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Subject:	FW: Trans Mountain Sumas Tank 121 Air Monitoring Bi-weekly Status Update

Hi all,

Please find below, the bi-weekly status update number nineteen - it was sent to me this morning. Also attached, is the odor management plan for your perusal.

As always, please send me your comments, if any.

Thanks very much and enjoy the rest of your day!

Dan

From: Sartore, Megan [mailto:Megan Sartore@kindermorgan.com]
Sent: Thursday, December 13, 2012 12:08 PM
To: Darryl Pederson
Cc: Dan Barghshoon; Droppo, Mike; Fleming, Edna; Galleithner, Barbara (Contractor); Forrester, Peter
Subject: Trans Mountain Sumas Tank 121 Air Monitoring Bi-weekly Status Update
Attach: \\Complex\S40073\EP\Share1\Other\Kinder Morgan Sumas Tank Farm\Odour Management Plan - FINAL.PDF

Hi Darryl

Dan informed me that you are taking over remediation files at the NEB. I have forwarded this update to you in light of your new responsibilities. I realize now that we owed the NEB an update last week, but for whatever reason this slipped from my calendar. My apologies for the delay. I'm copying Dan on this as well in light of your recent transition into this role.

Here is the update for December 13 related to the following activities:

- (1) The investigation to install a real-time air monitoring system in the community of Auguston;
- (2) The development of an incident response protocol for ambient air monitoring and sampling and
- (3) Review and enhancement of Trans Mountain's operational odor response and investigation procedure.

Progress:

(1) The air monitoring system is now installed at a temporary location at Sumas Tank Farm and is fully functional. Ongoing rainy conditions have prevented the installation of the system at the permanent location, which requires excavation of currently very muddy earth. The installation of the system at the temporary v. permanent location does not impact the ability of the equipment to monitor air quality in the area.

Trans Mountain has completed its ongoing investigation of best available/practicable technology for controlling fugitive emissions. The report is in the process of being finalized, and will be available to the NEB and stakeholders in January.

- (2) SLR's report entitled 'Development of Air Monitoring Plan for Unplanned Release of Product, Air monitoring Plan-Acute Public Health Risk Related to the Inhalation Pathway' has been reviewed by Trans Mountain and SLR is incorporating Trans Mountain's feedback into the final report. The final report should be available to the NEB and stakeholders in January.
- (3) Envirochem Services' report entitled 'Trans Mountain's Odour Complaint and Investigation Process' has been finalized. The final report is attached to this email. Trans Mountain is in the process of reviewing the report's recommendations and implementing them into its air emissions standard and associated procedures. The NEB is welcome to share this report with stakeholders.

Please contact me have you any questions.

Megan Sartore Regulatory Compliance Lead Kinder Morgan Canada Inc. Phone (403) 514-6614 Fax (403) 514-6622 <u>megan sartore@kindermorgan.com</u>

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ODOUR MANAGEMENT PLAN

Prepared for:

Ms. Tracy Longpre



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December 6, 2012

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1.0 INTRODUCTION

1.1 BACKGROUND

Kinder Morgan (KM) with 180 terminals and approximately 38,000 miles of pipelines that transport; natural gas, refined petroleum, crude oil, and other products is one of North America's largest energy companies.

The Trans Mountain Pipeline system (TMP) operated by Kinder Morgan Canada (KMC) transports crude oil and refined products from Edmonton Alberta to marketing terminals and refineries in central British Columbia, Greater Vancouver (the Lower Mainland) and the Puget Sound area in Washington state.

As part of their planned upgrade and expansion of the TMPL, KMC is reviewing and updating their Odour Management Plan (OMP). This review is driven not only by the proposed expansion, but also as an outcome of past odour incidents and the on going need to investigate ways that odour management and response can be continuously improved at their facilities. KMC recognizes that the level of ambient odour that is acceptable to their neighbouring communities is constantly being reduced. This reduced tolerance is often most noticeable at those locations where newer residential communities are built close to established long term operating industrial facilities. This reduction in the acceptance of ambient odour is driven by a variety of factors, only a few of which are controllable by the industry.

Typically these include:

- The change of historical industrial areas, that may have had higher incidence and tolerance of industrial odour, into residential communities that may have less tolerance;
- Increased general awareness of environmental issues, and concern about personal and family exposures to chemicals (odours);
- Rising property values and therefore rising expectations of residents to enjoy their property and to reduce tolerance of anything that impacts property values;
- Change overs in the community from long term residents that may have had an ongoing acceptance and / or connection with the existing industry (perhaps as employees or friends) to new neighbours without any such connections; and,
- Increased concern by regulators –often in response to increasing numbers of odour complaints. Regulatory management of existing sources in BC is in a large extent driven by complaints.



For these reasons, along with commitments to corporate social responsibility, pollution prevention; and, continual improvement, it is important for KMC to have management plans or strategies that both minimize odour generation as well as ensuring effective response to any incidents.

1.2 REGULATORY CONTEXT

Odour regulation depends on the location and can be regulated by a variety of different types of legislations including Environmental; Natural Resource, and Health acts and regulations, as well as local odour and nuisance bylaws. Unlike regulations for other air contaminants such as sulphur dioxide, and legislation for odours is often either non existent or varies across Canada and the world.

In Canada, there are no specific Federal regulations with respect to odours, as the provinces generally have the responsibility to regulate (permit) air emissions. However, the National Energy Board (NEB) has an expectation that companies under their jurisdiction operate in manner that is not detrimental to neighbours or affected stakeholders.

An overview of the approaches to odour regulation in Canada is presented in **Table 1**¹. Here it can be seen that some regulations relate to the "odour strength" measured as odour units (OU or OU/m³) and some to the specific odour causing chemicals or odourants such as hydrogen sulphide (H_2S) or ammonia, while some have no specific odour regulations. In general even though some jurisdictions may have no specific regulations, the presence of offsite odour usually falls within the legal definition of "pollution" and thus can be regulated by existing environmental regulations.

Jurisdiction	Standard or Criteria
Alberta	No odour Standards: off-site odour is prohibited as a contaminant by both Alberta Environment and ERCB Directive 19. Alberta Ambient Air Quality Objectives: H ₂ S: 10ppb (1 hr) –3ppb (24 hr).
British Columbia and	No current provincial odour standards Provincial Air Quality Objective "Level A" recommends Total Reduced Sulphur (TRS which includes H_2S) compounds at 7 µg/m ³ (1 hr Ave.) or 3 µg/m ³ (24 hr Average).
Metro Vancouver	Proposed Metro Vancouver Odour Bylaw includes 1 OU predicted (modelled) at any receptor plus fees per receptor impacted.
Saskatchewan, NS	No Standards Odour may be a contaminant.
Manitoba	2 OU measured at residential receptors. 7 OU measured at industrial receptors.

Table 1: Summary of Odour Standards in Canadian Provinces

¹ From: Bokowa, A. H. (2010). Review of Odour Legislation, <u>http://www.aidic.it/cet/10/23/006.pdf</u>



Jurisdiction	Standard or Criteria
Ontario	1 OU predicted any receptor or sensitive receptor.
New Brunswick, NL, NWT, PEI	No Standards off-site odour is prohibited as a contaminant.
NB, NL	For H_2S 15 µg/m ³ (1 hr Average) or 5 µg/m ³ (24 hr Average).
NL	For ammonia 100 μg/m ³ (1 hr Average).

