAL SALVAGED		TYPE OF CONTAINER	VOL. PER CONTAINER. CU. FT.	IS THERE A REGULAR PROGRAM OF CONTAINER CLEANING? <input type="checkbox"/> NO <input type="checkbox"/> YES
TYPE	QUANTITY	TYPE	QUANTITY			
				METAL CANS	houses	
				PLASTIC CANS		
				PLASTIC BAGS	domestic & restaurant	
				LARGE METAL CONTAINER (5)		IS THERE A REGULAR PROGRAM OF VEHICLE CLEANING? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
				OTHER		

DESCRIPTION OF CONTAINER CLEANING PROGRAM	DESCRIPTION OF VEHICLE CLEANING PROGRAM (as needed likely)
---	---

COMMENTS

Disposal at municipal site 2½ miles west of airport.
 - burning in season & landfill
 - rats

CENTRAL INCINERATION FACILITIES			APPLICABLE?	<input type="checkbox"/> YES	<input type="checkbox"/> NO
OPERATED BY	QUANTITY OF RESIDUES	DISPOSAL METHOD	PROVISION FOR HAZARDOUS MAT'L?		
<input type="checkbox"/> Mun. <input type="checkbox"/> Fed.					

LOCATION OF SITE 2½ miles west of airport (municipal)		AREA OF SITE (ACRES) IN USE <u>30 acres</u> TOTAL		HAUL DISTANCE FROM SOURCE <u>2.5</u> MILES		
		APPROX. DEPTH TO WATER TABLE <u>varies with season</u> <u>1' to 4'</u> FEET		FACTORS AFFECTING HAUL ROAD PASSABILITY eg.: mud, snow, others. <u>¼ mile mud off end of pavement</u>		
SECURITY FENCE? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	YEAR SITE OPENED <u>19 67</u>	ANTICIPATED YEAR OF CLOSURE <u>19</u>	APPROX. DEPTH OF FILL <u>20</u> FEET		SOIL TYPE (clay, sand, etc.) <u>Gravel and organic mixture</u>	
AREA SURROUNDING SITE			SITE		OPEN BURNING OF REFUSE?	
ZONING	ACTUAL LAND USE		OWNED BY	OPERATED BY	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	
NONE	<u>Tree Farm</u> <u>- permission from Forestry required to establish dump</u>		Mun.	<u>Prov. Crown V</u>	NO. OF MEN EMPLOYED AT SITE	
RESIDENTIAL			Fed.			FULL TIME
COMMERCIAL					PART TIME	
INDUSTRIAL			EQUIPMENT AT SITE		FULL TIME	
AGRICULTURAL					PART TIME <u>V</u>	
METHOD OF COMPACTION (eg: 5 passes with a D-6 Bulldozer)			DISPOSAL METHOD			
<u>Bulldozer - D-6 to D-8 depending on what's available.</u>			OPEN DUMP	TRENCH (land fill)	AREA (land fill)	
			COVER	TYPE inc. fill	FREQ.	DEPTH AFTER COMPTN ft
IS THERE A USE PLANNED FOR COMPLETED SITE? <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES (explain)			EXPLAIN ANY PROVISIONS FOR SPECIAL WASTES SUCH AS SLUDGES, HAZARDOUS MATERIALS, ETC.			
CONTROL PROBLEMS	IS CONTROL REQ'D?	BRIEF DESCRIPTION OF CONTROL PROGRAM				
FLIES						
BIRDS <u>V</u>		<u>Crows and gulls</u>				
RODENTS <u>V</u>		<u>Rats probably continuous rat poisoning program</u>				
DUST						
ODOUR		<u>Only when burning</u>				
BLOWING PAPER						

ADDITIONAL COMMENTS OR OBSERVATIONS



AIR (STATIONARY SOURCES)

DATE OF LAST ENTRY

REFERENCE TO FILES, REPORTS ETC.

