

TO: CITY MANAGER **DATE:** 2002 03 18

FROM: DIRECTOR ENGINEERING **FILE:** 10-08-11 (01)

SUBJECT: CHEVRON CANADA REFINERY - GROUNDWATER DISCHARGE TO BARRARD INLET

PURPOSE: To provide Council with comments on the Approval issued by the B.C. Ministry of Water, Land and Air Protection (BCWLAP) to Chevron Canada Limited to discharge groundwater from their refinery in Burnaby to Burrard Inlet.

RECOMMENDATIONS:

1. **THAT** Chevron Canada Limited and B.C. Ministry of Environment, Land and Air Protection work co-operatively to advance the timelines for submission of the Terms of Reference for the report on the Environmental Fate and Impact of Chevron's MTBE Discharges to Burrard Inlet.
2. **THAT** the conditions of the B.C Ministry of Water, Land and Air Protection Approval issued to Chevron Canada Limited be subject to future review based on the monitoring data and the results of the report on the Environmental Fate and Impact of Chevron's MTBE Discharges to Burrard Inlet.
3. **THAT** a copy of this report be forwarded to:
 - a) Mr. Doug Pope, Regional Manager, B.C. Ministry of Water, Land and Air Protection, 10470 152nd. Street, Surrey, B.C., V3R 0Y3;
 - b) Mr. Tom Kovar, Refinery Manager, Chevron Canada Limited, 355 N. Willingdon Avenue, Burnaby, B.C., V5C 1X4.

REPORT

1.0 INTRODUCTION

At the regular Council Meeting on March 11, 2002, Council discussed the discharge permit issued by the Ministry of Water, Land and Air Protection to Chevron Canada Refinery to release groundwater to Burrard Inlet. Council requested staff to provide a report on this matter and was specifically interested in monitoring and environmental loading in Burrard Inlet.

The following report comments on the Approval issued by the B.C. Ministry of Water, Land and Air Protection (BCWLAP) to Chevron Canada Limited to discharge groundwater from their refinery in Burnaby to Burrard Inlet.

2.0 CHEVRON CANADA REFINERY GROUNDWATER DISCHARGE APPLICATION

On November 26, 2001, Chevron Canada Limited forwarded an Application (see [Attachment #1](#)) to the BCWLAP requesting discharge of groundwater from their refinery to Burrard Inlet. The sources of groundwater discharge via impounding basins would include:

- ▶ recovered MTBE impacted groundwater extracted to control hydraulic gradients and movement of groundwater towards the refinery perimeter;
- ▶ groundwater recovered from drains located under the impoundment basin liners;
- ▶ groundwater generated during construction dewatering.

Chevron proposed a discharge limit for MTBE of 4.4 mg/L into Burrard Inlet. This limit was derived by taking the ambient marine MTBE limit of 0.44 mg/L¹ and applying a 10 times dilution factor². The total daily estimated groundwater discharge volumes into their impoundment basins is proposed to be 273 cubic meters (55 cubic meters from Area 1 and 218 cubic meters from Area 2). There was no request to increase the existing permitted discharge volumes for either Area 1 and Area 2 to Burrard Inlet.

According to Chevron, the Approval being sought for the above is a temporary measure to facilitate the discharge while Chevron and the BCWLAP continue to discuss potential modifications to the existing permit. The current permit (PE-4970) has limits on pH, Total Extractable Hydrocarbons (THE), Total Suspended Solids (TSS), phenols, toxicity and discharge volumes. In addition, in July 2000 an MTBE discharge limit of 2.5 mg/L was added to the monitoring regime for Area 1 by the BCWLAP to manage the May 17, 2000 MTBE spill remedial work.

¹B.C Water Quality Guidelines for MTBE.

²B.C. Waste Management Act, Contaminated Sites Regulation, Schedule 6; and Contaminated Sites Protocol 2: Site Specific Numerical Soil Standards, Section 3.2.9 Method 1.

Staff Comment on the Application:

On December 03, 2001, staff received a copy of the Application through a BCWLAP referral process for comments or recommendations. On December 12, 2001, staff forwarded a response to the Ministry seeking additional information relating to: the Approval term; calculations relating to total loadings of MTBE to Burrard Inlet (based on proposed discharge limit) and potential impact, if any, to downstream marine life over the duration of the discharge; and details on treatment technology and treatment efficiency.

On February 04, 2002 staff received an e-mail from the BCWLAP which responded to some questions raised by staff in their December 12, 2001 letter. On February 07, 2002, staff received a copy of a letter from Chevron forwarded to the BCWLAP which responded to the remaining issues raised by staff.

