

APPENDIX A
BACKGROUND ENVIRONMENTAL REPORTS

**Angus Environmental Limited. 1997. Property Transfer Assessment of St. Christopher's
Beach, Goderich Harbour**

**Phyper & Associates Ltd. 1995. Report on the Goderich Federal Harbour Environmental
Audit Baseline Study**

Watech Services Inc. 2004. Inspection of Harbour Bottom Port of Goderich

PROPERTY TRANSFER ASSESSMENT OF
ST. CHRISTOPHER'S BEACH, GODERICH HARBOUR,
GODERICH, ONTARIO

Report to:

Public Works and Government Services Canada
Environmental Services Division
Ontario Region
on behalf of
Transport Canada
Harbours and Ports
Central Region

Prepared by:

Angus Environmental Limited
1127 Leslie Street
Don Mills, Ontario
M3C 2J6

April 1997

EXECUTIVE SUMMARY

Angus Environmental Limited (AEL) was retained to prepare a Property Transfer Assessment (PTA) of St. Christopher's Beach, Goderich Harbour, Goderich, Ontario (the "subject property") and to report the findings to Public Works and Government Services Canada ("PWGSC") and Transport Canada, Harbours and Ports. The PTA consisted of a Phase I environmental site assessment, a compliance audit, field investigations, and the preparation of a remedial options evaluation and action plan. For each of the issues identified in the PTA as being in Categories 1 (a known threat to human health and safety), 2 (a violation of law), or 3 (non-compliance with a policy, guideline, code, etc.), preferred options, costs, and responsibilities are listed below.

Issue	Category	Preferred Option	Cost	Responsibility
The Water Treatment Plant (WTP) is not registered as generator of subject waste.	2	Registration with the Ministry of Environment and Energy (MOEE).	WTP staff time (<1 person day)	WTP staff
Waste oil is shipped from WTP without manifests.	2	Ensure that waste oil is shipped with manifests.	WTP staff time	WTP staff
Employees involved in transport of dangerous goods are not TDGA trained.	2	TDGA training for appropriate staff.	Average of \$1,000/person.	WTP staff - attend course
Exhaust fan ventilating powdered activated carbon equipment has no C of A (Air).	2	Obtain C of A (Air), i.e., a Certificate of Approval (Air).	Approximately \$2,000	WTP staff - retain an expert
Exhaust fan ventilating the chlorine room has no C of A (Air).	2	Obtain C of A (Air).	Approximately \$2,000	WTP staff - retain an expert
Opening of a pipe used to drain oil from the stand-by diesel generator is about 1 m from an open storm drain.	2	Improve method by which dripping oil is contained. Provide a cover to placed over the storm drain during any operation involving the handling of oil.	<\$2,000	WTP staff
Bucket under the wall-mounted air drier in the poly aluminum chloride room was leaking what seemed to be oily, stagnant water.	2	Improve method by which oily water is contained. Purchase a bucket of the appropriate size which does not leak. Empty the bucket before it overflows.	<\$2,000	WTP staff

Issue	Category	Preferred Option	Cost	Responsibility
Elevated PAH concentrations in soil at two boreholes.	3	No immediate action. If the property was to be redeveloped, a remediation plan should be implemented.	No cost.	N/A
Elevated concentrations of lead in ground water at one monitoring well.	3	Ground water should be re-samples to verify the presence and concentration of lead.	\$ 500	Property owner or manager

**REPORT ON
THE GODERICH FEDERAL HARBOUR
ENVIRONMENTAL AUDIT
BASELINE STUDY**

Prepared For

**CANADIAN COAST GUARD - CENTRAL REGION
HARBOUR AND PORTS**
201 Front St., Suite 703
Sarnia, Ontario, N7T 8B1
and
PUBLIC WORKS AND GOVERNMENT SERVICES
11th Floor, 4900 Yonge Street
Willowdale, Ontario, M2N 6A6

Prepared By

PHYPER & ASSOCIATES LTD.
Suite 402, 99 Atlantic Avenue
Toronto, Ontario, M6K 3J8

in association with

EEM inc.
3782 Draper Avenue
Montreal, Quebec, H4A 2P1

**Project No. 94-3047
JUNE 1995**

EXECUTIVE SUMMARY

In October 1994, Public Works and Government Services Canada acting on behalf of Harbours and Ports, Canadian Coast Guard - Central Region, retained Phyper & Associates Ltd. in association with ÉEM inc. to conduct an Environmental Audit/Baseline Study (Phase I) of the Goderich Harbour. The primary objectives of the audit/baseline study were:

- Establish and assess the environmental condition of the properties and the operations within the legal boundaries of the federal harbour;
- Assess the degree of compliance of the subject properties and operations within the legal boundaries of the harbour with the applicable federal and provincial environmental acts, regulations, guidelines and criteria
- Develop a prioritized action plan which identifies and recommends additional monitoring and measures to correct non-compliance issues

Audit Findings

The following is a summary of potential compliance issues associated with operations at Goderich Harbour:

Sifto Salt

- 1) A cyclone dust collection system was installed to control emissions from the bin vent for the No. 3 shaft loadout. This emission point has a C. of A. (#8-1167-89-907). During the site visit it was noted that the cyclone was not in operation. Facility personnel indicated that they have experienced problems with the operation of the device. Facility personnel also indicated that the emission levels from No. 3 mine shaft exhaust have decreased since the installation of the cyclone.

Sifto's legal counsel have indicated that it is not a condition of the C. of A. that the cyclone operate at all times and a new or amended C. of A. is not required if an alteration results in a decrease in the previously discharged levels. The MOEE is aware that the cyclone dust collector is not operating.

- 2) Historically, the facility has received numerous complaints from neighbours in the harbour, including marine vessels, primarily concerned with salt build up on equipment. Two studies were conducted in the mid 1980's to estimate the

impact of airborne salt dust on the Sifto's neighbours. The first was conducted by the MOEE in 1985 and 1986 and the second study was commissioned in 1988 by Sifto. Both studies concluded that the particulate matter in the form of salt particulate was affecting off site neighbours.

The following is a summary of activities performed by Sifto Salt to mitigate emissions:

- initiation of a program of regular maintenance and inspection of rubber curtains - 1985
- air classifier was installed to remove very fine material - 1989.
- rubber skirting was installed at the loading facilities - 1990 to 1992
- changes were made to the ship loading procedure - 1991
- discharge chute was repositioned to avoid dust discharges - 1993
- belt scrappers installed on the No. C-21 overhead conveyor belt - 1994
- panelling and skirting was installed at 2nd truck scale - 1994
- 2nd truck scale bins were enclosed - 1994

MOEE personnel from the regional office indicated that there has only been one registered complaint in 1994 in the harbour area due to salt emissions. However, conversations with a tenant and Transport Canada personnel have raised concerns over the salt emissions.

Section 14(1) of the Environmental Protection Act requires that no person shall discharge a contaminant into the natural environment that causes an adverse effect. Adverse effect has been broadly defined, and includes damage to property, injury to plant life and/or loss of enjoyment of the normal use of property. Based on this strict definition of adverse effect, salt emissions from the facility could result in a technical violation of this section of the EPA.

Goderich Grain Elevators

- 1) In the most recent Certificate of Approval (# 8-1083-92-006) application for a new dust collector system the Point of Impingement (POI) calculation indicated that the emission level was 20% of the allowable limit for particulate matter. Based on this information the facility may be in non-compliance with Section 1 through 3, Ontario Regulation 346, regarding allowable POI concentrations for the total facility emissions which includes an additional 7 dust collector exhausts.
- 2) Pumps are used at irregular intervals to remove storm water that has collected in the bottom of the elevator buildings. This water is discharged directly into

the Goderich Harbour. The discharge may have an "adverse effect" in the form of elevated Biological Oxygen Demand.

Captain Fats

- 1) The discharge of fish remains into the harbour may possibly constitute a violation of the Sections 16(1) and 14 of the Ontario Water Resources Act, as it may impair the water quality.

Environmental Baseline Data Findings

The Goderich Harbour is a mix of industrial, commercial and parkland settings that is used by H&P, tenants and the public. The environmental media (air, water, soil, groundwater and sediment) at the Goderich Harbour was compared with both federal and provincial clean-up guidelines to determine acceptability for its current uses. The findings of that assessment are presented below.