In British Columbia, Metro Vancouver, a regional agency, is responsible for management of air emissions in the Greater Vancouver Regional District. The GVRD includes Vancouver and Burnaby, but not Sumas.

2.0 PURPOSE AND SCOPE

Note: This document is a comprehensive odour management plan (OMP) for the management and minimization of odour and for responding to potential odour complaints at KMC facilities. Although this document provides the basis for and includes incident response management, <u>it is</u> <u>not intended to be an incident or first response document</u>. **Emergency and first responders are** *directed to KMC's <u>Air Monitoring Plan for Unplanned Petroleum Releases.</u>*

Petroleum hydrocarbon releases in 2007 and 2009 at the Burnaby Terminal which resulted in a number of odour complaints from the community, highlighted the sensitive nature of the KMC sites which border residential properties. The January 2012 release of crude oil at the Sumas facility (into the containment area) also generated a number of complaints and confirmed the need for a comprehensive and proactive OMP.

Most odour complaints originated from residential communities in Burnaby and Abbotsford due to their close proximity to KMC operations. The revised OMP primarily focuses on these areas, but the plan will be implemented for all Canadian operations and can be altered as necessary.

KMC retained Envirochem Services Inc. (Envirochem) to review and provide recommendations on the following aspects of their current OMP.

- 1) Review current Odour Complaint Report and provide recommendations on content, responsibilities, and ease of use.
- 2) Review current Internal Notification Procedure and provide recommendations on:
 - a) initial response procedure once a complaint is received (who is notified and when);
 - b) sampling procedures (how to sample, how long to sample, how many samples); and,
 - c) Post sampling response procedures for various odour conditions (how to respond to sampling results).
- Research the air constituents that could be released, based on the chemical and physical characteristics of KMC products and provide recommendations on the odourants and contaminants that should be sampled during onsite odour complaint investigations;



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- 4) Research air contaminant criteria and provide recommended numerical action levels and their associated operational responses. Align with task No. 2.0.
- 5) Research hand held equipment for field sampling and provide recommendations.
- 6) Review historic data on total sulphur analyses and odour intensities of KMC's products; create comparison tables between each, and provide recommendations on which products are the most odorous (info will be used for product allocation in tanks).
- 7) Add a proactive component to odour management. One of the approaches is to research software programs capable of trending and tracking data associated with odour complaints (i.e., meteorological data, air data).

3.0 KINDER MORGAN CANADA'S OPERATIONS

Kinder Morgan Canada transports, stores and handles crude oil and refined petroleum products through a number of pipeline systems and terminal facilities in Canada including the Trans Mountain pipeline (TMP); Express and Platte Pipelines; Puget Sound Pipeline; the Jet Fuel Pipeline; the Westridge marine terminal; the Vancouver Wharves Terminal in British Columbia; and, the North 40 Terminal in Edmonton, Alberta.² Figure 1 shows the BC Lower Mainland Portion of this pipeline.



Figure 1: Kinder Morgan Canada BC Lower Mainland Pipeline System

3.1 TMPL'S WEST COAST FACILITIES AND ODOUR CONTROLS³

The effective control of evaporative losses from product storage tanks is a key environmental and health and safety concern at KM operations. Good control and loss minimization reduces not only the amount of volatile organic compounds (VOC) entering local air sheds, but also reduces both on and off site odour and product loss. The following summarizes the vapour controls currently (November, 2012) KMC's Lower Mainland BC facilities.

3.1.1 Sumas

The Sumas Tank farm, located in Abbotsford, British Columbia shown on Figure 2 contains:

- 6 Petroleum Storage Tanks:
 - $\sqrt{-1}$ Two (2) equipped with internal floating roof vapour controls; and,
 - $\sqrt{}$ Four (4) equipped with external floating roof vapour controls.

The overall volume is 103 000 m³ (650,000 bbl). These facilities route crude oil from the TMPL mainline into Washington State via KMC's Puget Sound pipeline system.

bausan Rd Bausan Rd Bausan Rd Uker Rd

Figure 2: The Sumas Tank Farm Location

3.1.2 Burnaby Terminal

The Burnaby Terminal shown in **Figure 3** with an overall volume of 250 000 m³ (1.6 million bbl), receives both crude oil and refined products for temporary storage and distribution through separate pipelines to local terminals, a refinery, and the Westridge marine terminal.

³ Source: <u>http://www.kindermorgan.com/business/canada/transmountain.cfm</u>



The Burnaby facility has:

- 13 Petroleum Storage Tanks:
 - $\sqrt{}$ Six (6) equipped with internal floating roof vapour controls.
 - Four (4) of these are also equipped with activated carbon vapour absorption.
 - √ Seven (7) equipped with external floating roof vapour controls.

Figure 3: Burnaby Terminal Location

3.1.3 Westridge Marine Terminal

The Westridge Marine Terminal shown in **Figure 4**, located within Port Metro Vancouver has an overall volume of 46 000 m³ (290,000 bbl) and includes:

- Two (2) Petroleum storage tanks both equipped with internal floating roof vapour controls; and,
- A Ship loading dock equipped with vapour recovery.

In addition to loading crude oil barges and ships (up to ~120 000 DWT), it also receives jet fuel, which is delivered to the Vancouver International Airport (YVR) through the Jet Fuel pipeline system.



Figure 4: Westridge Terminal Location

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3.1.4 Pump Stations

There are 24 pump stations along the TMPL route, two of these, the:

- Sumas Pump Station located in Abbotsford; and,
- Port Kells pump station located in Surrey, as shown on Figure 1 are located in the BC Lower Mainland.

Although they do not store significant volumes of hydrocarbon their location and activities are included in this OMP.

3.2 PRODUCTS MANAGED IN THE TMPL PIPELINE AND STORAGE SYSTEM

TMPL transports crude oil, refined and semi refined products in the same line. The products are sent in batches of a specific materials or products for specific customers. Any products that mix at the shoulders of a batch are separated and re refined. Only crude oil and condensates are shipped into the United States. TMPL transports about ninety per cent of the gasoline used in the interior and south coast of British Columbia.

A summary of the products currently transported by the TMPL and their typical properties is presented in **Appendix A**. The individual storage tanks may contain either straight products or blends of several products. Although the product compositions do vary slightly by season, recent analyses (relative and absolute density, gravity, sulphur content, light ends components, BTEX, etc.) confirmed that the characteristics follow the historical seasonal trends with minor variations. If the products change or new products are added that could materially change the environmental (odour) or health and safety risks, then the OMP will be updated accordingly.

KMC is also conducting additional analyses of the various products' physical and chemical properties to establish an odour ranking potential (e.g., which products are the most odourous and therefore require the most stringent control from an odour perspective). Although this work is ongoing, some of the chemical compounds that are included in this study are presented in **Section 4.4** below. The detailed lab analyses and odour ranking information will be available from KMC.



4.0 ODOUR MANAGEMENT

4.1 ODOUR MANAGEMENT PLANNING – ACTIVITIES AND ELEMENTS

This KMC odour management plan is designed to be adaptive in nature. This implies that although this plan is developed and in place, it will always be monitored, evaluated, and improved as needed. If any changes in facilities' operation occur, those will be reflected in the OMP.

A simplified flow diagram of this adaptive odour management plan is presented in Figure 5.