IDENTIFICATION INFORMATION

NAME OF FACILITY Port Hardy Airport, Port Hardy, B.C.		ADDRESS
CONTACT	ADDRESS	TELEPHONE

STACK DETAILS

STACK NUMBER 1	STACK HEIGHT ATB 25 ft. 2 flues	STACK DIAMETER inside... 1' sq. each. outside... 8x12 or 14	STACK CONE DIA. IN.	STACK FLUE GAS VOL. CFM	STACK FLUE GAS TEMP. °F
STACK EXIT VELOCITY OF FLUE GAS F.P.S.	MAX. HEIGHT OF ADJACENT BUILDINGS Control 45 FT.	IS THERE A VISIBLE PLUME? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	NO. OF CONTRIBUTING SOURCES	STACK SHELL MAT'L steel concrete brick chimney	STACK LINING MAT'L none brick fire brick refractory
EMISSION CONCENTRATIONS					
SULPHUR OXIDES	HYDROCARBONS	CO	PARTICULATES	other	other vitreous clay
HALOGENATED COMP'DS	NITROGEN OXIDES	ALDEHYDES	CO ₂	H ₂ S	OTHER:.....
COMMENTS (eg - Meteorology, Prevailing Wind Directions, Geographical Features, Range and Area of Fallout, Land Use of Area Affected)					

STACK NO.	STACK HEIGHT ft.	STACK DIAMETER inside..... in. outside..... in.	STACK CONE DIA. IN.	STACK FLUE GAS VOL. CFM	STACK FLUE GAS TEMP. °F
STACK EXIT VELOCITY OF FLUE GAS F.P.S.	MAX. HEIGHT OF ADJACENT BUILDINGS FT.	IS THERE A VISIBLE PLUME? <input type="checkbox"/> YES <input type="checkbox"/> NO	NO. OF CONTRIBUTING SOURCES	STACK SHELL MAT'L steel concrete brick	STACK LINING MAT'L none brick fire brick refractory
EMISSION CONCENTRATIONS					
SULPHUR OXIDES	HYDROCARBONS	CO	PARTICULATES	other	other
HALOGENATED	NITROGEN OXIDES	ALDEHYDES	CO ₂	H ₂ S	OTHER:.....
COMMENTS					

FLUE GAS SOURCES (Use Additional Form(s) If Necessary)

A INCINERATORS <input type="checkbox"/> NOT APPLICABLE Barrel type for single family use.							
VENTING INTO STACK NO.	MFG'D BY	MODEL	TYPE <input type="checkbox"/> 1 chamber <input type="checkbox"/> 3 chamber	<input type="checkbox"/> controlled air <input type="checkbox"/>	RATED CAP. lbs/hr	NO. HRS DAILY OPERATION	DATE INSTALLED
INDUCED DRAFT FAN? <input type="checkbox"/> NO <input type="checkbox"/> YES	FORCED AIR FAN? <input type="checkbox"/> NO <input type="checkbox"/> YES	IGNITION BURNER? <input type="checkbox"/> NO <input type="checkbox"/> YES btu's/hr	AFTER BURNER? <input type="checkbox"/> NO <input type="checkbox"/> YES btu's/hr	AUX. FUEL <input type="checkbox"/> NONE <input type="checkbox"/> GAS <input type="checkbox"/> OIL (type.....)	COMPLAINTS <input type="checkbox"/> ODOUR <input type="checkbox"/> SMOKE <input type="checkbox"/> HEAT <input type="checkbox"/> PARTI.		
MAJOR TYPES OF WASTE INCINERATED AND ESTIMATED WEIGHT IN PERCENT paper..... % plastics..... %		BREECHING DIA'S inside..... in. outside..... in.	BREECHING L'GTH FT.	NO. OF BENDS	FLUE GAS VOL. TEMP.CFM°F		
EMISSION CONTROL OR HEAT RECOVERY EQUIPMENT							
TYPE	MANUFACTURER	MODEL	CAPACITY	EXIT FLUE GAS VOL. CFM	EXIT FLUE GAS TEMP. °F		
COMMENTS							