- 1) The soil on the south side of the Goderich Harbour has been impacted by historical industrial operations to the extent that it exceeds the MOEE clean-up criteria (industrial/commercial use) for Total Petroleum Hydrocarbon (TPH)(oil & grease) in an area along the water front, just northwest of the existing Goderich Grain Elevators. Based on the analysis of soil samples taken from this area (BH6-1 and BH7-2), the soil in this area has slightly elevated concentrations of TPH(oil & grease) extending to depths of at least 1 metre. Volume estimates of the impacted soil can not be realistically determined as only two samples were collected.
- 2) The Provincial Guidelines for the Protection and Management of Sediment Quality in Ontario has established LEL concentrations for allowable open lake disposal of sediments. Analysis of the sediment samples collected from the inner harbour indicated that the copper concentrations are above these concentrations. Samples from the outer harbour indicate that the copper concentrations are approximately 20% of the LEL suggesting that background concentrations in Lake Huron, in the area surrounding Goderich Harbour, are lower than concentrations determined from sediment collected from the inner harbour.

In addition, the analysis of sediments from the inner harbour indicated that the concentration of lead in 3 of 4 samples was between 80% and 100% of the LEL. The concentration of lead in sediment collected from the outer harbour was on average 15% of the LEL suggesting that background concentrations in Lake Huron are substantially lower than those observed in the inner harbour.

- 3) In addition to elevated concentrations of copper in the harbour sediment, the concentrations of total organic carbon (TOC) in all collected sediment samples from the inner harbour were found to be up to 70% of the SEL or 5 to 7 times higher than the LEL. Analysis of the outer harbour samples indicated that the TOC concentrations in sediments beyond the inner harbour appeared to be 2 to 3 times the LEL. This might suggest that the background concentrations in the immediate area of the Goderich Harbour are substantially less than the TOC concentrations of sediments from the inner harbour. Open lake disposal of material dredged from the inner harbour may therefore be considered to have an adverse effect.

Sediment sample analysis also indicate that the some of the sediment from the Goderich Harbour has TKN concentrations that marginally exceed the LEL limits. Analysis indicated that 6 of 10 sediment samples collected from the inner and outer harbour had TKN concentrations up to 80 % above 550 ug/g (the LEL for TKN).

- 4) A sediment sample, collected from the east end of the inner harbour, had concentrations of 4 PAHs within 20% of the tentative guideline LEL value and another 4 exceeded the tentative guideline LEL value. This area of the harbour is the approximate location of a former ship building island. Based on the available information historical activities at the ship building operations may have had an adverse effect on the local environment.
- 5) The leach pit operations on the site leased by Sifto Salt may be contributing to elevated TPH(oil & grease) concentrations in the surrounding soil. The TPH(oil & grease) concentrations of tested soil samples collected from borehole #11, approximately 10 metres from the open leach pit and at a depth between 1.3 metres and 2 metres, was approximately 75% of the criteria limit. Soil samples from a second borehole (borehole #9) on the other side of the leach pit, indicated that TPH (oil & grease) concentrations were 40 % of the clean-up criteria. Analysis of a soil sample collected from borehole #10 (located 10 metres from the leach pit) at 2 m to 2.3 m below the surface indicated that the concentrations of TPH(oil & grease) at this level were at or below the background concentrations. Groundwater from the background monitoring well (MW#5) showed signs of slightly elevated TPH(gas/diesel) concentrations, 335 ug/L. This data suggests that the hydrocarbon contamination may be migrating from the localized area of the leach pit along the surface of the groundwater to the lake.

Audit Recommendations

In order to prioritize the recommendations, three categories have been employed: high, medium and low. Potential High Risk refers to the resolution of activities which were identified during the study as being in non-compliance with Federal and Provincial legislation and/or municipal bylaws or which are causing a significant risk to workers or adjacent neighbours. Moderate Risk refers to the resolution of activities which may be in non-compliance with legislation or pose an unacceptable risk to workers or the community. Low Risk refers to the resolution of activities which are currently in non-compliance with components of published environmental management systems.

High Priority

- 1) Goderich Grain Elevators should be requested to provide an assessment of compliance with Regulation 346 standard for particulate matter from all eight cyclones. Current data indicates that emissions from 1 cyclone alone is 20% of the allowable level.
- 2) Goderich Grain Elevators should discuss with the MOEE the appropriateness of pumping storm water collected in the basement of the grain elevators directly to the inner harbour.
- 3) Captain Fats should be notified that an alternative method of waste disposal is required for the fish processing operation.
- 4) Goderich Grain Elevators should prepare a list of emergency telephone numbers to be posted in the pesticide storage site location.

Moderate Priority

- 5) Sifto should keep H&P informed on a semiannual basis on measures to reduce fugitive emissions and be copied on all communication with the MOEE regarding air emission pollution control equipment and mitigation measures.
- 6) Sifto should be requested to produce a brief semi-annual status report on compliance with MISA requirements.
- 7) A site visit by H&P personnel to Canada Agra Terminals Ltd. should be performed during the summer months to assess operations first hand.

- 8) Annual environmental inspections of all leased sites should be performed by H&P or their representative; a short checklist should be prepared to assist in the inspection.
- 9) All H&P personnel performing environmental inspections or responsible for environmental issues should receive training on environmental legislation, best management practices and environmental risks.
- 10) A tracking system should be implemented to follow-up on outstanding issues identified during the annual environmental inspections.
- 11) Written procedures should be prepared for loading fuel onto vessels by contractors.

Low Priority

- 12) Regional Director Operations should be contacted regarding reporting system for environmental issues related to Search and Rescue Base and resolution of deficiencies.
- 13) Computerized information system be used to store environmental issues on each property.
- 14) A written annual report be prepared summarizing the "environmental status of all properties" and be submitted to the Regional Director.
- 15) Department obtain either copies of all pertinent environmental legislation or summaries of legislation.

Environmental Baseline Data Recommendations

- 1) In order to better determine the extent of the petroleum contamination a sampling program should be initiated in this area extending along the waterfront toward BH1 (located east of Captain Fats). Analysis of the sample taken from BH1 indicated that the soil at that location meets the MOEE clean-up criteria.
- 2) Sediment material dredged from the inner harbour may exceed the PSQGs as per Section 3.1.1e of the guideline for copper and lead. Consequently, open lake disposal should only be undertaken in consultation with the appropriate agencies.

- 3) If sediment material is collected from the inner harbour, open lake disposal may not be allowed due to elevated concentrations of TOC and TKN. Consequently, open lake disposal should only be undertaken in consultation with the appropriate agencies.
- 4) Based on the strict interpretation of Section 3.1.1e) and the PAH concentrations, the sediment from the east section of the inner harbour should not be sent for open lake disposal but may require further testing or a management plan. Consequently, open lake disposal of sediment collected from this area of the harbour should only be undertaken in consultation with the appropriate agencies. An assessment may be necessary, depending on the outcome of the consultation, to determine the extent and degree of the contamination in the area of the east end of the harbour, i.e., that is to determine if contamination, specifically PAHs, are within acceptable levels.
- 5) The MOEE is aware the discharge of minewater by Sifto to their leach pit and has indicated disapproval with the practise; however, no alternative from the provincial agency was proposed. A meeting should be proposed between Sifto Salt, the MOEE and H&P to discuss potential options to reduce oil & grease from the current level of 36 ppm to approximately 15 ppm, a level frequently employed by the MOEE for Ontario discharges.

**INSPECTION OF HARBOUR BOTTOM
PORT OF GODERICH
Goderich, Ontario**

**Prepared for:
Goderich Port Management Corporation**

**Prepared by:
WATECH SERVICES INC.
895 Valetta Street
London, Ontario
N6H 2Z4**

June 2004

WSI 04155

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1. INTRODUCTION

WATECH SERVICES INC. was retained in June 2004 by the Goderich Port Management Corporation to carry out an inspection of the lake bottom immediately north of the Sifto Salt Mine north dock, in Goderich, Ontario.

The inspection included visual and tactile examination of the lake bottom to determine its present condition and provide insight into the cause of recent gas discharges from the harbour bottom. Concerns were raised by Sifto Salt as the salt mine caverns are located below this area.

2. PROCEDURES

The underwater inspection work was carried out by our inspection divers using surface supplied air diving helmets equipped with voice communications and voice recording capabilities. The inspection diver was in constant voice communication with the surface personnel relaying the results of the underwater investigation.

The Canadian Coast Guard had placed a marker buoy in the area of the last previously noted gas discharge as a reference point to begin the underwater inspection. The inspection diver searched around the identified area using a swing search technique, searching an area approximately 75 metres by 50 metres. All diving operations were conducted from the work tug "Ian Mac" provided by Macdonald Marine Ltd.

The condition of the lake bottom was evaluated by tactile examination with particular attention paid to any mounds or depressions located. The diver probed the bottom to determine the soil density and depth of soft soil deposits.

3. OBSERVATIONS

Within the area inspected the harbour bottom was found to consist of several layers of different material. The first layer was comprised of a very soft, sponge like silt, that ranged in depth from 0.15 metres to 1.5 metres. In the area of greatest concern identified by the Coast Guard the diver found many dome shaped mounds about 1.5 metres in diameter. In this area the diver found the depth of the silt layer to be the deepest.