Figure 5: Adaptive OMP

This OMP includes the following elements: *(i)* identifying and prioritizing odorous substances that may be released from petroleum; *(ii)* understanding the pipeline's operations and activities that could result in odour; *(iii)* outlining procedures to minimize odour release; *(iv)* OMP implementation and training; *(v)* proactive and reactive odourant (chemical) monitoring; and, *(vi)* odour complaint response procedures and plan management, review and improvement.



4.2 ACTIVITIES AT KMC THAT COULD GENERATE ODOUR

There are a variety of activities that occur at KMC operations that could lead to the potential generation of off site odour. These activities, which include both routine on going activities as well as no routine events are summarized below.

- Normal or Routine on going operations:
 - $\sqrt{}$ Product receipt into the storage tanks (tank filling).
 - \checkmark Blending (tanks transfers).
 - $\sqrt{}$ Products delivery out of the storage tanks (tank emptying).
- Non routine events (not on going operations):
 - ✓ Tank cleaning.
 - $\sqrt{}$ Tank bottoming.
 - ✓ Hydrovacing.
 - $\sqrt{}$ Equipment or management failure, leading to a spill; and
 - \checkmark Spill clean up activities.

4.3 ODOUR MANAGEMENT/MINIMIZATION ACTIVITIES AT KMC

To determine if there were specific operational activities that were resulting in the release of odour or odourants, historical operational data were reviewed and correlated with odour complaints. Based on this review the most common routine activity associated with odour complaint beyond was product delivery out of the tanks. Also specific events such as product spills –even if contained in the designed containment areas also generated odour complaints.

KMC has undertaken a number of measures to both minimize the potential generation of odour, such as the installation floating roof tank seals and activated carbon absorbers discussed above, as well as community outreach programs to address odour concerns within communities surrounding their facilities. In addition, as discussed in detail below, each odour complaint received is investigated, responded to, appropriate corrective actions applied, and, reported and filed for possible future follow up.

KMC products are sampled to calculate the odour intensities for the various products and blends and to provide information to operating staff that could be used in tank / product allocation and management (see following **Section 4.4**). For example, potentially odourous blends are stored in tanks equipped with the activated carbon absorbers or in tanks furthest from the neighbouring community.

Furthermore, KMC has conducted studies to analyse and present findings on: *(i)* complaints history and connections with meteorological conditions and operations; and *(ii)* modelling of accidental releases from product storage tanks to improve both management and response actions.



4.4 **PRIORITIZED ODOROUS SUBSTANCES (ODOURANTS) AND CRITERIA**

The list of prioritized substances to be monitored during chemical releases (spills) is presented in **Table 2** along with their odour detection thresholds (ODT) and a brief odour descriptor. These nineteen (19) contaminants of potential concern (COPCs) are derived from those identified in KMC's *Air Monitoring Plan for Unplanned Releases*. Although other potential odourants may be present, these chemicals are considered to be the most important ones for sampling during emergencies⁴. Since hydrogen sulphide is known to be present in several of the products transported by KMC, and it has a very low odour detection threshold (ODT), it is proposed that the first responder's field investigation include hydrogen sulphide (H₂S).

In addition to H₂S, total VOCs (volatile organic compounds) measurements will indicate the presence of hydrocarbons in the air. Since specific VOC such as benzene along with mercaptans (expressed as methyl mercaptan) may also be present during odour events options for direct measurement (in addition to total VOC) were also investigated. It is proposed that photo ionization detectors (PID) will used for both VOC and for benzene. If benzene specific PID sensors are not available the then correction factors (CF) to the VOC measurements can be applied. The sampling results can be compared to the following criteria:

- ODT (sometimes referred to as Odour Threshold value, OTV) for hydrogen sulfide (H₂S), methyl mercaptan, and benzene (see Table 2).
- Eight (8) hour AEGL 1⁵ for H₂S, and benzene. Although the actual odour investigations are not anticipated to last 8 hours, the 8 hour AEGL value will be used because it's the most conservative (lowest) criteria.
- Eight (8) hour criteria for AEGL 2⁶ for H₂S (if levels are above AEGL 1).
- If the AEGL 2 criteria is exceeded during an odour complaint investigation, the Air Monitoring Plan for Unplanned Releases would be implemented.

A summary of prioritized compounds and their AEGL 1 and AEGL 2 values are presented in **Appendix B** as noted earlier. The Field Investigation Form used to collect and report this information is shown in **Appendix C**.

⁶ **AEGL 2:** Is the airborne concentration (ppm or mg/m3) of a substance above which it is predicted that the general population, including susceptible individuals, could experience irreversible or other serious, long lasting adverse health effects or an impaired ability to escape.



⁴ For more details please refer to the report Air Monitoring Plan for Unplanned Petroleum Releases

⁵ **AEGL 1**: Acute Guideline Exposure Level is the airborne concentration (ppm or mg/m3) of a substance above which it is predicted that the general population, including susceptible individuals, could experience notable discomfort, irritation, or certain asymptomatic non sensory effects. However, the effects are not disabling and are transient and reversible upon cessation of exposure.

Table 2:	Selected Contamir	nants of Potential Co	oncern (COPC	C)
				ſ

Compound	Formula	Descriptor (if available)	ODT ⁷ ppm
Benzene	C ₆ H ₆	Solvent	0.16 8.65
Toluene	C ₇ H ₈	Floral Pungent Moth Balls	0.16
Ethylbenzene	C ₈ H ₁₀		0.092 2.3
Xylenes [o,m, p isomers]	C ₈ H ₁₀ ,	Aromatic Sweet	0.05 5.4
Naphthalene	C ₁₀ H ₈	Moth Ball	0.0095 0.3
1,3 butadiene	C ₄ H ₆	Mild petrol	0.455
1,2,4 trimethyl benzene	C_9H_{12}		
1,3,5 trimethyl benzene	C ₉ H ₁₂		
Isopropyl benzene (cumene)	C_9H_{12}		0.0051 1.2
N decane	$C_{10}H_{22}$		
N hexane	CH ₃ (CH ₂) ₄ CH		65 – 130
Methylcyclohexane	C ₇ H ₁₄		500
MethanethIol (methyl mercaptan)	CH₄S		0.001
EthanethIol (ethyl mercaptan)	C ₂ H ₆ S		0.0028
Sec butyl mercaptan	C ₄ H ₁₀ S		N/A
Hydrogen sulphide	H ₂ S	Rotten eggs	0.0005
VPHv (or F1, F2 and F3)			
Ethanol	CH ₃ CH ₂ OH	Pleasant, wine	0.52
lsooctane (2,2,4 Trimethylpentane)	C ₈ H ₁₈		N/A

4.4.1 Odour Detection Thresholds

Odour is detected by the human nose, which is difficult to standardize and calibrate, as a consequence odour measurement is not yet an exact science. Thus, the odour detection thresholds shown on **Table 2** vary depending on literature sources and measurement method. Although the ODT may have a range of possible threshold values for each of the various chemicals, they do still provide a good indication of the relative odour potential for comparing the various chemicals or odourants that may be present in the KMC products. For example, hydrogen sulphide with an ODT of 0.0005 ppm (0.5 ppb) is a much stronger odourant (by a factor of 100) than xylene which has an ODT of 0.05 ppm (50 ppb). For this OMP the lowest

⁷ ODT Source: <u>http://www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1256639817998</u> and <u>http://www.doylesdartden.com/e/odor.htm</u>



value is used as the potential threshold for odour complaints as it provides the most conservative approach.