On February 14, 2002, staff forwarded a further response to the Ministry raising the following issues:

- ▶ Chevron did not directly address to the City's question on the total loadings of MTBE to Burrard Inlet (based on proposed discharge limit) over the duration of discharge. Furthermore, it deferred answering the potential marine life impact question but instead cited the B.C. Water Quality Guideline and the findings of the Komex International Ltd. study titled "Water Quality Guidelines for MTBE, March 31, 2001". Staff noted that the Komex study forms the scientific basis for derivation of the MTBE limits by the province. However, it is also noted that the marine aquatic life limit of 0.44 mg/L is designated to be "Preliminary" as there is insufficient data available to satisfy Canadian Council of Ministers of the Environment (CCME) protocol requirements for setting it as "Interim" guideline.
- ▶ The treatment technology being applied is activated carbon which has been applied in Area 1 since year 2000. While staff appreciated the treatment efficiencies variability between areas due to varied hydrocarbon and other groundwater characteristics, it is understood that the Area 1 MTBE discharge limit of 2.5 mg/L has been met by Chevron.

Based on the above and specifically driven by the lack of information on loading and local marine life impact in the Inlet, staff recommended the Ministry set:

- ▶ a discharge limit of 2.5 mg/L MTBE which is applied to the recovered groundwater prior to mixing with water in the impoundment basins located within Chevron refinery;

- ▶ a groundwater extraction rate not to exceed the estimated rate of 55 cubic meters and 218 cubic meters per day for Area 1 and Area 2 respectively;
- ▶ a final discharge from Chevron's end of pipe to Burrard Inlet of 0.44 mg/L MTBE. While not specifically part of the noted application, staff also recommended the Ministry to require Chevron to monitor Benzene Toluene Ethylbenzene and Xylene (BTEX) in their discharge to Burrard Inlet due to presence of elevated benzene levels in the groundwater plume near well A2-9 in Area 2.

Given the understanding that the BCWLAP was going to make a decision on the above application imminently, staff had forwarded the above comments to the Ministry and appropriately informed Council of the same.

3.0 CHEVRON CANADA REFINERY GROUNDWATER DISCHARGE APPROVAL

On February 27, 2002, BCWLAP issued Approval AE-17046 under the provisions of the *Waste Management Act* to Chevron Canada Limited (see Attachment #2). The Approval, which expires on April 30, 2003, applies to the discharge of effluent from Area 1 and Area 2 and includes groundwater, water collected from under containment liners and groundwater collected during construction activities. The authorised works are carbon filtration systems, final settling basins (i.e. Area 1 Foreshore Basin and Area 2 Impoundment Basins) and related appurtenances.

Discharge Limits

The Approval sets a discharge limit of 4.4 mg/L of MTBE which is applied to the recovered and treated groundwater prior to mixing with water in the settling basins. The combined carbon filtration treatment systems discharges are limited to a total of MTBE mass of 36.5 kg per calendar month. Additionally, the characteristics of discharge to Burrard Inlet are not to exceed 1.8 mg/L MTBE.

Monitoring and Reporting

With respect to the monitoring and reporting requirements, the Approval in part requires Chevron to undertake daily monitoring of flow rates from the treatment plants as well as weekly grab sampling of effluent from the treatment plant. The samples are to be analyzed for MTBE and BTEX. In addition, weekly grab samples of effluent discharged to Burrard Inlet (Area 1 Foreshore Basin Outlet and Area 2 West Impoundment Basin Outlet) are to be obtained and analyzed for MTBE and the total loading in kg/day is to be calculated. Data of sample analysis, flow measurements, loading calculations from the treatment plants,

and total loadings to Burrard Inlet are to be maintained by Chevron for inspection by MWLAP. A status report covering progress, test calculations, compliance assessment and recommendations is to be submitted by Chevron to the Regional Waste Manager for the previous quarter. The first reporting period ends on March 31, 2002.

Emergency Procedures

The Approval provides for specific actions which must be undertaken by Chevron in an event of an emergency which prevents compliance with the requirements of the Approval.

Environmental Report

Chevron Canada Limited is required to submit a report prepared by qualified professionals on the environmental fate and impact of Chevron's MTBE discharges to Burrard Inlet. Terms of Reference, acceptable to the Regional Waste Manager, for the report are to be submitted by August 15, 2002.

Disposal of Spent Carbon

Spent carbon from the treatment plants is to be disposed of in a manner acceptable to the Ministry.

Staff Comments on the Approval

The Approval term is reasonable. The Discharge Limits (1.8 mg/L MTBE), although not as stringent as those proposed by City staff, are noted to be more restrictive than those Chevron had proposed in their application (4.4 mg/L MTBE) as well as those the Ministry had allowed previously in Area 1 (2.5 mg/L). In addition, a total mass loading of MTBE from the treatment plants is reasonable. However, staff are unclear on how the 1.8 mg/L MTBE limit for the effluent discharge to Burrard Inlet was derived.

The Monitoring and Reporting requirements are reasonable although it is noted that effluent discharged to Burrard Inlet is not required to be analyzed for BTEX.

