

TO: CITY MANAGER

FROM: DIRECTOR PLANNING & BUILDING

SUBJECT: Area 1 Facilities Plan
Blending and Shipping Area
Chevron Canada Ltd
Phase I Application
Preliminary Plan Approval #99-37

1999 April 06

PURPOSE: To provide Council with information on an application for Chevron's Area I Facilities Plan and in particular the Phase I details.

RECOMMENDATIONS:

1. **THAT** a copy of this report be sent to Mr. G. J. McRae, Operations Planner, Chevron Canada Limited, 355 North Willingdon Avenue, Burnaby, B.C. V5C 1X4

R E P O R T

This department is in receipt of an application for Preliminary Plan Approval for the first phase of Chevron's Burnaby Refinery Area 1 Facilities Plan. Area 1 is the Blending and Shipping Area and includes property owned by Chevron Canada Limited primarily within DL 187 (see attached Sketch #1).

The plan outlines a multi-year program in which Chevron wishes to achieve both operational and environmental improvements in the Blending and Shipping Area. The key components of the overall plan are:

- Vapour recovery for marine loading
- Tank upgrade and replacement
- Spill prevention and containment
- Asphalt loading rack and scale
- Improved road access to the western part of Area 1.

Chevron is requesting approval of the complete multi-year plan outlined in this report. This request is in order to plan a manner in which to conduct changes to the facility over an anticipated period of 5 - 10 years. The first phase, for which Preliminary Plan Approval application has been made

CITY MANAGER

RE: Area 1 Facilities Plan, Blending & Shipping Area
Chevron Canada Ltd./ Phase I Appl'n (PPA#99-37)
1999 April 06.....Page 2

consists of the Marine Vapour Recovery Unit and the first of the new tanks to be located in the area currently occupied by the lube tanks(see attached Sketches #2 and #3).

1.0 BACKGROUND

On August 25, 1995 this Department reported to Council on an application for Preliminary Plan Approval (PPA) #11332 which was made by Chevron. This application was for replacement tankage, asphalt loading rack, truck scale and included LPG bullet relocation and a new fire water storage tank. Council will note that the report was tabled and adopted. Chevron was requested to delay implementation of the PPA while staff were directed to respond to questions which arose from the report. Further reports followed which responded to questions with respect to the Chevron buffer area etc. Subsequently, two aspects of the PPA application (which was put on hold) were pulled from the application and approved under separate PPA. These were for the LPG bullet relocation and the fire water storage tank.

The remainder of PPA #11332 is cancelled and is now replaced with the current application PPA #99-37. This report will present Council with Chevron's request to acknowledge the Area 1 Facilities Plan as a package but the actual PPA will be specific to the Marine Vapour Recovery Unit and the first of the new tanks proposed in the Area 1 Facilities Plan. Chevron has indicated that it is important to them, in terms of planning their future capital expenditures program to obtain an "approval in principle" to the full proposal, with the understanding that each additional work section of the Area 1 Facilities Plan will require a separate PPA application and approval.

1.1 Area 1 Facilities Plan

The Area 1 Facilities Plan builds upon and is intended to further the environmental and operational initiatives that have been implemented and reported to Council since 1990. These include items such as the new wharf (reported to Council 1994 March 04), relocation of New Lube Products to a warehouse in Lake City and the LPG bullets relocation. In addition, other improvements have been made in recent years such as the introduction of vapour recovery at the tank truck loading rack, in-line blenders for gasoline and diesel, tankage upgrades (seals, double floors) and new pipelines connecting Area 1 with the refinery. In their PPA submission Chevron points out that the benefits from these investments area:

- Lower emissions of volatile organic compounds (VOC's)
- Improved spill prevention

CITY MANAGER

RE: Area 1 Facilities Plan, Blending & Shipping Area
Chevron Canada Ltd./ Phase I Appl'n (PPA#99-37)
1999 April 06.....Page 3

- Reduced traffic - relocation of warehouse to Lake City
- Reduced odours
- Safety - new wharf replaced wooden wharf
- Operational efficiency and incident reduction.