The second layer was found to be made up of rotting debris from trees, aquatic plants and river runoff debris. The diver found the depth of the second layer ranged from 20 millimetres to 300 millimetres. Also the area with the dome shaped silt mounds had the thickest layer of debris under the silt.

The third layer the diver found was the natural lake bottom that was noted to consist of a hard clay substance. This layer was noted to generally level and no holes or large depressions were noted.

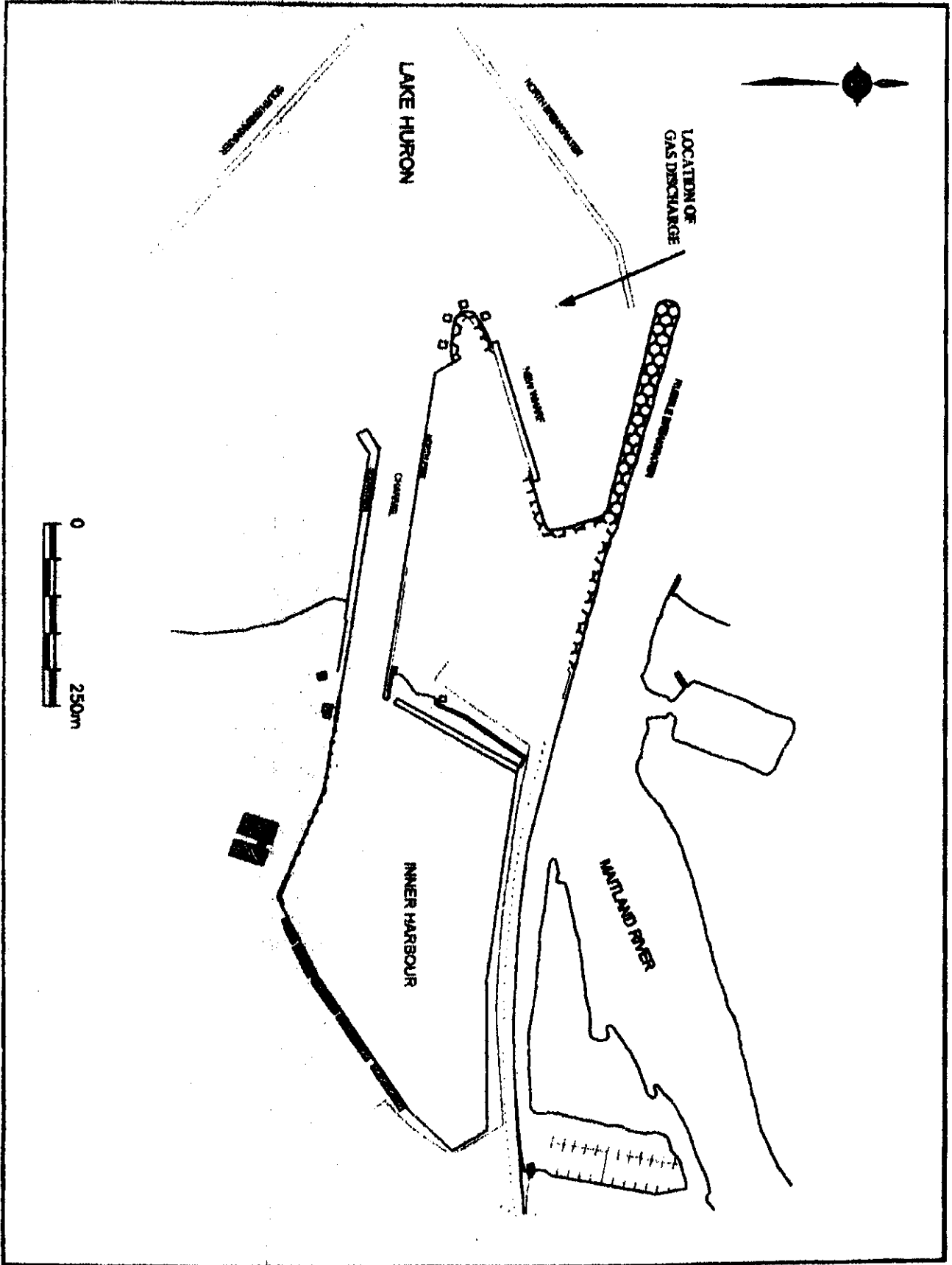
As the diver dug and probed through the dome shaped mounds he reported bubbling coming from the harbour bottom and described a methane smell. A large quantity of bubbling and light debris also reached the water surface as the diver probed the mound. Surface personal noted that only in the general area specified around the marker buoy did a significant amount of bubbling and debris come to the surface. The diver noted that over the entire area inspected small gas bubbles escaped from the bottom with probing and walking on the bottom.