Staff are pleased to see the requirement of having Chevron submit a report on the environmental fate and impact of the MTBE discharges to Burrard Inlet. Given that the B.C. Water Quality Guideline marine aquatic limit for MTBE is "Preliminary", the above report would answer the appropriateness of the 1.8 mg/L MTBE discharge limit to Burrard Inlet. Staff are, however, concerned regarding the August 15, 2002 timeline set by the Ministry for the acceptance of Terms of Reference. This timeline should be advanced ahead to ensure that any negative environmental impacts are addressed promptly and mitigated. Based on

the overall assessment of the Approval, staff believe that this is the area where consideration can be made to appeal the decision under Part 7 of the *Waste Management Act*. For Council's information, the deadline for filing an appeal with the Environmental Appeal Board is March 28, 2002. However, given that the appeal process can potentially take several months and thereby negate any gains on the advancement of the timeline for the acceptance of the Terms of Reference, staff recommend that Chevron Canada Limited and B.C. Ministry of Environment, Land and Air Protection work co-operatively to advance the timelines for submission of the Terms of Reference for the report on the environmental fate and impact of Chevron's MTBE discharges to Burrard Inlet

Furthermore, the conditions of the B.C Ministry of Water, Land and Air Protection Approval issued to Chevron Canada Limited should be subject to future review based on the monitoring data and the results of the Environmental Study.


4.0 CONCLUSION

The B.C Ministry of Water, Land and Air Protection has recently issued an Approval to Chevron Canada Limited to discharge groundwater from their refinery in Burnaby. It is noted that the groundwater monitoring regime sets an MTBE discharge limit which is more restrictive than Chevron had proposed in their application as well as those limits that the Ministry had previously allowed in Area 1. A total mass loading of MTBE from the treatment plants has also been placed. Aspects relating to the monitoring, reporting, are emergency procedure are reasonable. While the requirement for submission of a report on environmental fate and impact of Chevron's MTBE discharge to the Inlet is applauded, the staff are concerned about the timeline set within the Approval for acceptance of the Terms of Reference for the work by the Ministry. Based on the overall assessment of the Approval, staff believe that this is the area where consideration can be made to appeal the decision under Part 7 of the *Waste Management Act*. For Council's information, the deadline for filing an appeal with the Environmental Appeal Board is March 28, 2002.

However, given that the appeal process can potentially take several months and thereby negate any gains on the advancement of the timeline for the acceptance of the Terms of Reference, staff recommend that Chevron Canada Limited and B.C. Ministry of Environment, Land and Air Protection work co-operatively to advance the timelines for submission of the Terms of Reference for the report on the Environmental Fate and Impact of Chevron's MTBE Discharges to Burrard Inlet.

Furthermore, the conditions of the B.C Ministry of Water, Land and Air Protection Approval issued to Chevron Canada Limited should be subject to future review based on the monitoring data and the results of the Environmental Fate and Impact of Chevron's MTBE Discharges to Burrard Inlet.

The City supports Chevron's ongoing efforts to remediate contamination on their property. However, the City would also like to ensure that the "clean-up" efforts do not result in creating adverse off-site environmental impacts.


W.C. Sinclair
DIRECTOR ENGINEERING

DD:
Attachments

cc: Director Planning and Building
City Solicitor

*Note:
The two attachments referred to in this report
are available in the Clerk's Department.*





Item No.....10
 Manager's Report No.....09
 Council Meeting.....02/03/25

ATTACHMENT #1

FAXED
 Clerk's file
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 J

November 29, 2001

Our File: AE-17046

City of Burnaby
 4949 Canada Way
 Burnaby BC V5G 1M2

Attention: Dipak Dattani, Engineering

Dear Sir/Madam:

Re: Application Pursuant to Waste Management Act
 on behalf of **Chevron Canada Limited**
Dated November 28, 2001, located at Burnaby Refinery, Burnaby BC

The subject application is being processed in the Pollution Prevention office located at 10470 - 152nd Street, Surrey, British Columbia, V3R 0Y3. Our staff contact for this particular application is **Dave Robertson** whose telephone number is **604-582-5307**.

It is our intention to dispose of this application as expeditiously as possible. Accordingly, if you wish to comment or make recommendations with respect to the application, you are requested to do so within thirty days from the date of this letter. Should you require additional time, it will be necessary for you to contact the above person, and additional time may be given if the circumstances warrant it.

Please be advised that decisions on applications are only made on the basis of technical considerations relating to pollution prevention. This office cannot consider zoning and planning issues during the processing of an application made under the Waste Management Act. These issues fall within the jurisdiction of municipal and regional governments.

A response form is enclosed for your use.

Yours truly,

Fay O'Neill, Processing
 Pollution Prevention, LMR

Enc.