As stated earlier, in August 1995 the PPA application for the "Replacement Tankage, Asphalt Loading Rack and Truck Scale "(PPA #11332) was delayed pending resolution of a number of issues raised by Council and residents. A community advisory panel (CAP) was formed and began to meet since October 1996. Chevron presented the Area 1 Facilities Plan to this group in November 1997. The conceptual Area 1 Plan was also presented to Mayor Drummond and various City Department staff in October 1997 as well as the G.V.R.D. personnel at the same time. An application has been made to the GVRD to amend the Area 1 Air Permit. Approval is anticipated in 1999. Chevron informs the City that mail-outs of the Neighbourhood News have included information on this plan. As well, Chevron has held two public information sessions in November and December 1998. Feedback was "generally supportive of the Marine Vapour Recovery and other steps in the plan that reduce emissions and odours, but some questioned the addition of tank capacity". Chevron's response was that "additional tank capacity will provide operational improvements to Chevron, allow for improved tank design and maintenance and contribute to reduced emissions and odours. With respect to refinery capacity, no changes are planned at this time, although operational improvements will continue to provide opportunities for increased throughput. Any plan to add to refinery capacity would be the subject of a separate permitting process."

The Plan has evolved since the 1994 PPA application and now encompasses a long-term plan for the whole of Area 1. Chevron sees the overall benefits of the multi-year plan to include:

- Reduced emissions of V.O.C.'s
- Reduced odours
- Improved spill prevention and containment
- Increased operational efficiency
- Reduced risk of operational incidents.

COMPONENTS OF AREA 1 PLAN

Vapour Recovery Unit for Marine Loading

When products are loaded onto a marine vessel it displaces the air in the cargo compartment, as well as any hydrocarbon molecules that evaporate into the air space. These emissions contribute to contaminants in the atmosphere upon discharge from the vessel. The proposed

CITY MANAGER

RE: Area 1 Facilities Plan, Blending & Shipping Area
Chevron Canada Ltd./ Phase I Appl'n (PPA#99-37)
1999 April 06.....Page 4

vapour recovery system will send this mixture back to an onshore unit where the hydrocarbon can be recovered. This process will eliminate almost 98% of the emissions at the wharf once all marine vessels that load at the Chevron wharf are made compatible. Currently 40% of shipments are on Chevron vessels which are equipped to utilize the VRU. All other carriers have been advised that the VRU is being built and have been encouraged to make their equipment compatible. Construction of the VRU is expected to be complete by the end of 1999 pending approval of PPA #99-37 by April 1999. However it is important to note that in the event that the PPA approval is delayed, the VRU completion date will be August 2000. Chevron calculates that by the time all elements of the Area 1 Facilities Plan are operational and all vessels using the wharf are converted, total Area 1 emissions will have been reduced by more than 80% as shown in the submitted Sketch #4 attached. The reduction indicated on the chart from 1999 to 2000 corresponds to the anticipated immediate reduction in emissions from marine loadings upon commencement of operation of the Marine Loading VRU.

Tank Upgrade and Replacement

Area 1 is the site of the original Standard Oil refinery that was built in 1935. Many of the existing tanks are of that vintage. This plan will remove 127 of the existing tanks and will build 11 new tanks for product storage (see Sketches #2 and #3). The eight new tanks for gasoline storage will be built with floating roofs and double seals. Chevron indicates that the total of the VOC emissions from the new tanks will be lower than the emissions from the 14 gasoline tanks they replace. Further emissions reduction would be achieved by the addition of secondary seals to gasoline tanks that will be retained. All new tanks will be constructed to current spill containment and seismic standards.

The total new tank capacity of 265,000 cu. m. in Area 1 will be 16% greater than exists today. Chevron indicates that this increases the capability of taking tanks out of service for routine inspection and maintenance and allows for improved operability with fewer blends and transfers from one tank to another. This dismantlement of tanks would begin in 1999 and the tank replacement program would be implemented between the years 2000-2007.

The following items form a part of the Area 1 Facilities Plan but are not a part of the current PPA application and are part of a long-term, on-going process.

Spill Prevention and Containment

The long-term plan for Area 1 tankage includes the design of spill containment facilities. These include improved area drainage, upgraded dikes and an upgraded containment pond.

CITY MANAGER

*RE: Area 1 Facilities Plan, Blending & Shipping Area
Chevron Canada Ltd./ Phase 1 Appl'n (PPA#99-37)
1999 April 06.....Page 5*

To help prevent spills, new tanks will be built with double floors. Secondary floors will be provided for existing tanks when they are out of service for maintenance. Systems and equipment will be installed for automatic tank gauging. The automated equipment will require a new building to house the electronics which will be located in the Utilities Area near the new Marine VRU.