For most chemicals the ODT is typically much lower than the concentration at which health or safety risks may occur (as shown in **Appendix B**). However, as there is no clear correlation between ODT and toxicological (health) affects, it is important to also consider the potential health effects that could be associated with exposure to the various odourants. For this purpose the health exposure criteria for the COPC identified in KMC's *Air Monitoring Plan for Unplanned Petroleum Releases* were compared to the ODTs to develop a relative risk rankings (RRR) for the various COPC. These RRR are also shown in **Appendix B**. Here it can be seen that since the ODT level of benzene is close to its AEGL 1 it has one of the highest RRR of the COPC. A RRR greater than 1 indicates that the AEGL 1 may be exceeded before the chemical's odour is detected.

4.5 ODOUR COMPLAINT RESPONSE PROCESS

4.5.1 Existing Odour Complaint Response Procedures

KMC has established procedures for responding to community odours and complaints. Every odour complaint is forwarded to an operator onsite, investigated by means of a visit to the odour location, and followed up with the complainant (if identified). Records include a form which is emailed or faxed to the Environment Department and other responsible managers once completed.

As part of the update to their OMP, KMC reviewed their existing odour response processes and procedures to identity opportunities for improvement or potential upgrades. These upgrades, summarized in the following sections of this plan, included involving the Control Centre (CC) from the beginning of the process, and to establish a quantitative means of assessing odours, and to improve internal communication of odour complaints.

4.5.2 Review and Upgrading of Odour Complaint Response Procedures

This review resulted in the updated field investigation process, field monitoring steps outlined in Odour Complaint Response & Field Investigation Procedure outlined in **Section 5.0.**

In addition to this process/procedure review options for environmental monitoring and sampling equipment were also reviewed to ensure that appropriate environmental monitoring and sampling equipment is available to the response team. The following section outlines this review of sampling/equipment technologies currently available.



4.6 ODOURANT MONITORING EQUIPMENT SELECTION

The OMP proposes two separate monitoring schemes: continuous fence line fixed monitors at Burnaby Terminal and Sumas Tank Farm, and portable hand held instruments (direct reading) for field sampling during odour events.

In choosing the most appropriate instrumentation for sampling and monitoring of odorous compounds KMC considered the following characteristics:

- Detection limits of instruments and methods are below or as close as possible to ODT of a particular compound and definitely below occupational health and safety criteria;
- Programmable to measure and record a considerable amounts of data;
- Convenient for handling and operation so to provide quick and accurate results appropriate for odour response procedures;
- Short response times (e.g., <30 sec to 90% full scale) and ideally, real time monitoring with the fastest response;
- Data logging capabilities. Results/data should be accessible through a software application delivering data to an office PC or other devices for future interpretation and reporting; and,
- Continuous ambient analyzers for long term sampling and on going monitoring placed at the facility property fence line to identify contaminant levels at site boundaries.

In addition to field (or fixed) monitors, additional air sampling and analysis could be conducted by taking air samples with:

- Sample bags or SUMMA canisters for subsequent offsite laboratory analyses. Such laboratory analyses could be used to provide more detailed chemical speciation or lower detection limits. Although these samples are not part of the OMP, as they require more time for laboratory analyses, they are effective in providing additional insight into the nature of the of emitted compounds that could be emitted from KMC operations.
- Colorimetric chemical absorbent tubes (e.g. Drager or GasTec Detector Tubes) to provide data on the presence and/or concentration of specific chemicals. These tubes can provide valuable supporting information, however due to the presence of potential interferences are not the primary analytical protocols for odour response.

The chosen sampling method should have minimal sample loses (low sample degradation) during sampling, storage, transport. **Table 3** below compares the some of the advantages and disadvantages of bag versus absorption tube sampling.



Drawbacks	Sample bags	Adsorptive sampling				
	Adsorption onto surface.	Incomplete adsorption (breakthrough).				
	Permeation through polymer	Incomplete desorption Reactions				
LUSSES	reactions (photo induced, with	adherent to desorption (high				
	water).	temperature).				
Storage	Variable losses, time lag	High stability over month				
Storage	sampling/measurement <6 hours.					
Complexity	Low.	High (adsorption + desorption).				
Composition	Change compared to original	Change compared to original odourous				
	odourous air.	air.				

Table 3: Advantages and Disadvantages of Sampling Methods8

4.7 FENCE-LINE OR ONSITE AIR MONITORING AT BURNABY AND SUMAS

Based on the historical odour complaints report submitted by KMC and completed by SNC Lavalin in 2012, continuous monitoring is suggested along the northwest borders of the Sumas Tank Farm (**Figure 6** left) and along the northwest borders (**Figure 6** right) on the Burnaby Terminal. Each recommended location is the closest proximity to adjacent residential communities.

Figure 6: Proposed Locations for Continuous Fixed Monitors at Sumas and Burnaby Terminals





Single continuous monitor to be operational in 2012.
 Suggested additional continuous monitors to be operational in future.

All continuous monitoring values along with weather data should be automatically logged into a KMC odour management system / software.



⁸ Source: http://www.aidic.it/cet/10/23/009.pdf

4.8 MOBILE AIR MONITORING

For all odour complaints received, hand held instruments should be used at the odour complaint location (offsite) to sample for the selected compounds outlined in Section 4.4. However:

- exact number of locations to be sampled will depend on a number of hot spots identified (or location of complaints received);
- the duration of sampling will depend on operating and weather conditions as well as a chosen sampling method (sorbent samplers or a hand held instrument);
- sampling frequency will also depend on operating and weather conditions and should be determined on case by case basis. It will be crucial to follow the Odour Complaint Response & Field Investigation Procedure (Figure 7) to determine the need for more samples and/or increased frequency of sampling; and,
- Sampling instructions specific to each instrument, will be accessible to KMC personnel as reference material to support their training.

4.9 CURRENTLY AVAILABLE MONITORING TECHNOLOGY

There are a variety of instruments available on the market for sampling the major compounds of interest to KMC such as hydrogen sulphide, VOCs, and mercaptans as summarized in **Appendix D.**

For the hand held (mobile) instruments, it is recommended that a:

- Jerome 631 X by Arizona Instruments be used for hydrogen sulphide;
- ppbRAE 3000 by RAE Systems be used for total low level VOCs;
- UltraRae 3000 RAE Systems be used for used for benzene (and VOC); and,
- Colorimetric detector tubes (e.g., Draeger or Gastec) be available for quick preliminary screening/characterization of mercaptans.

4.10 WEATHER STATION – METEOROLOGICAL PARAMETERS MONITORING AND RECORDS

Access to good local meteorological information is almost as important as facility operations and activities in understanding and managing community exposure to chemical releases / emissions. The most important parameters are wind speed and direction which will determine the location of possible impacted areas. However, increased ambient temperature is important factor in giving rise to chemicals' vaporization and increased odour potential. Other parameters such as humidity and precipitation, cloud cover, and atmospheric stability are also considered in odour dispersion.