RECEIVED

November 28, 2001 NOV 28 2001

LOWER MAINLAND REGION

BY COURIER

Mr. Doug Pope
Regional Manager
Pollution Prevention
Ministry of Water, Land and Air Protection
Lower Mainland Region
10470, 152nd Street
Surrey, BC
V3R 0Y3

**BCWLAP PERMIT No. PE-4970, CHEVRON BURNABY REFINERY, AREA 1
and AREA 2 GROUNDWATER DISCHARGE TO BURRARD INLET**

Dear Mr. Pope,

This letter is in response to our meeting last week with Mr. Ray Robb and Mr. Dave Robertson of your staff regarding the Burnaby Refinery's request to discharge groundwater via impounding basins to Burrard Inlet. As discussed, there are several sources of groundwater that need to be managed at the Burnaby Refinery, including:

- recovered MTBE impacted groundwater extracted to control hydraulic gradients and movement of groundwater towards the refinery's perimeter;
- groundwater recovered from drains located under the liners at the West Impounding Basin (WIB) in Area 1 and in the future Area 2 (these under-drains help prevent the liners from being damaged); and
- groundwater generated during construction dewatering (for example, the new Area 2 West Impounding Basin synthetic liner installation).

Based on our discussions, we request an "Approval" for groundwater to be combined with water currently discharged to Burrard Inlet in Area 1 and Area 2 per British Columbia Ministry of Water, Land and Air Protection (BCWLAP) Permit No. PE-4970 (Permit). We understand that this "Approval" is a temporary measure to facilitate

Chevron



Chevron

Chevron Canada Limited
1500 - 1050 West Pender Street
Vancouver, BC V6E 3T4
Phone (604) 668-5300

Refinery
355 North Willingdon Avenue
Burnaby, BC V5C 1X4
Phone (604) 257-4040

Mr. Jason Donchin
Manager of Health, Environment and Safety
Phone (604) 257-4004
Fax (604) 257-4030
E-mail jasd@chevron.com

discharge while we continue to discuss potential modifications to the Permit. In addition, Mr. Robb has asked Chevron to propose a discharge limit for MTBE (methyl-tertiary butyl ether); we currently have limits for pH, Total Extractable Hydrocarbons (T.E.H.), Total Suspended Solids (T.S.S.), phenols and Toxicity. Based on the discussion below, we propose a discharge limit to Burrard Inlet of 4.4 parts per million of MTBE. We also recognize BCWLAP's concern that groundwater extracted and treated to reduce MTBE levels not use dilution with stormwater as part of this treatment.

MTBE Limit

The proposed maximum concentration limit for MTBE is 4.4 mg/L for discharges into Burrard Inlet per BCWLAP permit No. PE-4970. The value was derived by using the following method:

The marine estuarine value (0.44 mg/L) was applied as per the British Columbia Water Quality Guideline (References 1, 2) with a 10 times dilution factor applied, consistent with that used by BCWLAP (References 3, 4). Thus, 0.44 mg/L x 10 times dilution = 4.4 mg/L for MTBE.

References:

- 1. Table 40 of the British Columbia Water Quality Guidelines (Criteria): 1998 Edition, states that the Recommended Guideline for MTBE in Aquatic Life (marine estuarine) is 0.44 mg/L. This is often referred to as the 'ambient level'.*
- 2. In a study submitted by Komex International Ltd. for BCWLAP, titled "Water Quality Guidelines for MTBE", using toxicological data, a guideline of 0.44 mg/L is derived.*
- 3. The B.C. Reg. 375/96 Waste Management Act, Contaminated Sites Regulation states in Schedule 6, Generic Numerical Water Standards that "Aquatic life standards assume minimum 1:10 dilution is available".*
- 4. In the Contaminated Sites Protocol 2: Site Specific Numerical Soil Standards, Section 3.2.9 Method I. General Procedure for the Development of Method I Groundwater Protective Site-specific Numerical soil Standards, it is stated to use 10 times the most current BC Environment approved applicable water quality criteria or guideline as the value for the parameter C_w (which is defined as the concentration in water at the receptor).*

This is consistent with previously established guidelines that have been scientifically developed by British Columbia Regulatory Authorities.

Discharge Volume

Collection and discharge volumes are estimated only, as follows:

- Area 1 groundwater collection flow from the WIB underliner is currently estimated at approximately 10 gallons per minute (55 cubic meters per day vs. current limit of 19,550 cubic meters per day).*
- Area 2 groundwater collection flow from wells is currently estimated to be approximately 20 gallons per minute (109 cubic meters per day vs. current limit*

of 18,000 cubic meters per day). This is anticipated to increase to a total of approximately 40 gallons per minute (218 cubic meters per day) when our Area 2 West Impounding Basin has been re-lined, as we will need to collect water from under the liner to prevent pressure build-up (hydraulic control). During the construction of this liner, we will also need to 'de-water' the construction site and deal with this water in a similar fashion.