5. CONCLUSIONS

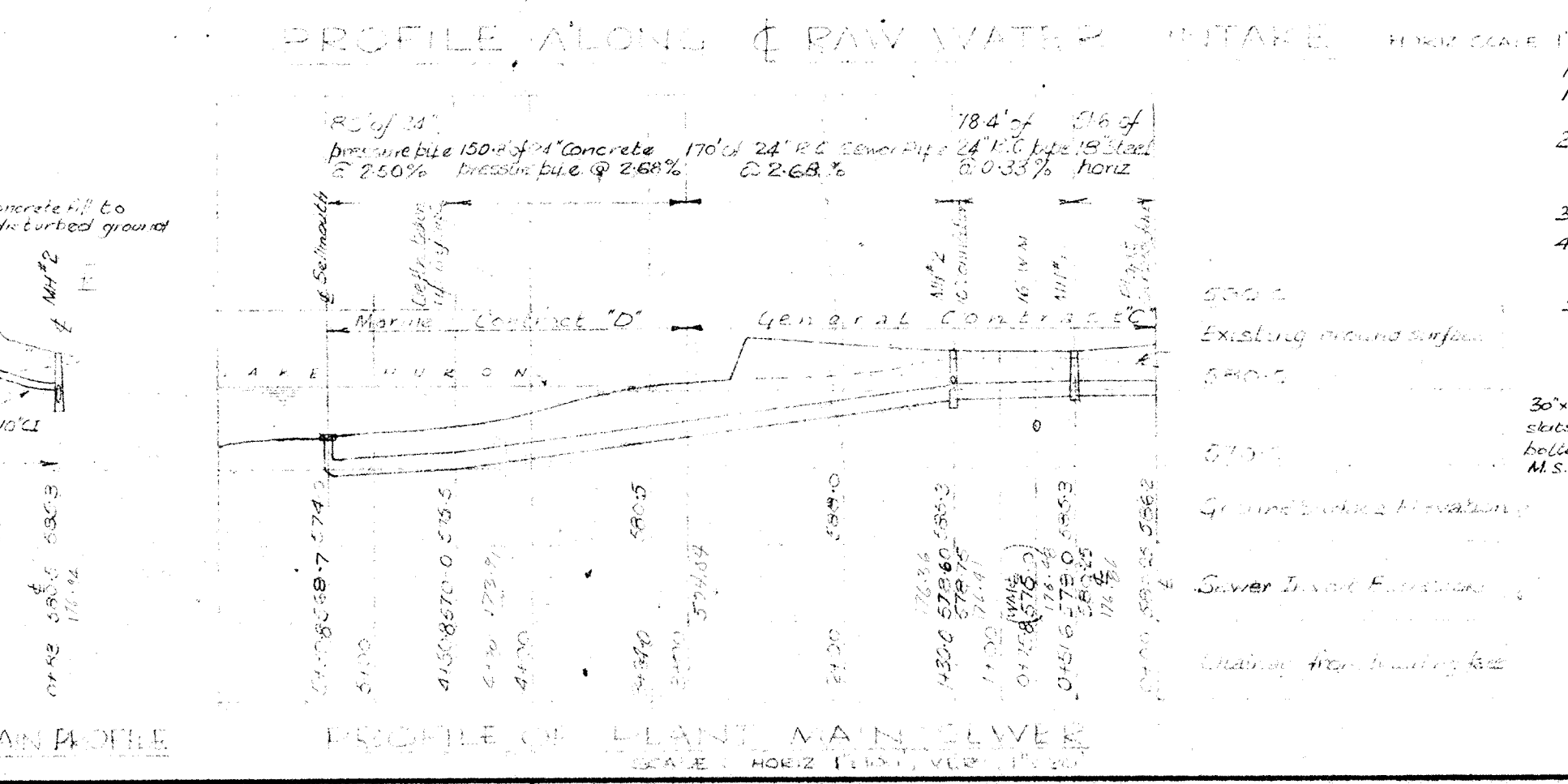
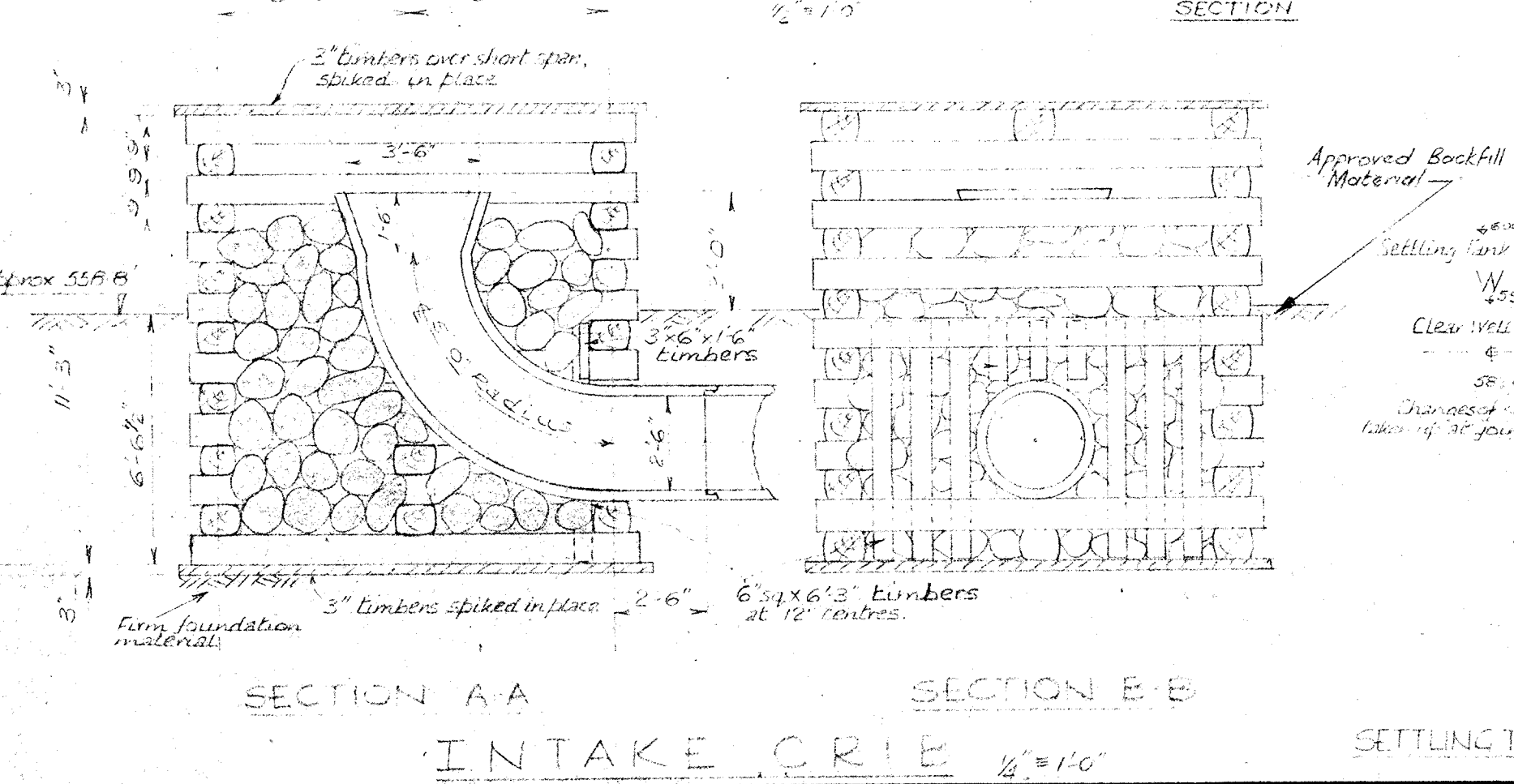
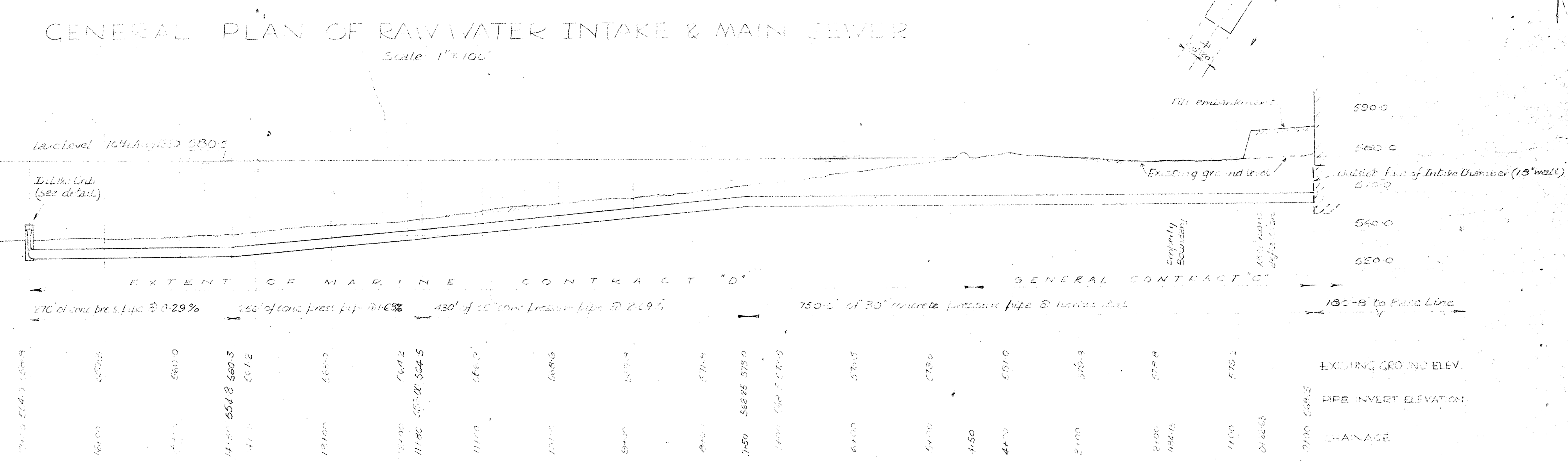
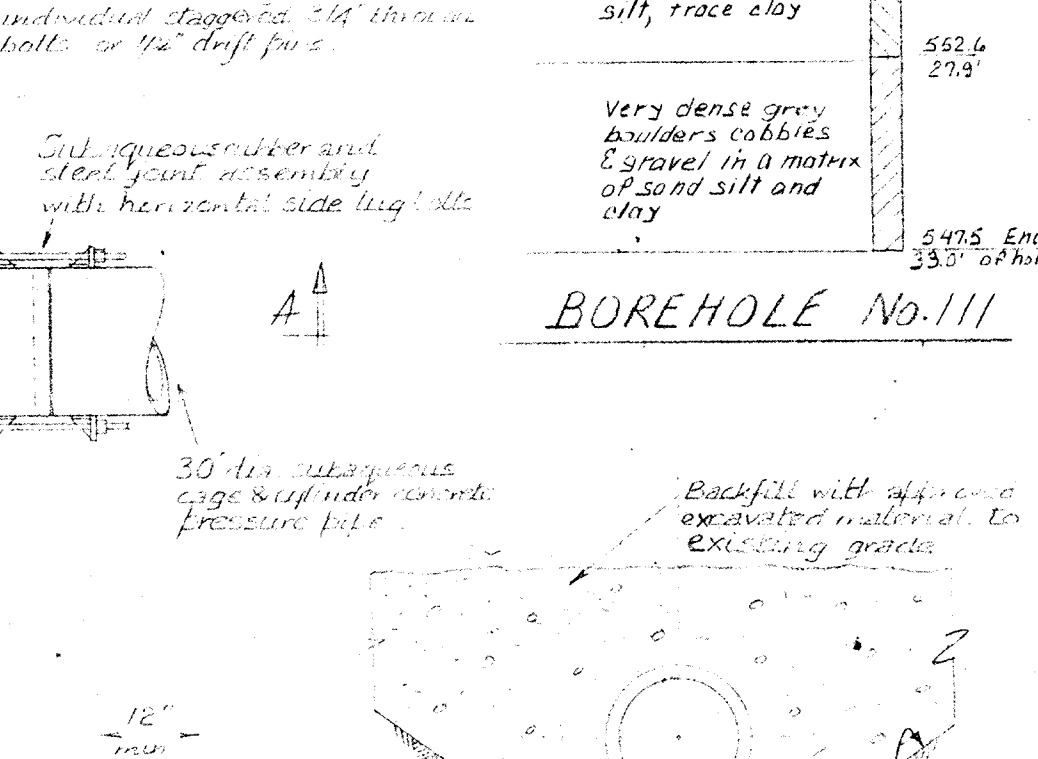
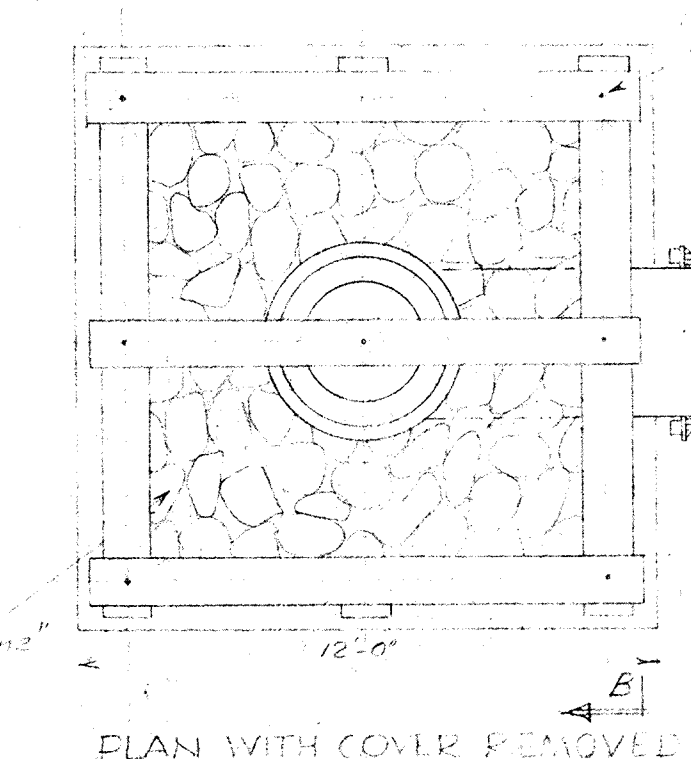
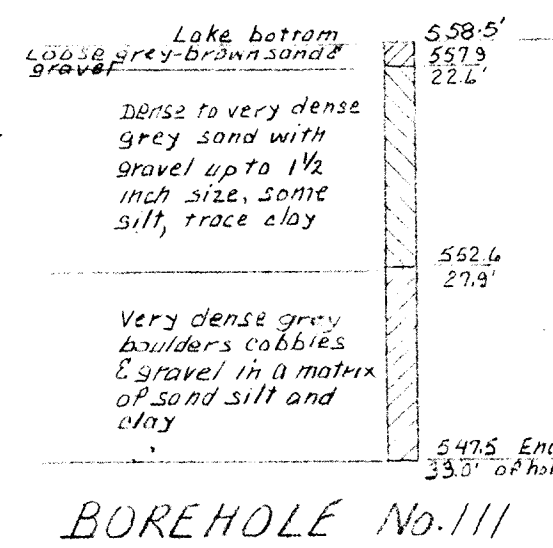
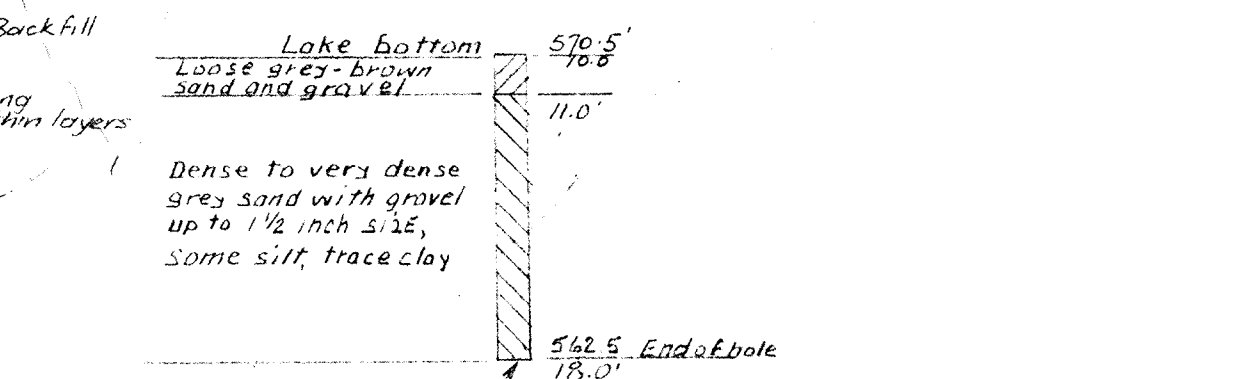
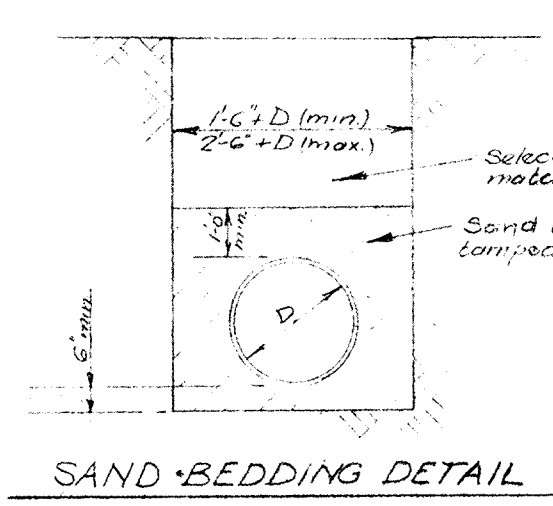