KMC proposes to install automated weather stations at Sumas Tank Farm and Burnaby Terminal with real time logging and displaying at a minimum wind speed and direction. This approach is significant in accurately describing meteorological on site conditions as opposed to data from remote weather stations, which due to impacts of topography, local obstacles, and different land use etc., may not accurately reflect conditions at the KMC site. Furthermore, an on site station would enable a proactive approach in monitoring weather conditions favourable to increased odours in case of emissions, so KMC operations may be more closely monitored or postponed in order to avoid odour incidents.

4.11 PROACTIVE ODOUR MANAGEMENT ACTIVITIES

Proactive odour management activities refer to possible actions and / or technical aids which will help to prevent odour incidents.

4.11.1 Correlating operations with favourable weather meteorological conditions to minimize potential odour nuisance

As previously mentioned, accurate and site specific meteorological data are crucial in determining the locations of potential odour impacts. Ideally industrial facilities, such as KMC operations, are located such that most prevalent wind direction does not carry odours into populated areas. However, as discussed above, with residential development moving into areas neighbouring the facility, this initial good design may be overcome by land use changes. Thus, it is important to identify and understand the meteorological conditions (wind speed, direction, atmospheric stability) that could potentially transport odours to the densest (or closest) residential areas. And, once identified take every effort to correlate odour causing activities or operations with favourable meteorological dispersion conditions.

4.11.2 Environmental Incident Management Software Systems

Effective proactive (and reactive) odour complaint or incident management requires a software solution that both simplifies and improves the management of odour and other incidents. It should facilitate the efficient investigation, monitoring, logging, reporting, following up, and closure of any incident. It should allow the real time monitoring and communication of both the data and the response actions.

Envirochem researched several potential solutions and determined that the Envolv[™] Incident Manager developed by an Envirochem associated company was the best solution for incident management system, including odour, noise, environmental, property damage, equipment damage, and EH&S near misses.



With the Envolv[™], Incident Manager complaints are received, forwarded to appropriate parties, investigated, and reported in near real time. Where follow up action is required, the responsible parties are automatically notified. Active tracking with auto escalation procedures ensures actions are completed in a timely manner.

Current KMC practices include completing an odour complaint report form which contains the events basic location information, which is then faxed or emailed. Using a software approach designed for tracking and management, such as the Envolv[™] application allows event to easily and directly linked to geographical maps which enables easy visualisation of the incident location, potentially impacted surroundings, and land use features –whether a complaint has already been received or foreseen due to an operational incident, visualisation provides more accuracy and direction for actions even from remote management office (Control Centre). Collected data can then be mined for analysis and status of complaint including relevant actions items are continuously tracked and reported and are available to all KMC parties involved at the same time.

The general software flow includes: complaint is received, incident is opened, relevant details are input into form fields and saved. Automatically, an email is sent to member(s) of email distribution list as defined by type of complaint. A pdf copy of incident is included in the email as well as requested actions to be taken (determined by nature of incident).

Next phase of incident investigation is automatically initiated. Subsequently, based on conditions and /or time —follow up emails are automatically generated and sent to appropriate individuals.

At each subsequent stage of incident, auto notifications are emailed to responsible person indicating required action (assumes action has been identified in incident input form).

All relevant documents, fixed monitoring instruments readings and statistics, weather data (wind speed and direction), lab data, web links, reference materials, etc. should be stored in a database for easy retrieval directly from incident input form(s). In addition, chemical monitoring at Sumas and Burnaby terminals and weather data could be constantly fed into the software (not only triggered by a complaint) and with alert levels assigned, provide continuous health & safety protection for KMC's employees and surrounding communities.

Status of incident (complaint) should be continuously monitored and displayed in Envolv[™] dash board until incident is closed and a single mouse click should generate predefine dynamic reports.



5.0 ODOUR COMPLAINT RESPONSE & FIELD INVESTIGATION PROCEDURE

As discussed above, the odour complaint response procedure previously prepared by KMC was reviewed and revised to include updated responsibilities of parties involved and also to incorporate field investigation procedures as an integral part of the response process.

A flow diagram summarizing the main steps of the revised process is presented Figure 7 below.

Each complaint received, either by telephone or through the KMC's website, should be recorded in a consistent manner using the current Odour Complaint Report (**Appendix E**). The form should be available to KMC's Control Centre (CC) which receives complaints but also to other KMC personnel involved in subsequent odour complaint response stages in order to complete the requested sections of the report. If management software were adopted by KMC or KMC as suggested, the form along with other operational and weather data should be available to all personnel and for all KMC sites in real time for easy access. Furthermore, procedures described here for odour complaint response and field investigation procedures, is connected to other KMC documents and procedures such as Emergency Response Plan (ERP). All observations and sampling results will be recorded using the Field Investigation Form (**Appendix C**). Forms will be assigned an identification number and filed for reference by the Environmental Advisor after final sign off.

The following sections provide background and guidance on implementing the odour response summarized in **Figure 7**.







ODOUR MANAGEMENT PLAN FINAL.DOCX

5.1 STEP 1: RECEIPT OF ODOUR COMPLAINTS

All odour complaints received by KMC should be directed to the Control Centre (CC) by providing the toll free number or redirecting the call. The CC Operator who receives the call should record the odour characteristics and the complainant's details, as well as investigate the operational conditions of the pipeline according to the Control Centre General Procedure 2.2.9, Odour Complaint Notification. All collected information should be recorded in sections A C of the Odour Complaint Report (**Appendix F**).

Note: Complaint logging system through odour management software would enable instant odour notification of site operator / field personnel and also mapping of odour complaints for easier visualisation of impacted areas.

5.2 STEP 2: COMPLAINT RESPONSE – SITE INVESTIGATION

The second step in the process involves the complaint being communicated to the on call district operator who will act as First Responder (FR) to the complaint. The FR initiates the field investigation process by:

- Reviewing pipeline operations and odour complaint details received from the CC.
- Conducting a screening investigation using hand held sampling instruments for a 10 minute duration at the location of the odour complaint.
- Comparing measurements with selected criteria (AEGL 1 and AEGL 2) and recording the findings in the Field Investigation Form.
- Repeating hand held instrument sampling procedures if any of the levels have been exceeded.
- Discussing the findings with CC and deciding on further course of actions.

5.3 STEP 3: RESPONSE - ODOUR CHARACTERIZATION AND RESPONSE

If no criteria exceedances are noted, then further odour incident characterization is needed to determine the following:

- If odours are likely attributable to KMC, then:
 - ✓ CC initiates applicable emergency response procedures (i.e., Emergency Response Line [ERL] call or pipeline shut down) as necessary.
 - $\sqrt{}$ FR responds to complaint by providing assurance to the complainant of measures undertaken to address odours.



- If odours are not likely attributable to KMC, then:
 - ✓ FR responds to the complainant with the explanation that the odours do not originate from KMC operations but KMC will continue the investigation process.

If criteria exceedances are noted, then:

- ✓ CC initiates applicable emergency response procedures (i.e., Emergency Response Line [ERL] call or pipeline shut down) as necessary.
- Environment Department initiates Air Monitoring Plan for Unplanned Petroleum Releases which includes procedures and criteria to address acute public health during emergency events such as releases. Emergency response criteria (primarily AEGL) are used to screen air monitoring results and assist in evacuation or shelter in place decisions. If the acute public exposure criteria are exceeded for more than 24 consecutive hours, and public receptors are present in the area of exceedance, the data will be used for an acute human health assessment for the inhalation pathway.