We appreciate your prompt review of our request as we currently plan to begin the extraction and management of MTBE impacted groundwater in Area 2 at the end of January 2002. We are installing a temporary treatment unit that:

- a) will allow us to manage water generated during groundwater pump tests of the newly installed horizontal well and A2-9 extraction well, and
- b) is designed to be available for continued use while the extraction rate, water chemistry, and hydraulic response data is analyzed and the treatment system is under design.

Without the ability to discharge, we may have to suspend groundwater control measures following the pump tests.

Thank you for assistance in this matter. Over the next year, groundwater flows and treatment technologies will be more defined, enabling us to work with BCWLAP to develop an amended permit that addresses groundwater.

Sincerely,

A handwritten signature in black ink, appearing to be 'J. A. ...', written over a horizontal line.

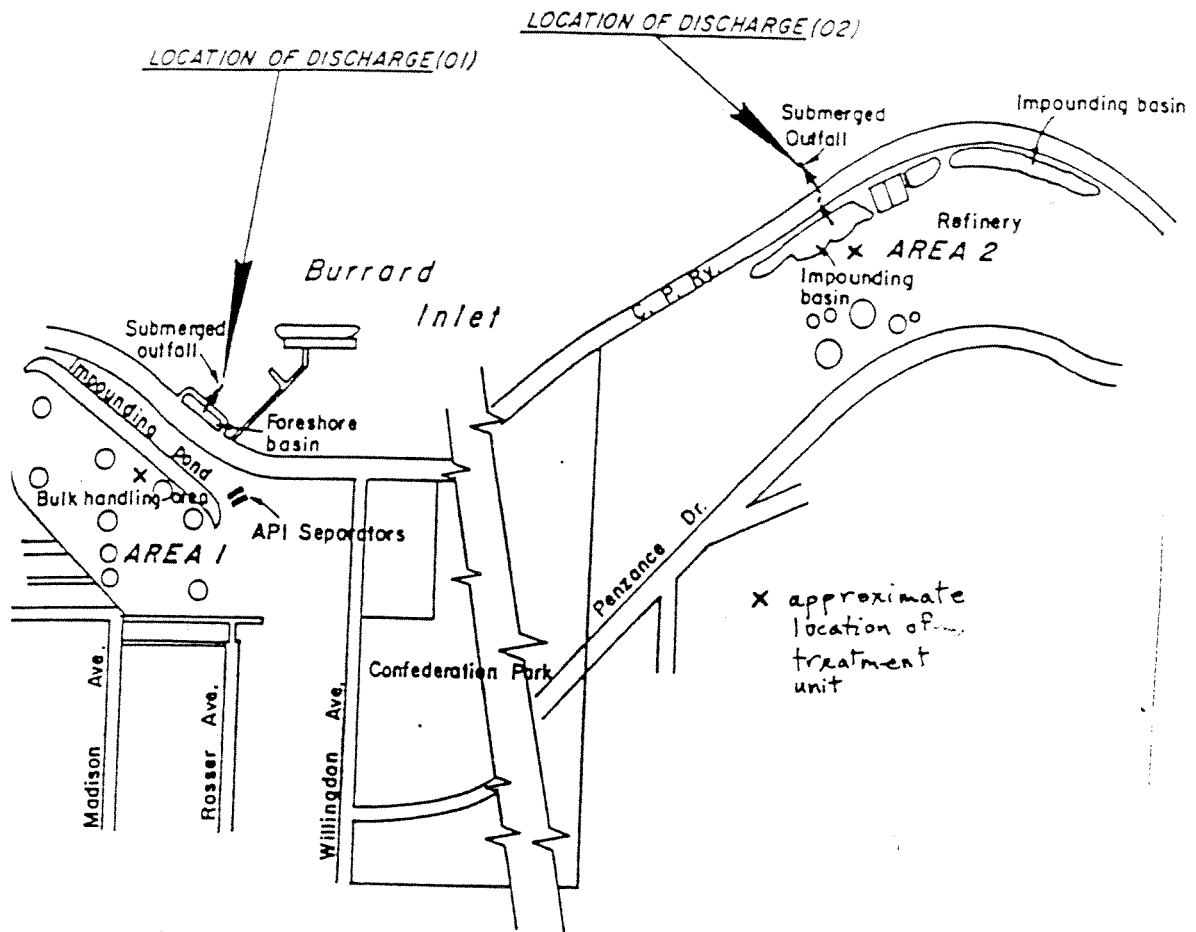
Attachment
Fee Enclosed

cc: Mr. Ray Robb
Mr. Dave Robertson



SITE PLAN

Scale 1:10,000



Legal Description: Area 1; L. C & D, Bl. 22, Pl. 9135, L. 18 of Bl. 25, Plan 1282, L. 10, Bl. 26, Plan 1282, L. C of Bl. 26, Plan 10832, L. 19, 20, 21 of Bl. 27, Plan 1282, L. 26, 27 of Bl. 33, Plan 1282, L. J. Plan 9135, L. 43, Plan 53694, all of D.L. 187, Gp. 1, NWD.