Asphalt Loading Rack

The fourth element of the Facilities Plan is the relocation of the Asphalt Loading Rack. The operation now produces only one grade of asphalt, for paving use. This requires no blending, oxidizing or any other process. The current loading rack is located in the area where Chevron plans to build the VRU. Although Chevron has not decided where they will locate the Loading Rack one option is at the existing products loading rack. The plan includes building a new weight scale for the trucks at the rack in order to improve loading efficiency. With the rack and scale located together it should assist in reducing traffic in the area. Trucks presently weigh in, proceed down to the rack, and then return to the scale to weigh out. The new rack/scale will eliminate one of the two trips through the gate at Rosser Avenue. Chevron indicates any potentially odorous vapours displaced from the trucks at the new rack will be removed from the rack area and treated.

Perimeter Road

The last element of the plan is the perimeter road, inside the fence line providing additional internal access to the western end of the tank farm. Currently, most refinery traffic uses public roads to get to the west gates, for quick access to that area.

When all tanks designated for removal are gone, there will only be two tanks remaining near the fence line. These tanks would be moved away from the fence to allow construction of an inside-the-fence roadway that could accommodate emergency and refinery vehicles (see Sketch #3).

In addition to the improved access, the removal and relocation of the tanks will assist in improving views for the neighbourhood, as the new and relocated tanks will be at a lower elevation.

Miscellaneous

With the construction of new tanks in the Pan Tank area, the existing fire hall will be too close to the tanks. A new structure will be built in Area 1 for storage of fire protection equipment.

CITY MANAGER

RE: Area 1 Facilities Plan, Blending & Shipping Area
Chevron Canada Ltd./ Phase 1 Appl'n (PPA#99-37)
1999 April 06.....Page 6

2.0 OUTSTANDING QUESTIONS

At the regular Council Meeting held on 1995 September 18, Council reconsidered their decision of 1995 September 11 pertaining to Preliminary Plan Approval #11332. Arising from Council's further consideration of the PPA Council adopted a motion that staff report back with respect to 5 questions outlined at that time. Although PPA #11332 has been cancelled and in essence replaced with a new proposal, it is necessary to review the questions in context of this new proposal and application.

MOTION:

- "1. THAT staff investigate the types of product that will be held in the new eleven tanks."**

This plan will remove 127 of the existing tanks (see Sketches #2 and #3) and will build 11 new tanks for product storage. Eight of the new tanks will be for gasoline storage, two will be for distillate and the remaining one for gas oil/fuel oil. (see attached Sketch #5).

- "2. Whether or not there are associated vapour recovery systems in conjunction with the new tanks".....and...**
- "3. Given the type of product that would or could be stored in the tanks, would it be more appropriate to include domed roofs"?**

Chevron responded specifically to this question from BRACE as reported in City Manager's report to Council 1996 June 05 question 3.14. The statement then was that floating roof designs, including primary and secondary roof seals, are the most effective means of minimizing hydrocarbon emissions. At that time staff commented that the design satisfied the guidelines established by the Canadian Council of Ministers of the Environment (CCME). These guidelines are also being used by the GVRD and the product storage that Chevron is proposing does not require domed roofs.

Chevron submits that the addition of domes does not improve the performance of the floating roof and its seals, except that it does eliminate wind effects. However, it is noted that these effects are measurable only if wind velocities exceed 10 km/h. Wind speeds in North Burnaby average 3 - 5 km/h, so the addition of domes to floating roof tanks would not normally be effective at reducing odours, as odours are not usually a problem in windy conditions.

Chevron does have three tanks with domes in the Burnaby Refinery today. Two of these tanks contain MTBE, which must be kept dry. Domes are an effective way of preventing

CITY MANAGER

RE: Area 1 Facilities Plan, Blending & Shipping Area
Chevron Canada Ltd./ Phase I Appl'n (PPA#99-37)
1999 April 06.....Page 7

rain water from bypassing the seals and contaminating the product. The third dome was installed in 1998 on a tank containing a high vapour pressure gasoline blend stock, which is a potential source of odours. This tank was a rivetted tank under which conditions a seal is has less contact with the surface area and a double seal along with a dome installation combined has the same effect as a double seal. Chevron indicates they are monitoring the impact of the dome on odours from this tank.

In summary, Chevron does not believe that domes would provide a significant reduction in odours for most products stored in Area 1.

"4. Will there be notification coming from Chevron if there is ever a change in product to be stored in these tanks."?