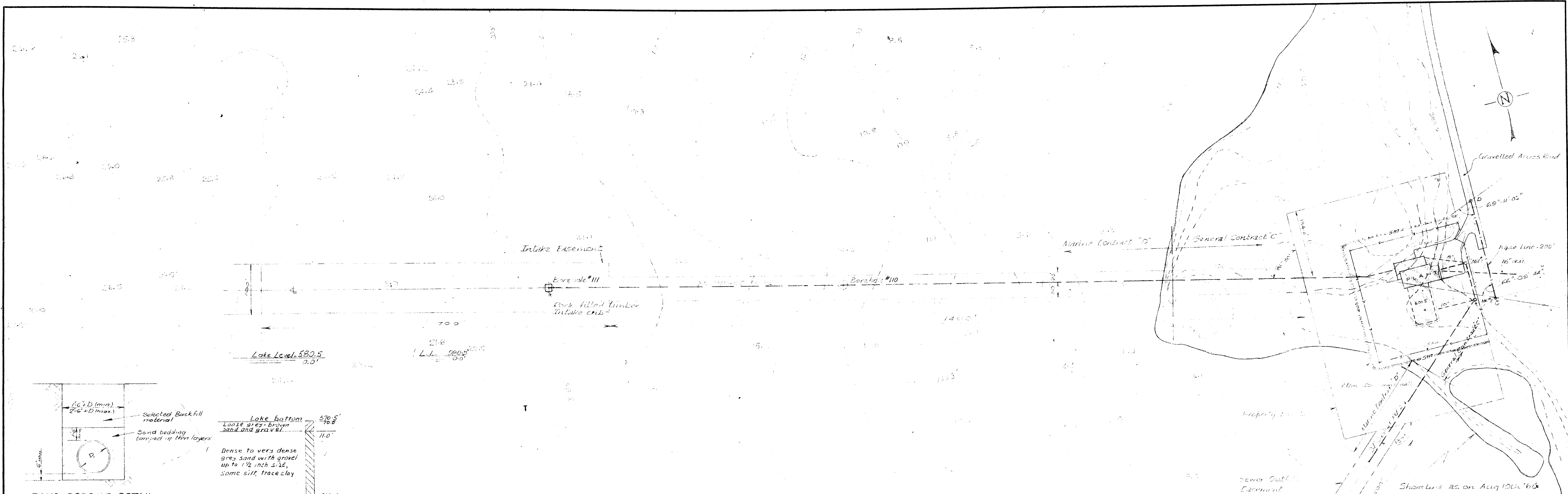
Based on the underwater inspection results, the cause of the gas discharge is related to rotting organic debris deposited during spring run-off from the Maitland River. The debris enters the harbour area through the gap between the rock rubble section of the river training wall and the north breakwater as shown on Figure 1.