Area 2; L. 67 of D.L. 188, Gp. 1, NWD., Pl. 28468., Plan 14518, D.L. 189, Gp. 1, NWD., Plan 13496, D.L. 188, D.L. 189, Gp. 1, NWD., except Plan 13238, Ref. Plan 13504, part on filing A37751 & Plan 49497.

Location Map

Scale: 1:10,000

Site Plan: A

Assistant Regional Waste Manager





Date: FEB 27 2002

File: AE-17046

REGISTERED MAIL

Chevron Canada Limited
1500 - 1050 West Pender Street
Vancouver, British Columbia V6E 3T4

Dear Approval Holder:

Enclosed is Approval AE-17046 issued under the provisions of the *Waste Management Act*. Your attention is respectfully directed to the conditions of the Approval.

This approval does not authorize entry upon, crossing over, or use for any purpose of private or crown lands or works, unless and except as authorized by the owner of such lands or works. The responsibility for obtaining such authority rests with the approval holder. It is also the responsibility of the approval holder to ensure that all activities conducted under this approval are carried out with due regard to the rights of third parties, and comply with other applicable legislation that may be in force.

This decision may be appealed by persons aggrieved by the decision in accordance with Part 7 of the Waste Management Act. Notice of the appeal must (1) be in writing, (2) include the grounds for appeal, (3) be directed by registered mail or personally delivered to the Chair, Environmental Appeal Board, 4th Floor 836 Yates Street, Victoria BC V8W 9V1, (4) be delivered within 30 days from the date notice of the decision is given, and (5) be accompanied by a fee of \$25.00, payable to the Minister of Finance and Corporate Relations.

Administration of this approval will be carried out by staff from our regional office located at 10470 - 152 Street, Surrey, British Columbia, V3R 0Y3. Plans, data and reports pertinent to the approval are to be submitted to the Regional Waste Manager at this address.

Yours truly,

R. H. Robb
Regional Waste Manager

enclosure

c.c. Environment Canada

- 1.1.4 The location of the facilities from which the discharge originates is L. C & D, Bl. 22, Pl. 9135, L. 18 of Bl. 25, Plan 1282, L. 10, Bl. 26, Plan 1282, L. C of Bl. 26, Plan 10832, L. 19, 20, 21 of Bl 27, Plan 1282, L. 26, 27 of Bl. 33, Plan 1282, L. J, Plan 9135, L. 43, Plan 53694, all of D. L. 187, Gp. 1, NWD.
- 1.1.5 The location of the point of discharge is within D. L. 187, Gp. 1, NWD, to Crown Land covered by the waters of Burrard Inlet.
- 1.2 This subsection applies to the discharge of effluent from the petroleum refinery designated as Area 2 as shown on the attached Site Plan A. The site reference number for this discharge is E208566.
- 1.2.1 The effluent includes groundwater, water collected from under containment liners and groundwater collected during construction activities. The characteristics of the discharge to Burrard Inlet shall not exceed:
- | | |
|------|-----------|
| MTBE | 1.8 mg/L. |
|------|-----------|
- 1.2.2 The authorised works are a carbon filtration water treatment pilot plant system, final settling basin and related appurtenances approximately located as shown on attached Site Plan A.
- 1.2.3 The authorised works must be complete and in operation when discharge commences.
- 1.2.4 The location of the facilities from which the discharge originates is L. 67 of D. L. 188, Gp. 1, NWD., Pl. 28468, Plan 14518, D.L. 189, Gp. 1, NWD., Plan 13496, D.L. 188, D. L. 189, Gp. 1, NWD., except Plan 13238, Ref. Plan 13504, part on filing A37751 & Plan 49497.
- 1.2.5 The location of the point of discharge is within D. L. 189, Gp. 1, NWD.

2. **GENERAL REQUIREMENTS**

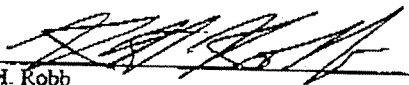
2.1 **Maintenance of Works**

The permittee shall inspect the authorised works regularly and maintain them in good working order. Notify the Regional Waste Manager of any malfunction of these works.

2.2 **Process Modifications**

The Regional Waste Manager shall be notified prior to implementing changes to any process that may adversely affect the quality and/or quantity of the discharge.

Date Issued: FEB 27 2002
Date Amended:
(most recent)
Page: 2 of 5


R.H. Robb
Assistant Regional Waste Manager

APPROVAL: AE-17046

2.3 Emergency Procedures

In the event of an emergency which prevents compliance with a requirement of this approval, that requirement shall be suspended for such time as the emergency continues or until otherwise directed by the Regional Waste Manager provided that:

- (a) Due diligence was exercised in relation to the process, operation or event which caused the emergency and that the emergency occurred notwithstanding this exercise of due diligence;
- (b) The manager is immediately notified of the emergency; and
- (c) It can be demonstrated that every thing possible is being done to restore compliance in the shortest possible time.