As mentioned earlier in this report, the eleven new tanks will be used to store the products shown in Sketch #5. In a memorandum dated 1999 April 06 Chevron notes that three of these tanks are not designated for storing products that generate VOC emissions (gasoline or gasoline components) If a change of service would result in VOC emissions from a tank that was not previously permitted, Chevron would be required to request an amendment to the Area 1 air permit from the GVRD. If this occurred, Chevron has committed to notifying Burnaby Environmental Services by copy of the GVRD permit amendment.

"5. Will there be a need for a vapour recovery program in the asphalt loading rack"?

Chevron indicates that there will be vapour scrubbing equipment which will be used to vent vapours through a charcoal filter."

3.0 DEPARTMENT COMMENTS AND REVIEW

As noted earlier in this report, various Departmental staff from the City as well as representatives of the G.V.R.D. were invited to attend an information session with respect to the Area 1 Facilities plan in October 1997. Subsequently, upon application of Preliminary Plan Approval, the submission was given full circulation to the pertinent Departments. These included Fire Prevention Office, Environmental Services, Engineering and the Building Department. Full approval has been given from the various Departments. The approvals acknowledge the Area 1 Facilities Plan but will comment on more detail with each additional application for Preliminary Plan Approval as the full plan proceeds. It is also anticipated that the GVRD amendment permit will be issued by the end of April.

CITY MANAGER

RE: Area 1 Facilities Plan, Blending & Shipping Area
Chevron Canada Ltd./ Phase I Appl'n (PPA#99-37)
1999 April 06.....Page 8

4.0 IMPLEMENTATION - AREA 1 FACILITIES PLAN AND PRELIMINARY PLAN APPROVAL #99-37

As outlined in this report, the Area 1 Facilities Plan outlines a number of various components which Chevron hopes to achieve in the following 5 - 10 years. The City has received application for Preliminary Plan approval for two of the components to date. Unless otherwise indicated by Council, the Planning and Building Department will treat this as an indication of Council's support of the Plan in principle and staff will pursue the approval and release of PPA #99-37 subject to all normal Bylaw requirements and Departmental responses.



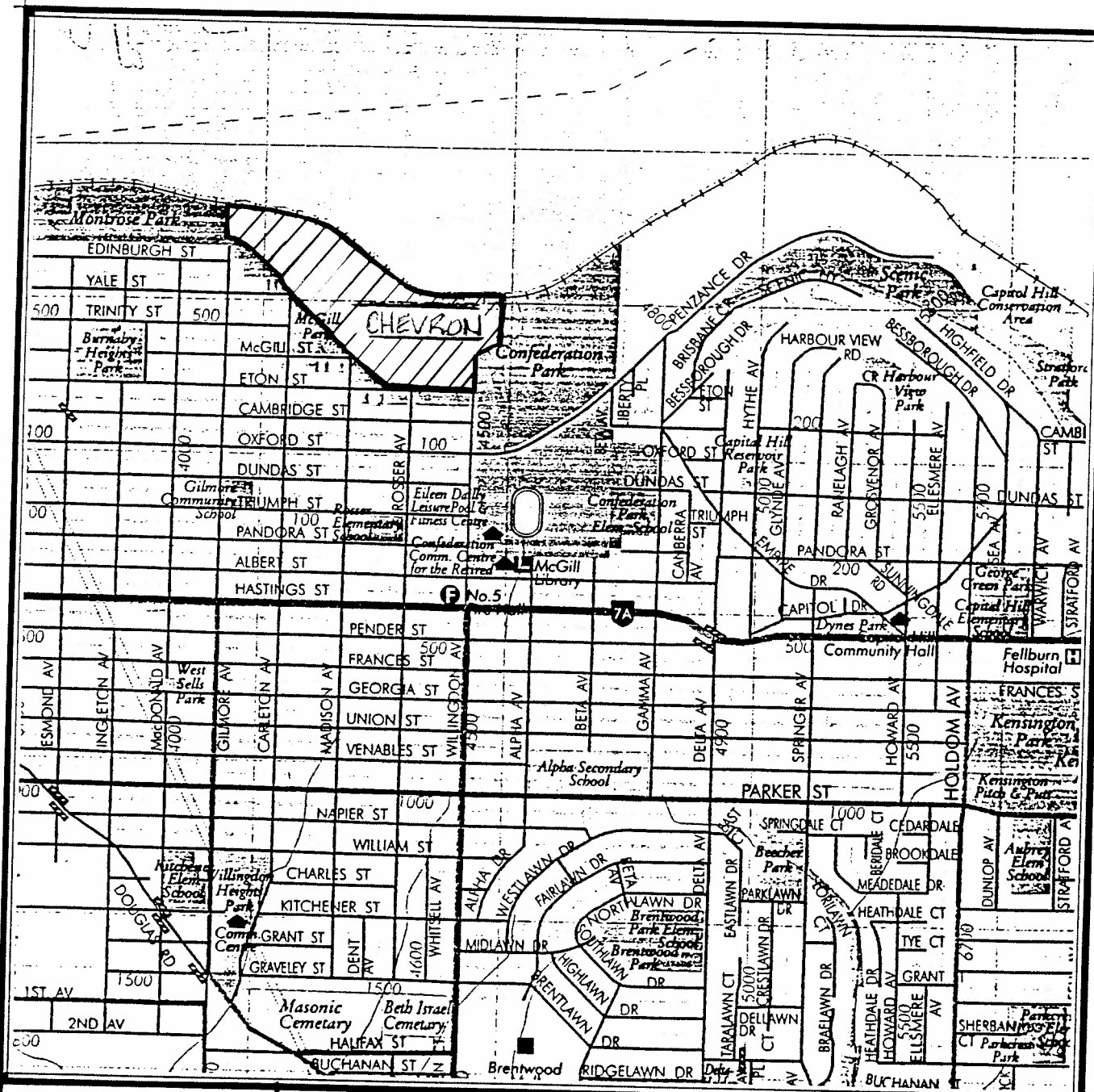
D. G. Stenson
Director Planning and Building