B BOILER AND OTHER SOURCES

VENTING INTO STACK NO. 1 for each	TYPE OF EQUIP.	MANUFACTURER	MODEL	RATED H.P. OR CAPACITY	DATE INSTALLED 1963 - ATB 1967 - MT	FUEL TYPE #2	FUEL RATE 2.75 ATB gal/hr 1.5 MT lbs/hr		
FUEL CONSUMPTION/ANNUM DEC - FEB MAR - MAY JUN - AUG SEPT - NOV					TOTAL 130,000 gal for all			COMPLAINTS No	
AUXILIARY EQUIPMENT INDUCED DRAFT FAN <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO OTHER FORCED DRAFT FAN <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO					BREECHING DIA inside in. outside in.	BREECHING LTH FT.	NO. OF BENDS	FLUE GAS VOL. CFM	FLUE GAS TEMP. °F
EMISSION CONTROL OR HEAT RECOVERY EQUIPMENT									
TYPE N/A	MANUFACTURER	MODEL	CAPACITY	EXIT FLUE GAS VOLUME CFM		TEMP. °F			
COMMENTS (1) CENTRAL BOILER FOR TERMINAL BUILDING (22,000 gals/yr., installed 1963) (2) APARTMENTS HAVE CENTRAL BOILER (APTS. ARE BEING REMOVED) (3) M.T. (MOTOR TRANSPORT) GARAGE AND CENTRAL BOILER, PART OF TRADES BLOCK (8,000 gals/yr.) Installed 1967. ALL HOUSES HAVE INDIVIDUAL FURNACES) ALL OIL-FIRED (#2 FURNACE OIL)) 35 domestic furnaces) Installed 1955 to 1969.) 200 to 2000 gals/mo.) 100,000 gals/yr.									

VENTING INTO STACK NO.	TYPE OF EQUIP.	MANUFACTURER	MODEL	RATED H.P. OR CAPACITY	DATE INSTALLED	FUEL TYPE	FUEL RATE gal/hr lbs/hr c.f./hr		
FUEL CONSUMPTION/ANNUM DEC - FEB MAR - MAY JUN - AUG SEPT - NOV					TOTAL			COMPLAINTS	
AUXILIARY EQUIPMENT INDUCED DRAFT FAN <input type="checkbox"/> YES <input type="checkbox"/> NO OTHER FORCED DRAFT FAN <input type="checkbox"/> YES <input type="checkbox"/> NO					BREECHING DIA inside in. outside in.	BREECHING LTH FT.	NO. OF BENDS	FLUE GAS VOL. CFM	FLUE GAS TEMP. °F
EMISSION CONTROL OR HEAT RECOVERY EQUIPMENT									
TYPE	MANUFACTURER	MODEL	CAPACITY	EXIT FLUE GAS VOLUME CFM		TEMP. °F			
COMMENTS									

C AIR POLLUTION SOURCES NOT COVERED ABOVE Eg. Stone Quarry, Grain Elevator etc.

<p>Fire Drills - 5,000 gals/yr. - 300 or 400 gals each time</p> <p>Occasional complaints when wind is from N.E. Drills are usually carried out when wind is not from N.E.</p>	<p>COMPLAINTS</p> <p><input type="checkbox"/> HEAT <input type="checkbox"/> SMOKE</p> <p><input type="checkbox"/> ODOUR <input checked="" type="checkbox"/> PARTICULATES</p> <p><input type="checkbox"/> TOXICITY <input type="checkbox"/> CORROSION</p>
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FACILITIES SURVEY - CORRECTION PROCEDURES

WATER

AIR

SOLIDS

OTHER (specify)

PRIORITY

IDENTIFICATION INFORMATION

NAME OF FACILITY Port Hardy Airport			ADDRESS		
DEPARTMENT MOT	REGION Pacific	SERVICE/BRANCH Airports	Port Hardy, B.C.		
PROJECT (Extended aeration) Secondary treatment with long outfall and separation of sanitary & storm sewers.					
PLANNING BY: <input type="checkbox"/> DEPARTMENT OR AGENCY <input type="checkbox"/> CONSULTANTS <input type="checkbox"/> F.A.P.B.					
CONSULTANTS			CONTRACTOR		

REPORT

	ESTIMATED		ACTUAL		COMMENTS
	Cost	Completion Date	Cost	Completion Date	
PROJECT STUDY PLANS					
CONTRACT 1					
CONTRACT 2					
PHASE I					
PHASE II					
TOTAL					

T.B. SUBMISSIONS

PROGRESS REPORTS

DATE					
% COMPLETE					
EXPENDITURES TO DATE					
EXTRAS					
REVISED TOTAL ESTIMATES					
ANTICIPATED COMPLETION DATE					

SPECIAL CIRCUMSTANCES AND PROBLEMS

EST cost \$200,000 F.Y. 1973/74
 Joint development with housing sub-division currently
 under study by municipally retained consultants.
 March 1973 - no action yet

September 1972