Notwithstanding (a), (b) and (c) above, the manager may require the operation to be suspended or production levels to be reduced to protect the environment while the situation is corrected.

2.4 Bypasses

The discharge of groundwater extracted from the underdrain of the West Impounding Basin in Area 1, the underdrain of the West Impounding Basin in Area 2 or the groundwater extraction system in the vicinity of the West Impounding Basin in Area 2 which has bypassed the designated groundwater treatment works is prohibited unless the approval of the Regional Waste Manager is obtained and confirmed in writing. It is not considered a bypass if untreated water meets concentrations for discharge outlined in Subsection 2.6

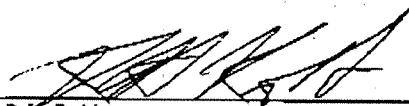
2.5 Notification

The Regional Waste Manager shall be notified of a change in ownership of the works authorized in Section 1.1 or 1.2 within 10 days of an ownership change.

2.6 Carbon Filtration System Discharge

If at any time the MTBE concentration from a carbon filtration treatment system exceeds 4.4 mg/L, the discharge from that treatment system will be suspended or rerouted so that the effluent from this treatment system does not discharge to a final settling basin. The combined carbon filtration treatment systems discharges will be limited to a total MTBE mass of 36.5 kg per calander month.

Date Issued: FEB 27 2002
Date Amended:
(most recent)
Page: 3 of 5


R.H. Robb
Assistant Regional Waste Manager

APPROVAL: AE-17046

2.7 Disposal of Spent Carbon

Spent carbon from the pilot plants shall be disposed of to a site and in a manner acceptable by the Regional Waste Manager.

2.8 Environmental Report

The approval holder shall submit a report prepared by qualified professionals on the environmental fate and impact of Chevron's MTBE discharges to Burrard Inlet. The terms of reference, acceptable to the Regional Waste Manager, for the report shall be submitted by August 15, 2002.

3. MONITORING AND REPORTING REQUIREMENTS

3.1.1 Flow Measurement

Provide and maintain a suitable flow measuring device at each of the discharges of the two treatment plants and record once per day the effluent volume discharged over a 24-hour period.

3.1.2 Grab Sampling

Suitable sampling facilities shall be installed and a grab sample of the effluent discharged from the treatment plants shall be obtained once each week. The samples shall be analyzed for MTBE (methyl tertiary-butyl ether) and BETX (benzene, ethylbenzene, toluene and xylene).

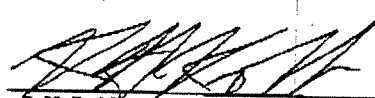
Suitable sampling facilities shall be installed and a grab sample of the effluent discharged to Burrard Inlet (Area 1, outlet of the Foreshore Basin, site reference number E101251 and Area 2, outlet of the West Impounding Basin, site reference number E208566) shall be obtained once each week. The samples shall be analyzed for MTBE, and the total loading in kg/day shall be calculated.

Proper care should be taken in sampling, storing and transporting the samples to adequately control temperature and avoid contamination, breakage, etc.

3.1.3 Chemical Analysis

Analyses are to be carried out in accordance with procedures described in the "British Columbia Environmental Laboratory Manual for the Analysis of Water, Wastewater, Sediment and Biological Materials (March 1994 Permute Edition)", or by suitable alternative procedures as authorized by the Regional Waste Manager.

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R.H. Robb
Assistant Regional Waste Manager

APPROVAL: AE-17046

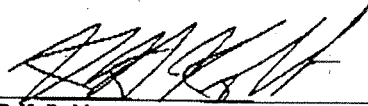
A copy of the above manual may be purchased from the Queen's Printer Publications Centre, P. O. Box 9452, Stn. Prove. Gov't. Victoria, British Columbia, V8W 9V7 (1-800-663-6105 or (250) 387-6409), and are also available for inspection at all Pollution Prevention offices.

4. Reporting

Maintain data of analyses, flow measurements, loading calculations from the treatment plants, and total loadings to Burrard Inlet for inspection and submit the data, suitably tabulated including a status report covering progress, test results, compliance assessment and recommendations to the Regional Waste Manager for the previous quarter. The first reporting period shall end March 31, 2002. All reports shall be received by the manager within 31 days of the end of the reporting period.