If odours are not likely attributable to KMC, then:

- ✓ Environment Department discontinues Air Monitoring Plan for Unplanned Petroleum Releases procedures and the FR contacts the local emergency response personnel (i.e., fire department).
- ✓ FR responds to the complainant with the explanation that the odours do not originate from KMC operations but KMC will continue the investigation process and sample as outlined in our procedures.

If odours are likely attributable to KMC, then:

- The Environment Department continues monitoring according to the Air Monitoring Plan for Unplanned Petroleum Releases procedures. Depending on sampling results and the compounds exceeded, different actions are triggered. Refer to the Air Monitoring Plan for Unplanned Petroleum Releases procedures for additional detail.
- ✓ Environment Department works with field personnel to contain and abate odours and minimize or cease chemical releases to surrounding communities and the environment.
- ✓ FR responds to complaint by providing assurance to the complainant of measures undertaken to address odours.



5.4 STEP 4: CLOSURE & CORRECTIVE ACTIONS

The final step in the odour response procedures refers to the closure of the odour complaint and follow up corrective measures (if applicable). The OMP requires the:

- The District EHS Coordinator and District Supervisor to complete Section E of the OCR as follows:
 - $\sqrt{}$ Summarize actions during the response stage and provide recommendations for further actions; and,
 - $\sqrt{}$ Notify Regional Director when the above is complete.
- The Regional Director ensures that follow up actions are complete, fill in Section F of the OCR, and notify the Environmental Advisor upon completion.
- The Environmental Advisor reviews all collected information, assigns an identification number to the complaint, completes section G of OCR, and updates the odour complaint master list.

5.5 **DOCUMENTATION**

All received complaints, monitoring data, corrective actions, reports, filled out forms and communication (both internal and external) should be documented, assigned an identification number, cross referenced, and filed for ease of future recovery. Filing includes electronic versions being saved on a hard drive (as backup) and stored in a safe place accessible to managers and environmental advisors. Hard copies of the same documentation should be also stored and secured in a filing cabinet.

6.0 ODOUR MANAGEMENT PLANNING REVIEWING, UPDATING AND CONTINUAL IMPROVEMENT

The following management elements are an integral part of KMC's OMP:

- Roles & Responsibilities;
- Staff Training;
- Communication; and,
- Management Review.

These management elements are briefly discussed below.



6.1 ROLES & RESPONSIBILITIES

Every KMC employee is responsible for odour control aspects related to his/her job tasks. Pipeline activities should be evaluated as necessary to determine their odour potential. This information should be communicated effectively within the company by the Environment Department. Any employee who notices abnormal odours or observes incidents that could result in odours being transported off site should advise his/her supervisor.

Appendix E summarizes responsibilities of the main personnel for activation of OMP procedures.

6.2 STAFF TRAINING

The training required to implement this OMP will be integrated into and tracked by the existing KMC KEEP Training Program. The primary responsible persons in the OMP are:

- Control Centre Supervisor
- Site Operators
- First Responders (most often operators)
- District Supervisors
- Environmental Advisor
- District EHS Coordinators

Each of the district personnel acting as first responders to odour complaints should complete a mandatory training on air samples collection and data recording and data interpretation.

Training programs should be designed to be well defined with respect to consistency in recording, interpretation and responding regardless the personnel involved and/or district in question. Also, training should account for any changes in procedures and should be current through regular updates especially if any changes arise from the management review. The OMP training will also be mandatory for new KMC hires according to their job function.

Training will be tracked and reviewed on an annual basis to ensure that the necessary and appropriate staff has been trained and is available.

6.3 COMMUNICATION OF THE ODOUR MANAGEMENT PLAN

The OMP will be incorporated into KMC's existing communication structure and protocols, for example, it should be included *internal communication* via emails, company's newsletter, training and the like. The aspects of OMP and any updates that could be relevant to the local community should be *communicated externally* as well in order to ensure that community is well informed on actions and updates that KMC is undertaking. Some means of external



communication include, but are not limited to KMC website, advisory/community meetings and advisory panels, community open house events, community newsletters and the like.

6.4 ANNUAL PERFORMANCE REVIEW AND CONTINUAL IMPROVEMENT

An annual performance review will be conducted summarizing the number, nature, and management of the odour complaints that occurred in the past year. The review will also include: product characterization updates, odour complaint trend identification, changes in procedures and/or equipment (reviewed annually), changes to the OMP, any changes in connection to emergency planning/response and recommendations for ongoing improvement.

In addition bag or Summa canister samples of the air in and around KMCs operations will be taken annually at one of the KMC sites to assess the mix (speciation) of the VOC that could be potentially associated with KMC operations.

Recommendations will be considered as part of the normal business planning and budgeting process. An annual performance review and any on going improvements are part of adaptive management as presented earlier in **Figure 5**.

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APPENDIX A

Burnaby Terminal and Sumas Tank Farm Product Properties



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Product Name	Product	Absolute Density	Total Sulphur	S&W	H2S	Mercapt	Olefins	TAN	Pour Pt	Reid	Kinematic Viscosity	Odour
	ID	(kg/m3)	(wt%)	(vol%)	(wt ppm)	(wt ppm)	(vol%)	(mg KOH/g)	(C)	V.P. (kPa)	(mm²/s)@ 10C	Index
SUPER LIGHTS												
Isoctane	ISO	701.0	<0.003	<0.01						12.1	0.82(16)	
LIGHTS	•											
BC Light Crude	BCL	825.9	0.60	0.12			0.80	0.18	-9.0	31.5	6.214	
Boundary Lake Crude	BLK	844.3	0.83	0.08			0.71	0.15	-12.0	29.9	12.060	
Horizon Synthetic	CNS	853.0	0.08	0.23	<0.5	<0.5	<0.3	<0.1	<-65	26.6	12(20)	
Central Alberta KOC	KOC	847.8	1.07	0.26	161.10	33.7	<0.3	0.16	-6.0	74.5	10.968	
Suncor Synthetic A	OSA	862.0	0.20	0.07	<0.5	1.8	<0.3	<0.1	-9.0	18.0	9.349	4.05
Suncor Synthetic C	OSC	876.1	0.22	0.08	<0.5	<0.5	<0.3	<0.1	-9.0	12.8	13.10	
Premium Albian Synthetic	PAS	859.4	0.10	0.14	<0.5	<0.5	<0.3	<0.1	-30.0	<0.1	11.599	
Peace River Crude	PCR	826.0	0.54	0.16	<0.5	21.4	<0.3	0.15	-6.0	66.2	7.984	5.08
Peace River Sour	PCSR	866.3	2.59	0.25	3.90	87.2	<0.3	0.49	-24.0	68.9	16.689	5.34
Pembina Crude	PEM	830.4	0.43	0.20	<0.5	3.4	<0.3	<0.1	-9.0	74.9	8.034	4.05
Pembina North	PNC	825.0	0.45	0.15	<0.5	27.4	<0.3	0.11	-15.0	65.9	6.227	5.20
Rainbow Crude	RBW	835.7	0.49	0.08	<0.5	3.7	<0.3	<0.1	-9.0	49.5	7.289	4.38
Shell Synthetic Light	SSX	867.8	0.22	0.02	<0.5	4.2	<0.3	0.13	-21.0	20.7	13.607	4.75
Syncrude	SYN	863.5	0.18	0.08	<0.5	<0.5	<0.3	<0.1	-57.0	31.7	8.906	
SUPER HEAVY												
Albian Heavy Synthetic	AHS	936.7	2.47	0.14	<0.5	11.7	<0.3	0.46	-27	62.7	***	5.18
Cold Lake Blend	CL	925.6	3.72	0.36	<0.5	52.4	<0.3	1.02	-27	51.7	***	5.27