The debris is deposited away from the opening where flow velocity is low. The debris becomes trapped in the soft silt sediment where it rots and forms the gas mounds that periodically discharge methane as the pressure in the mound increases.

As it is now known that the gas discharge is not related to the operation of the mine or the harbour no remedial action is required at this time.



APPENDIX B
ENGINEERING DRAWINGS



NOTE

1. All levels based on geodetic B.M. 587.076 on river at concrete foundation of existing pump station chimney.
2. For correction to lake level add 0.903'
3. High water level 583.6'
4. Low water level 577.4'
5. Shore section contours related to geodetic datum.
6. See drawing No. 32 for plan setting-out details of yard piping.
7. See drawing No. 18 for layout of raw water intake piping inside of building foot.

ONTARIO WATER RESOURCES COMMISSION

TOWN OF GODERICH
WATER TREATMENT PLANT

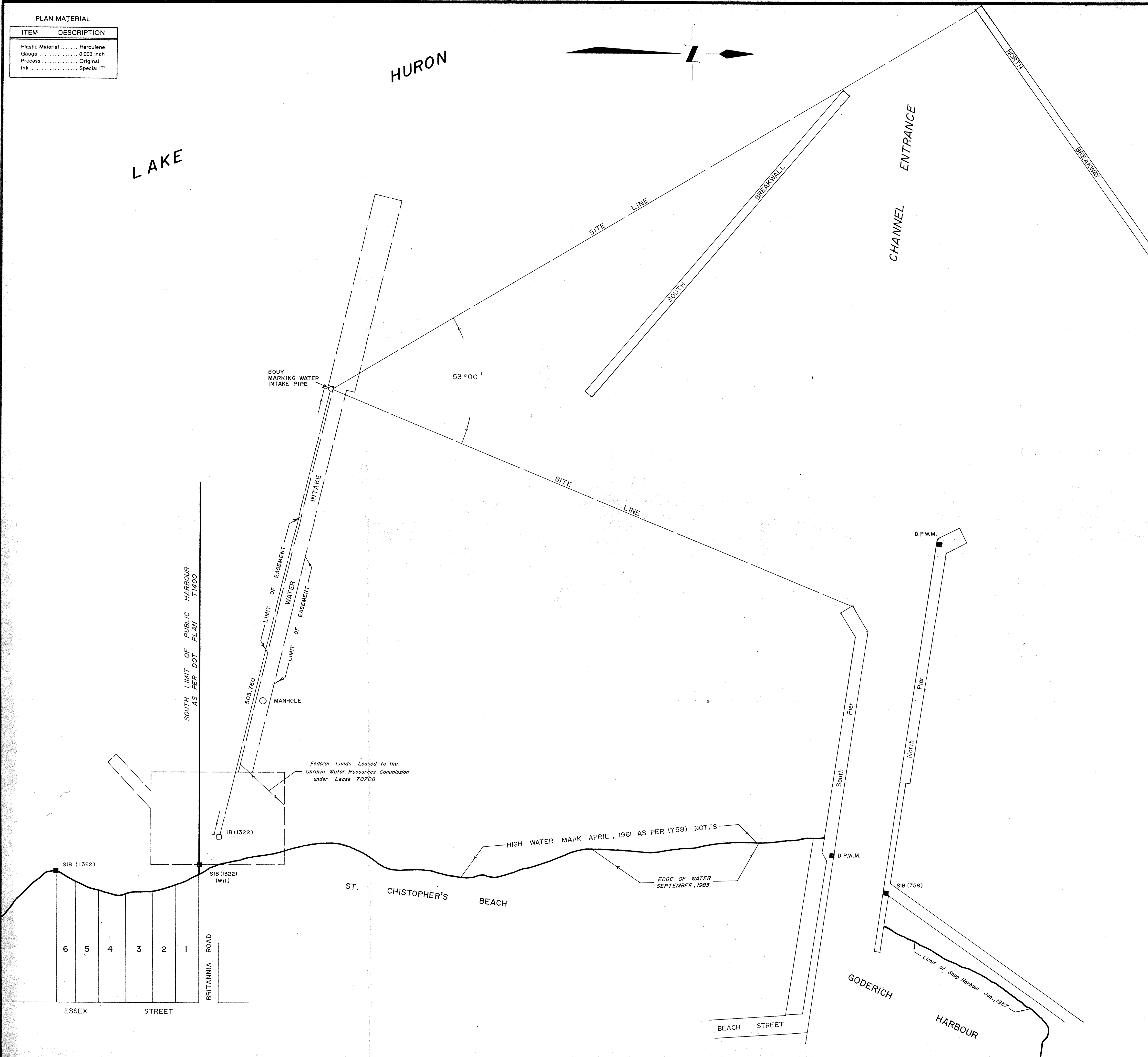
**RAW WATER INTAKE AND
MAIN PLANT SEWER**

J. H. MacLaren
JAMES F. MACLAREN ASSOCIATES
ENGINEERS TORONTO

DATE JUNE 19, 1961 SCALE AS SHOWN DWG. No. 31 OF 33

PLAN MATERIAL

ITEM	DESCRIPTION
Plastic Material	Herculene
Gauge	0.003 inch
Process	Original
Ink	Special "T"



CAUTION
This Plan is not a Plan of Subdivision within the meaning of the Planning Act.

METRIC
Distances shown on this Plan are in metres and can be converted to feet by dividing by 0.304 8.

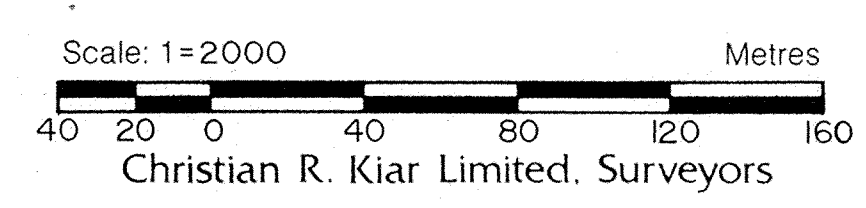
D.Saunderscock
Drawn by

C.R.K.
Checked by

SCHEDULE

PART	LOT	INST. N°	AREA	PART	LOT	INST. N°	AREA

PLAN SHOWING
Water Intake
of
Water Purification Plant
for the
Town of Goderich
County of Huron



NOTES

- S.S.I.B. Denotes short standard iron bar
- S.I.B. Denotes standard iron bar
- I.B. Denotes iron bar
- I.B.Ø Denotes round iron bar
- I.P. Denotes iron pipe
- C.C. Denotes cut cross
- C.M. Denotes concrete monument
- (wit.) Denotes witness
- ⊕ Denotes planted monument
- ⊙ Denotes found monument
- P.W.F. Denotes post and wire fence
- B.F. Denotes board fence
- S.R.F. Denotes snake rail fence
- P.F. Denotes picket fence
- (758) Denotes B.M. Ross, Ontario Land Surveyor
- (1322) Denotes C.R. Kiar, Ontario Land Surveyor
- (884) Denotes Archibald, Gray & McKay Ltd., O.L.S.
- (M.T.C.) Denotes Ministry of Transportation and Communications

AMENDED : JUNE 1, 1988.

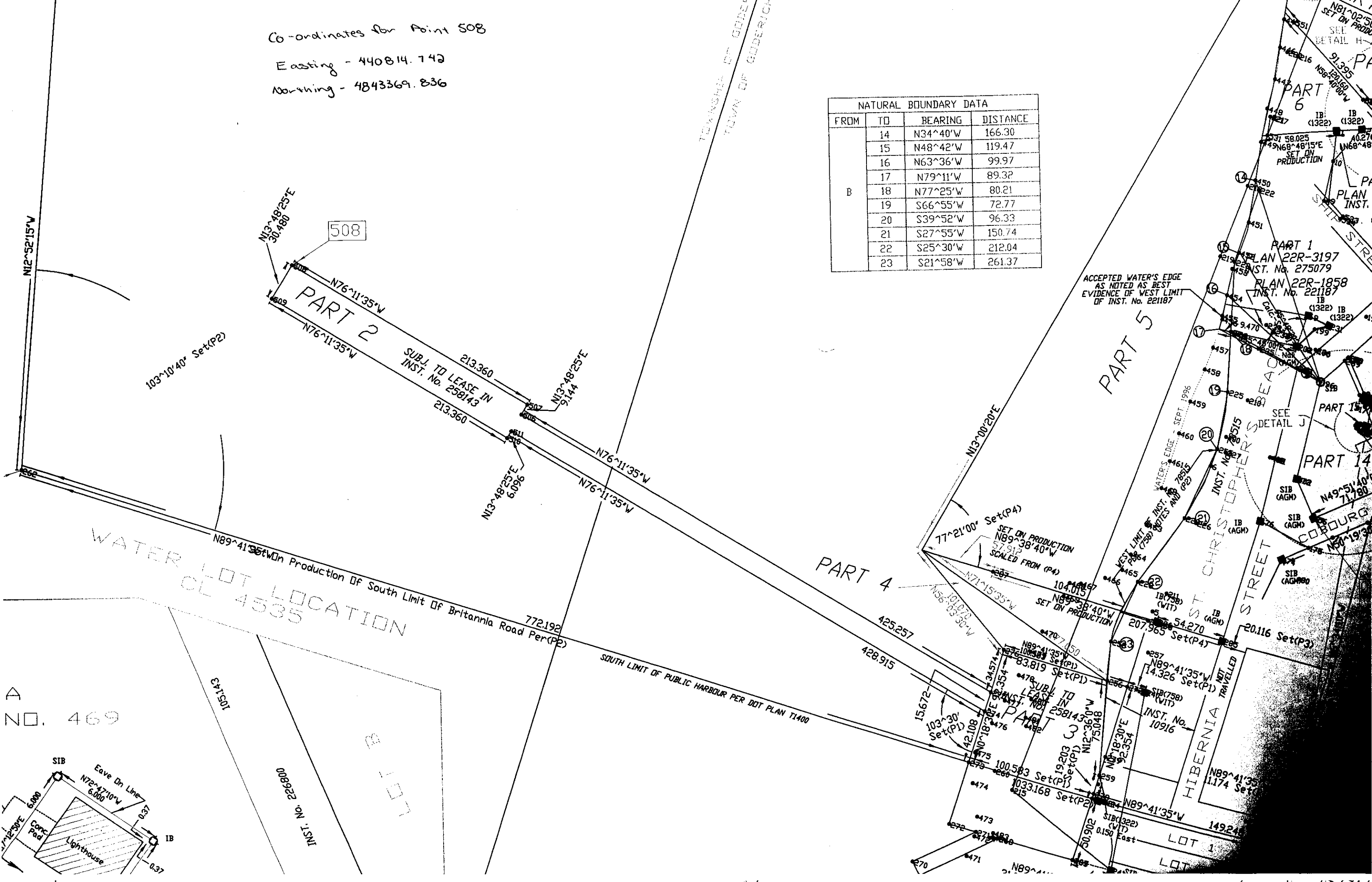
December 18, 1985
Date
Goderich, Ont.