PJA/ds

Attach.

cc: Director Engineering (Dipak Dattani, Manager Environmental Services)
Chief Fire Prevention Officer
Chief Building Inspector

a:\PPA+forms\chevron.rpt



Date:
99 APRIL 7

Scale:
N.T.S.

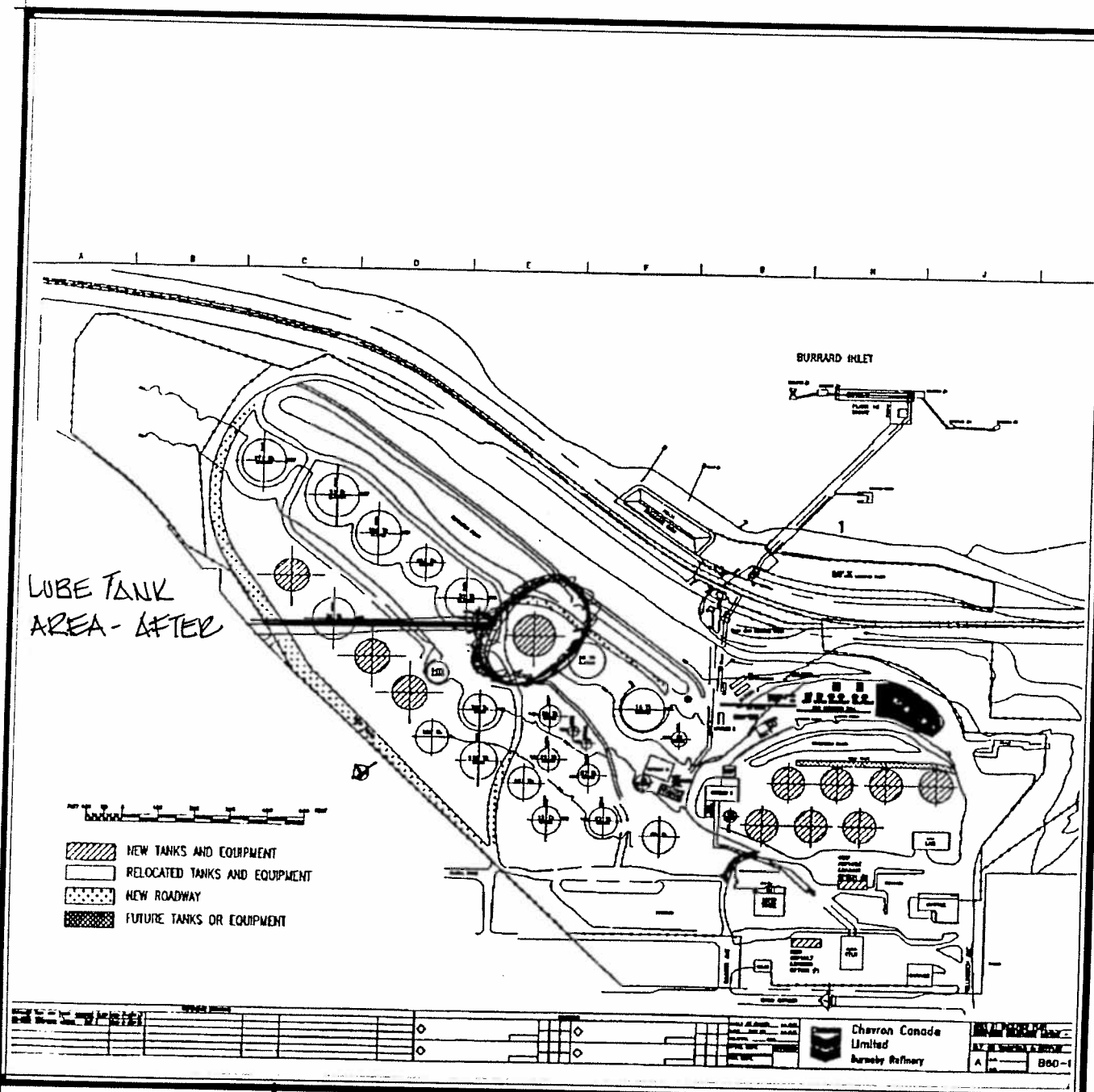
Drawn By:
PJA



City of
Burnaby
Planning & Building Dept.

SKETCH # 1.


LOCATION MAP



Date: 99 APRIL 7

Scale: N.T.S.

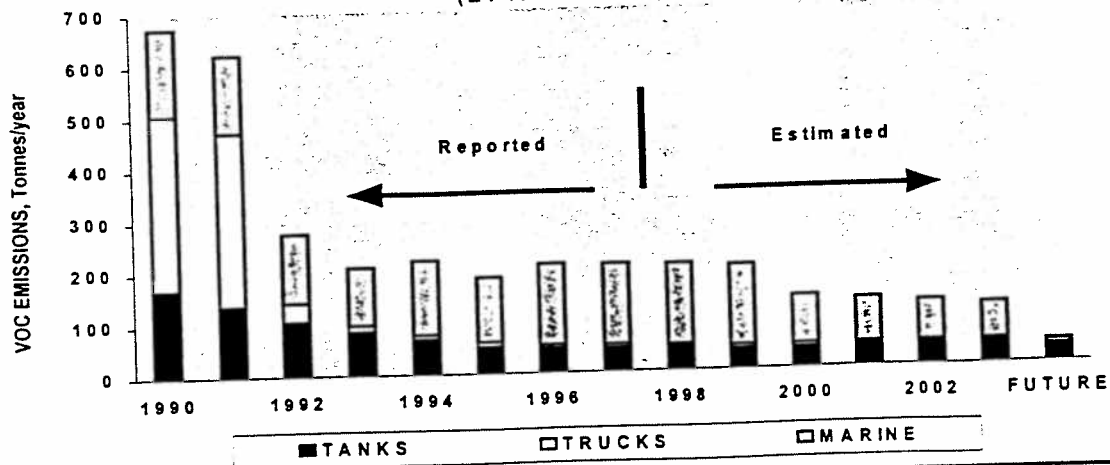
Drawn By: BA

 City of Burnaby
 Planning & Building Dept.

SKETCH #3

AREA 1 FACILITIES PLAN

CHEVRON AREA 1
CALCULATED EMISSIONS
(EPA Method)



Date:
99 APRIL 7

Scale:
N.T.S.

Drawn By:
PJA



City of
Burnaby
Planning & Building Dept.

SKETCH #4

EMISSIONS CHART

New Tanks			New Capacity	Planned
<u>Size, m³</u>	<u>Number</u>	<u>Location</u>	<u>m³</u>	<u>Service</u>
7950	7	Pan Tank Area	55650	Gasoline
7950	1	SW Fence Line	7950	Swing (Gasoline / Distillate)
7950	2	SW Fence Line	15900	Distillate
12700	<u>1</u>	Lube Tank Area	<u>12700</u>	Gas Oil / Fuel Oil
	11		92200	

m³ = cubic meters

Date:

99 APRIL 7

Scale:

N.T.S.

Drawn By:

RJA



City of
Burnaby

Planning & Building Dept.

SKETCH # 5

NEW TANK - PRODUCT STORAGE CHART