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Tank Number	Odour Index
72	6.23
73	2.93
74	6.07
81	5.72
84	4.28
101	5.50
102	2.93
103	4.26
104	5.91
122	6.04



ODOUR MANAGEMENT PLAN - KINDER MORGAN CANADA

APPENDIX B Prioritized Compounds and their Exposure Limits



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	Flashpoint			DC STEL				AEGL-1 (ppm)		AEGL-2 (ppm)				RRR
Compound	(vol %)	Temp (®F)	ODT (ppm)	(ppm)	10 min	1 hr	4 hr	8 hr	10 min	1 hr	4 hr	8 hr	IDLH (ppm)	(ODT/ 8 hr AEGL-1)
Benzene	14000ppm		0.16 8.65	2.5	130	52	18	9.0	2000	800	400	200	500	0.96
Toluene	1.1	40	0.16		200	200	200	200	3100	1200	790	650	500	0.00080
Ethylbenzene			0.92 2.3		33	33	33	33	2900	1100	660	580	800 [LEL]	0.070
Xylenes [o,m, p isomers]	0.9 1.1	81 90	0.05 5.4	150	130	130	130	130	2500	920	500	400	900	0.042
Naphthalene			0.0095 0.3	15									250	
1,3 butadiene			0.455		670	670	670	670	6700	5300	3400	2700	2000 [LEL]	0.00068
1,2,4 trimethyl					180	140	90	45	460	360	230	150		
1,3,5 trimethyl benzene					180	140	90	45	460	360	230	150		
lsopropyl benzene (cumene)			0.0051 1.2	75	50	50	50	50	550	300	190	130	900 [LEL]	0.024
N decane														
N hexane	1.1	7	65 130										1100 [LEL]	
Methylcyclohexane			500										1200 [LEL]	
MethanethIol (methyl mercaptan)			0.001		N/A	N/A	N/A	N/A	59	47	30	19	150	
EthanethIol (Ethyl mercaptan)			0.0028		1.0	1.0	1.0	1.0	150	120	77	37	500	0.0028
Sec butyl mercaptan			N/A	çan										
Hydrogen sulphide			0.0005	10	0.75	0.51	0.36	0.33	41	27	20	17	100	0.0015
VPHv (or F1, F2 and F3)														
Ethanol	3.3 %	55	0.52	1000									3300	
Isooctane (2,2,4 Trimethylpentane)			N/A											

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Source : http://www.enviromed.ca/Documents/GasDetection VocMeasure.pdf http://www.raesystems.com/sites/default/files/downloads/FeedsEnclosure AP 221 PIDs for Assessment of Exposure Risks.pdf Immediately Dangerous To Life or Health Concentrations (IDLHs): http://www.cdc.gov/niosh/idlh/intridl4.html AEGLs: http://www.cdc.gov/niosh/idlh/intridl4.html

N/A not avaiable due to insufficient data

LEL: This only applies to low concentrations of combustibles gases, and it stands for Lower Explosive Limit. It is the volume composition of a flammable gas in air. Below this limit no explosive atmosphere will be formed. Concentrations levels for gas detection purposes are expressed in % of LEL. In other words it is a volume ratio of the gas relative to the LEL.

ODT: Odour Detection Threshold. Sources: http://www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1256639817998 and http://www.doylesdartden.com/e/odor.htm

RRR : Relative Risk Ranking. The odour detection threshold divided by the 8 hr AEGL 1 exposure limit.

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ODOUR MANAGEMENT PLAN - KINDER MORGAN CANADA

APPENDIX C Odour Complaint Field Investigation Form

Appendix C Page 1								
Odour Co	mplaint Field	Investigat	ion Form	Date [mm,	/dd/yy]			
Site Investigator (print name):	Star	t time:		End time:				
	ΜΕΤΕΟ	ROLOGICAL CONDI	TIONS					
General weather remarks (rain, overcast)	:							
Wind speed: Calm I sl	ght breeze 🗌 wind	y 🗌 m/s (if known)					
Wind direction: N NE E	□se □s □sw	□w □nw	Unknowr	ı				
Humidity: 🗌% 🔲 unknow	n							
	OPE	RATING CONDITIO	NS					
KMC activities in progress (onsite) [describe	2]:							
KMC activities in progress (offsite) [describ	e]:							
Other* activities in progress onsite or offsit	e [describe]:							
*i.e. landscapina new soil and/or compost: roofi	na tar. road pavina. excava	ations. non KMC truck	accidents/spills.	etc.				
	OD	OUR OBSERVATIO	NS					
Is there an odour present and, if so, list any	descriptors (see odour	descriptors):						
Is this the same odour as the complainant i	noted:							
Intensity of the odour (0 to 6 scale – 0 = no	odour, 3 = distinct odo	ur, 6 = extremely st	rong odour):					
Hedonic tone of the odour (-10 to 10 scale	-10 least pleasant, +10	most pleasant):	c ,					
Has the adour changed since arriving on si								
CHEM	ICAL SAMPLING - (H	HEND-HELD MO	NITORS)	Sa	mple #1			
Sampling location:	Sampling start tin	ne (24 hr)						
HYDROGEN SULPHIDE [H ₂ S] [units]	VOC as	s BENZENE [C ₆ H ₆]	[units]	METHYL MERC	APTANS [CH₃S	H] [units]		
8 hr: AEGL-1 = 0.33 ppm AEGL-2 = 17 pp STEL = 10 ppm	om 8 hr: AEGL-	1 =9 ppm AEGL-2 STEL =2.5 ppm	2 =200 ppm	8 hr: AEGL-1	= N/A AEGL-2 STEL = N/A	: = 19 ppm		
Laterand and				Instrument used:	Resoluti	on 30 sec/log		
Instrument used:	Instrument us	ed:		Detector tube type	e and range: #71	0.25-140ppm		
Readings:	Readings:	F		5 min readings: Detector tube rea	; ; ading: ;	;		
~1 min: 5 min: ~1 min: 5 min: 10 min: 15 min: #of strokes:								
Instrument data over 15 min campling period. Instrument data over 15 min campling period. Instrument data over 15 min campling period.								
Min Max Avera	ae Min	Min Max Average Min Max Average						
AVERU								
Were any exceedances noted above? Pleas	Nere any exceedances noted above? Please check the component(s) and the criteria that were exceeded:							
H_2S : Yes No If yes, G	riteria exceeded: 🔲 /	AEGL-1 🗌 AEGL	-2 🗌 STEL					
VOC:: Yes No If yes, criteria exceeded: AEGL-1 AEGL-2 STEL								