C.R. Kiar
Ontario Land Surveyor.

PLAN FILE 73017063 W.O. 84-271

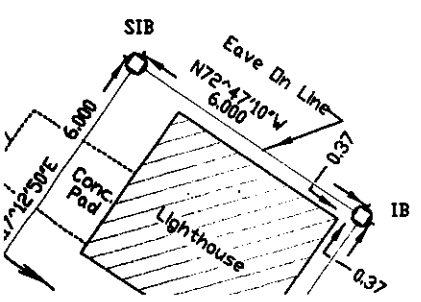
Co-ordinates for Point 508
 Easting - 440814.742
 Northing - 4843369.836

NATURAL BOUNDARY DATA			
FROM	TO	BEARING	DISTANCE
B	14	N34°40'W	166.30
	15	N48°42'W	119.47
	16	N63°36'W	99.97
	17	N79°11'W	89.32
	18	N77°25'W	80.21
	19	S66°55'W	72.77
	20	S39°52'W	96.33
	21	S27°55'W	150.74
	22	S25°30'W	212.04
	23	S21°58'W	261.37



WATER LOT LOCATION
 CL 4535

NO. 469



103°10'40" Set(P2)

PART 2

SUBJ. TO LEASE IN
 INST. No. 258143

PART 4

PART 5

PART 1
 PLAN 22R-3197
 INST. No. 275079

PART 1
 PLAN 22R-1858
 INST. No. 221187

PART 15

PART 14

COBBOURG

ST. CHRISTOPHER'S

HIBERNIA

LOT 1
 LOT 2

SOUTH LIMIT OF PUBLIC HARBOUR PER DOT PLAN T1400

ACCEPTED WATER'S EDGE
 AS NOTED AS BEST
 EVIDENCE OF WEST LIMIT
 OF INST. No. 221187

77°21'00" Set(P4)
 SET ON PRODUCTION
 N89°38'40"W
 57.912
 SCALED FROM (P4)

207.965 Set(P4)

14.326 Set(P1)

INST. No. 10916

149.24

105143

INST. No. 1581

LOT 1

772.192

428.915

425.257

15.672

103°30' Set(P1)

100.583 Set(P1)

1033.168 Set(P2)

19203 Set(P1)

100.902

104.015

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207.965 Set(P4)

14.326 Set(P1)

INST. No. 10916

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APPENDIX C
VIDEO FOOTAGE SUMMARIES

Summary Notes for Videos Provided by the Goderich Water Treatment Plant

Video No. 1: Goderich Water Intake Inspection (Final)

Proctor and Redfern and B.M. Ross, June 22, 1988(89)? (Date is mumbled in video, 88157 BMROSS job # associated with intake) ~20 min

- Starts at surface, follows buoy chain down
- Describes “new” intake cover system
- Piles with steel I-beams form the support
- Video taken before roof of structure was constructed
- This video has the best visibility and footage of the area surrounding the inlet
- Sand/silt bottom surrounding the structure
 - o Relatively flat/silty bottom
 - o No rock visible
 - o No vegetation visible
- Second dive taken to examine some damage to the structure, presumably from ice
- Second dive shows the old timbre structure

Video No. 2: Goderich Water Plant

Chlorine Line Inspection – Jan 18, 1996 ~10 min

- Starts just outside the intake pipe
- Very silty around intake pipe
- 30” cement pipe at outlet, narrows to 24” inside
- Pipe is mostly free of mussels
- Riser extends vertically just inside the inlet
- Best view of the inlet occurs at the beginning of the video, does not show much of the surrounding area
- Bulk of the video is inside the pipe
- Another view of the inlet at the very end, but very little is visible

Video No. 3: Inspection of Water Intake Facilities

Watech Services Inc, May 2000 ~15 min

- Begins with a description of the inlet structure
 - o Chlorine diffuser ring goes around perimeter of mouth of inlet
 - o Held in place by stainless brackets
- No zebra mussels inside mouth of pipe
 - o Nearly 100% coverage outside of pipe
- Steel roof 2 ½’ above the mouth of the pipe
- Concrete bags put in place around concrete riser
 - o Placed around the old timber structure
- Steel support beams hold the roof of the structure
- Top of roof covered in silt, algae and zebra mussels
- Round concrete piles support steel intake structure

APPENDIX D
INTERVIEWS WITH WTP OPERATOR AND HARBOUR MASTER



B. M. ROSS AND ASSOCIATES LIMITED
Consulting Engineers
62 North Street, Goderich, ON N7A 2T4
p. (519) 524-2641 • f. (519) 524-4403
www.bmross.net

Memo

From: Steve Burns
sburns@bmross.net

To: File

Re: Interview of Goderich WTP Operator – Laurie Cox of Veolia Water

File #: 06203

Date: November 7, 2006

Date of Interview: October 26/06

1.0 Intake Description

- Intake takes water from Lake Huron with an upturned pipe inlet.
- See drawings for description and location details.

2.0 Operational Details

2.1 Pumping Record:

- Daily data available for January 2003 to September 2006

2.2 Raw Water Quality Record:

- Daily data is available for at least January 2003 to September 2006
- Data includes temperature, turbidity, pH, alkalinity,
- There is a single value for each day
- Recorded alkalinities were treated water until “sometime” in 2005 when they started to measure and record raw water. L. Cox advised that “*there's not a big difference between the alkalinity results for treated water and raw water*”
- General chemistry including organics and inorganics are summarized in Annual Reports available for 2003 to 2005
- L. Cox advised that they have been part of the MOE DWSP since the early 90's. Data can be obtained from MOE through Patrick Yang (416-235-6004)

2.3 Spill Notification and Response

- MOE has never phoned so there is no experience.
- WTP can be shut-down immediately upon notification (“*a flick of a switch*”)
- Start-up duration will depend on whether or not plant gets contaminated. If there is no contamination start-up could be almost immediate.

- How long you can stay shut-down depends on the system demand.
- The plant can be drained (pumped to waste) by using the backwash pump.
- No raw water conditions are alarmed.