Date Issued:
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(most recent)
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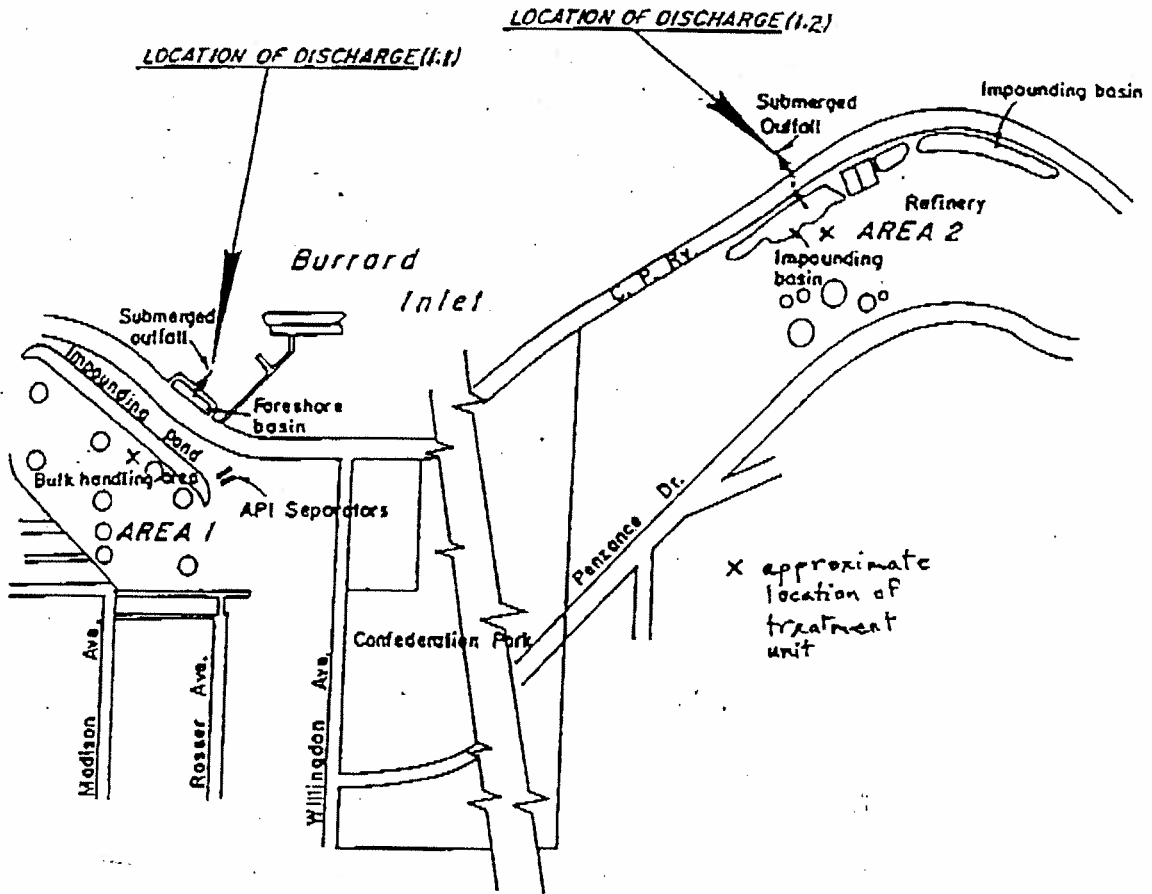
FEB 27 2002



R.H. Robb
Assistant Regional Waste Manager

APPROVAL: AE-17046

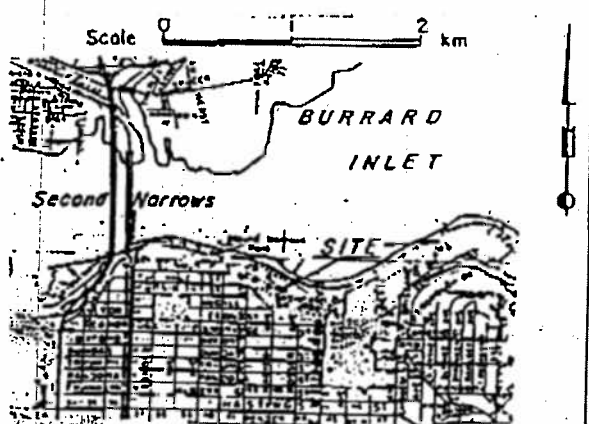
SITE PLAN



Legal Description: Area 1; L. C & D, Bl. 22, Pl. 9135, L. 18 of Bl. 25, Plan 1282, L. 10, Bl. 26, Plan 1282, L. C of Bl. 26, Plan 10832, L. 19, 20, 21 of Bl. 27, Plan 1282, L. 26, 27 of Bl. 33, Plan 1282, L. J, Plan 9135, L. 43, Plan 53694, all of D.L. 187, Gp. 1, NWD.

Area 2; L. 67 of D.L. 188, Gp. 1, NWD., Pl. 28468., Plan 14518, D.L. 189, Gp. 1, NWD., Plan 13496, D.L. 188, D.L. 189, Gp. 1, NWD., except Plan 13238, Ref. Plan 13504, part on filing A37751 & Plan 49497.

Location Map



Scale: 1:10,000

Site Plan: A

AE-17046

date issued: FEB 27 2002

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