2.4 Historical Operational Issues

- Taste and Odour –
 - There has not been a T & O problem for 5 or 6 years. No PAC has been used in that time.
 - The theory was that it was algae that caused T & O.
 - The only difference that L. Cox is aware of is that lake levels have been lower.
- Turbidity
 - The automatic meter plugs daily from late fall to ice cover and for a couple of weeks in the spring because of “sea weed”.
 - Conditions can vary significantly from day to day.
 - The worst conditions seem to occur when winds are off shore from the south or southeast.
 - The very worst conditions occur when the winds are from the southeast and there is a significant flow from the river. Under these conditions turbidities will exceed 100 NTU and can get to 140 or 150. There will be a simultaneous change in alkalinity.
 - If there is a significant river flow but no wind the turbidities will be 30 to 40 NTU.
 - Windy conditions alone typically do not make the water difficult to treat.
 - If the lake is “*churned up*” by on-shore winds (e.g. northwest) then turbidities will reach 50 to 60 NTU but the water will not be difficult to treat. The turbidity will be caused by gritty/sandy material.
 - A steady northwest wind can cause the lake to “clear up” and have lower E.coli concentrations.
 - Turbidities can return to normal values (e.g. < 10) within 24 hours.
 - 3 years ago challenging treatment conditions existed daily throughout the fall into the winter.
 - In 2006 there have been no significant events.
 - Note: L. Cox reported the following on Nov. 1/06 – “*This bacti report corresponds with a period of “river” water... “green” tinge to raw water...higher than normal alkalinity ,138 mg/l calcium carbonate...slightly elevated raw turbidity, 9.6 NTU on the raw moderately high coagulant demand 6 mg/l... moderately high chlorine demand, dosage of 2.46 mg/l to arrive at finished water residual of 1.09 mg/l. The river was running fairly high after some rain events and the winds were moderate out of the south.*”
 - The report referred to in the above is attached. The sample was taken Oct.24/06.
- Alkalinity

- It is believed that increases in alkalinity occur because of the influence of the river.
- Temperature
 - Temperatures can go from 20° C to 9° C in a few hours.
 - This will occur 2 or 3 times each summer.
 - It is not related to storm conditions.
 - It can not be predicted.
- Ice Conditions
 - Ice jamming of the intake has never been a problem.
 - Frazil ice has occurred "*a half dozen times in 17 years*" including 2x in Feb/March of 2006.
 - Frazil ice is not related to ice jamming.
- E.coli
 - E.coli concentrations will increase following a storm event. It is not known whether this is related to the lake, the river or storm sewer discharges to the shoreline.
- Other Conditions
 - Ships turning in the vicinity of the intake have impacted raw water quality.
 - Dredging operations have had no effect.
 - Development of the shoreline, including shore protection structures, in the vicinity of the plant, has not appeared to affect water quality. L. Cox noted that lake levels have been consistently low since the development has occurred.

3.0 Contaminants of Concern

3.1 Operator's Concerns

- As an operator he is always very concerned about microbial contamination.
- He is also concerned about organics, inorganics and pesticides but there has been no history of problems with any parameters.
- AECL has samples taken and submitted for radioactivity quarterly. They have never indicated that a problem exists.

3.2 Other Potential Concerns

- Because of the location of the intake the following potential sources of contamination exist:
 - All agricultural activities via the Maitland River
 - Goderich STP discharge to shore, south of WTP, including by-passes caused by CSO's.
 - Storm sewer discharges north and south of WTP
 - Marinas in the Maitland River

- Mining activities and salt storage at the mouth of the Maitland river and adjacent to the harbour
- Commercial shipping and recreational boating.

4.0 Data Sources and Reports

4.1 Reports

- B. M. Ross and Associates Ltd., "*Town of Goderich Engineers Report for Water works*", File No. 00174, June 30/01
- Hopkins G. J., "*Great Lakes Nearshore Water Quality Monitoring at Water Supply Intakes; 1976-1981*", October 1983.
- Angus Environmental Ltd., "*Property Transfer Assessment of St. Christopher's Beach, Goderich Harbour, Goderich, ONT*", April 1997
- The Lake Huron Centre for Coastal Conservation, "*Nearshore Water Quality. A preliminary Report on Historical Nearshore Water Quality Information for Southeastern Lake Huron; Sauble Beach to Sarnia*", 2003.
- Science Committee, "*Sources and Mechanisms of Delivery of E.coli (bacteria) to the Lake Huron Shoreline of Huron County*", April, 2005.
- Vucinic, Jelena, "*Huron County Health Unit - Beach Water Report 1990-2000*", October 2000.
- Watech Services Inc., "*Inspection of Harbour Bottom – Port of Goderich, Goderich, Ont.*", June 2004.
- Phyper & Associates Ltd., "*Report on The Goderich Federal Harbour Environmental Audit Baseline Study*", June 1995.
- B. M. Ross & Associates Ltd., "*Goderich Port Management Corporation Harbour Rehabilitation Master Plan*", March 2006.
- B. M. Ross & Associates Ltd., "*Municipal Class Environmental Assessment for Improvements to the Goderich Pollution Control Plant*", July 2005.
- B. M. Ross & Associates Ltd., "*Town of Goderich – Pollution Prevention Control Plan*", April 2004.

4.2 Videos

- B.M. Ross & Associates Ltd. & Proctor & Redfern Ltd. Goderich Water Intake Inspection (Final). June 1988(89).
- Aqua Rehab Inc. Promotional Video for Pipe Restoration. (2 Copies)
- Town of Goderich. Chlorine Line Inspection Video. January 1996.
- Watech Services Inc. Inspection of Water Intake Facilities. May 2000.

5.0 Other

- Bathymetry around intake is not available.
- The only knowledge of sediments and substrates will come from the videos listed in 4.2.
- Operator's opinion is that currents seem to be north to south based on observed flows from River.

Steve Burns, P.Eng.

Meeting with Ian McAdam: Goderich Harbour Master

Meeting Date: October 24, 2006
Meeting Time: 1:00 p.m.
Meeting Location: B.M. Ross & Associates Office – 62 North Street, Goderich
Present: Kelly Vader, Environmental Planner

Questions: The following questions were asked during the meeting

1) Is he aware of any fuel storage locations within the Harbour?

Mr. McAdam indicated that there was a small diesel fuel tank located near the Coast Guard Station and his office (McDonald Marine). There are also likely small fuel tanks located at the private marina's operated by Dick Peever. Large fuel requirements are serviced by tanker trucks that come down to the harbour when required.

2) Are the large lake ships fueled when in the harbour?

He indicated that a majority of the large ships fuel-up in Sarnia before coming to Goderich. If fuel is required, a tanker truck would come to the harbour with the needed fuel.

3) What sanitary sewage storage facilities are present in the harbour?

There are very limited sanitary sewage storage facilities. The Coast Guard, Salt Mine and Marine facilities pump their sanitary to a forcemain located along the harbour access road. This is pumped into the Town collection system. There are a few portable toilets supplied for the workers and for fishermen. He also believes that sewage from the tourist booth and other public washrooms are pumped into the town's sanitary collection system.

4) What salt storage occurs within the harbour?

There are four or five large salt storage facilities on the island where sifto will temporarily store salt from the mine before shipping it out via either rail or by ship. These storages appear to be covered.

5) Is he aware of any chemical storage in the harbour?

The only chemical storage would be the Da-Lee liquid calcium storage which is located on the northwest corner of the harbour island. There is a circular storage tank in this area (constructed since 1999). Material is shipped here by barge from Michigan and then transferred by truck uptown to their main facility.

6) Does the harbour have an Emergency Spill Action Plan?

Yes there is a spill action plan in place which is coordinated by the Coast Guard. They have periodic practices which also involve the Goderich Fire Department. Should a major spill occur, the Eastern Canada Response Team (situated in Sarnia) would respond with booms and other equipment required to contain a spill. He said there should be a copy of the Response Plan at the Coast Guard Station.

7) Is bilge water a concern?

Ian didn't believe that bilge water was a concern. Most ships either do not dump their bilge water or have systems in place to filter it before dumping it in the lake.

8) Where do boats pump their sewage holding tanks?

His facility and the Coast Guard station pump directly into the Town's system. He's not sure where the commercial marina's pump their waste to.

9) Are there any potential risks associated with the railway?

He said the rail line primarily ferries box cars into the harbour area for loading and unloading to the ships and salt mine. He is not aware of any fuel storage at the harbour level. All of these activities are centered at the main station up above.

10) Is he aware of any material shipped into or out of the harbour which could pose a risk or threat to the municipal water intake?

A majority of the material shipped into or out of the area is either salt or grain. He is not aware of any material which might be of concern.

11) Is he aware of any spills which have occurred within the harbour?

Other than a couple of fishing boats which sank several years ago and were quickly cleaned up, there have been no major spills that he is aware of.

12) Would it be possible to GPS the location of some of the facilities?

Portions of the Sifto property are not accessible, but most of the area is open to fishermen, so it should be possible to access most of the areas we would want to locate.

13) How often is the harbour dredged and is the material sampled?

A major dredging occurs usually every 5 years with occasional maintenance dredging occurring when required adjacent to the docks. The last several times the material was dumped 5 miles out in the lake. BMROSS generally supervised the dredging, so sampling records are probably available in-house.

14) Does the harbour do any water sampling?

They do not take any water samples, though they occasionally see DFO boats in the area taking samples.

15) Can he think of anything else related to harbour activities which might affect the intake?

Several years ago there was a concern expressed over ships turning around outside of the harbour so they could back into the channel. Some felt that that the prop wash disturbed sediments near the intake causing poor water quality. He said that most of the large ships turn to the north, but a few turn to the south in the vicinity of the intake. The average depth of the props would be between 20'-22' (6-6.7 meters). They kept an eye on it for several months, but then the issue went away and they no longer watch it.