If yes, criteria exceeded: 🗌 AEGL-1 🗌 AEGL-2 🗌 STEL

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CH₃SH: ☐ Yes ☐ No

	(CHEMICAL SAN	1PLING – HENI	D-HELD MON	IITORS	Sample	#2
Sampling location:	Si	ampling start time	e (24 hr)				
HYDROGEN SULPHIDE [H ₂ S] [uni	ts]	VOC as	BENZENE [C ₆ H ₆]] [units]	METHYL MER	RCAPTANS [CH₃	SH] [units]
8 hr: AEGL-1 = 0.33 ppm AEGL-2 = 1 STEL = 10 ppm	7 ppm	8 hr: AEGL-1	=9 ppm AEGL-2 STEL =2.5 ppm	2 =200 ppm	8 hr: AEGL-	1 = N/A AEGL- STEL = N/A	2 = 19 ppm
Instrument used:		Instrument used	:		Instrument used: Detector tube typ	Resolu [.] e and range: #71	tion 30 sec/log 0.25-140ppm
Readings:~1 min:5 min:10 min:15 min:		Readings: ~1 min: 10 min:	5 min: 15 min:		5 min readings Detector tube rea Concentration:	: ; ; ading: ; #of [units]	; strokes:
Instrument data over 15 min sampling	period:	Instrument date	a over 15 min san	npling period:	Instrument dat	ta over 15 min saı	mpling period:
Min Max Av	erage	Min	Мах	Average	Min	Мах	Average
Were any exceedances noted above? Pl	ease checl	k the component(s	and the criteria	that were excee	eded:		
H₂S: ☐ Yes ☐ No If ve	es. criteria	exceeded:	egl-1 🗌 Aegi	L-2 STEL			
C_6H_6 : Yes No if ye	es, criteria			L-2 L SIEL			
CH₃SH: Yes No If ye	s, criteria e	exceeded: 🗌 AE	GL-1 🗌 AEGL	-2 🗌 STEL			
S							
	ł	FOLLOW UP	WITH CONT	FROL CENT	RE		
REVIEW WITH CC: Site conditions (odo Sampling exceedance	urs, wind, es (if appl	Control Cen onsite/offsite acti icable)	<i>t<mark>re Phone No.: (</mark></i> vities, etc.)	780) 449 5732			
Is odour complaint attrib	utable to 1	KMC:	Yes	No 🗌 Un	known		
Will ERL be initiated?		∐ Yes □	No				
SITE INVESTIGATOR (Sign	ature):						
Email form to EHS Coordinator and	<mark>l Environme</mark>	ental Advisor					
ODOUR MANAGEMENT PLAN FIN.	AL.DOCX				Œe	NVIROC Page 39 SE	

ODOUR MANAGEMENT PLAN - KINDER MORGAN CANADA

Appendix D Monitoring Instruments

ODOUR MANAGEMENT PLAN FINAL.DOCX

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Appendix D Page 1

Compound	HYDR	OGEN SULFIDE [H₂S] CAS# 7783-06-4	
STEL =5 ppm IDLH = 100 ppm ODT =0.0005ppm	10 min 1 hr 4 hr 8 hr AEGL 1 0.75 0.51 0.36 0.33 AEGL 2 41 27 20 17	Handheld	Fixed
Method 1008	http://www.osha.gov/dts/sltc/methods/ validated/1008/1008.html Detection limit of the procedure depends on the sampling time & volume; the lowest is 0.448 ppm or 0.623 mg/m ³ for a TWA sample		
Sorbent tubes	http://www.skcinc.com/prod/226- 177.asp	Sorbent tubes Detection limit of the procedure depends on the sampling time & volume; the lowest is 0.448 ppm or 0.623 mg/m ³ for a TWA sample	
Hand-held RKI gas detectors	http://www.rkiinstruments.com/?gclid= CLiKyc7u-LECFSXhQgodPnQAOw - Leak check, confined space, alarm	Portable and fix Eg GASwatch GX – EAGLE series <i>Measuring range 0 - 100 ppm</i>	Beacon 110 – 800, RM, Pioneer Measuring range 0 -100.0 ppm
Durawear Industrial monitors- GasBadge	http://www.durawear.com/index.cfm/a /catalog.catshow/catid/145?gclid=CK2ft Ljx-LECFcKDQgodtmYACw	T40 Rattler – single gas monitor <i>Measuring range in ppm</i>	Industrial Scientific – not for H2S
RAE Systems	http://www.durawear.com/index.cfm/a /catalog.prodShow/vid/5185/catid/240	ToxyRAE 3 personal monitor 0.1 ppm resolution	
Jerome	http://www.azic.com/downloads/broch ures/Jerome%C2%AE%20631%20Brochu re.pdf	Jerome 631 Data logger <i>Measuring range</i> 0.003-50 ppm	
NetSafety monitors	http://www.net- safety.com/products/gas-detectors.html general site, a variety of instruments		EcoSense 2-wire loop powered <u>http://www.net-</u> <u>safety.com/products/ec</u> <u>o-sense.html</u> <i>Measuring range 0 - 100</i> ppm
BW Honeywell Gas monitors	http://www.pksafety.com/bw- honeywell-gas-alert-clip-extreme-h2s- monitor.html	GA24XT-H Measuring range 0 - 100 ppm	
ATI Technologies	http://www.analyticaltechnology.com/p ublic/product.aspx?ProductID=1019	in condensing gos stressme	Q45S Wet H2S Gas Detector Measuring range 0 - 200 ppm
	blinding typical of standard sulfide sensor	in condensing gas streams wit s.	nout the water vapor

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							Appendix D
General Monitors	http://w	www.ger	neralmon	itors.con	n/Gas-		S4100T
	<u>Detecto</u>	rs/c/201	L?N=100	10&Ne=1	0007		Measuring range 0 - 100 ppr
	Note: se	elf-conta	ined, mi	rolled hydrogen sulphide trai	nsmitter with integral 3		
	digit rea	adout; ho	ousing or	remotel	y mount	ed at distances of 600 meters	
Grainger	http://w	vww.gra	inger.cor	<u>m/Graing</u>	er/IND		9ACG7
	USTRIAL	-SCIENT	IFIC-Fixe	d-Gas-De	etector-		Industrial Scientific
	<u>9ACG7</u>						Measuring range 0 - 999 ppr
EPA case To read	http://w	www.epa	a.gov/bps	11-1-1 2 -11-1-11-1-11-1-11-1-11-1-1-1-1-1-1-1-			
						Mercaptans	
Compound					as METH	YL-MERCAPTAN [CH ₄ S]	
					C	AS No.: 74-93-1	
	[ppm]	10 min	1 hr	4 hr	8 hr		
STEL =0.5 ppm IDLH = 150 ppm	AEGL 1	N/A	N/A	N/A	N/A	Handheld	Fixed
	AEGL 2	59	47	30			
RAE Instruments	http://w	www.rae	systems	com/che	mical/	ppbRAF	RAEGuard PID
	methyl-	mercapt	an		<u>inneur</u>	Measuring range 1 nnh to	3 models to choose from
						10.000 ppm	0.01 - 20 ppm
							0.10 - 100 ppm
							1.00 - 1000 ppm
Method #26	Glass fib	ore filter	S				
	http://w	vww.osh	na.gov/dt	s/sltc/me	ethods/		
	organic/	/org026/	/org026.ł	<u>html</u>			
	Reliable quantification limit 0.027ppm						
ON Science	http://w	ww.ion	science.c	com/sear	<u>ch-</u>	ProCheck Tiger	TVOC – ARTEX (PID
	results/gas-or-formula-					Detection range1ppb to	instrument)
	details?	gasid=42	20			20000 ppm	Detection range of 0 – 1
							ppm, 0 – 100 ppm or 0 –
							1000 ppm
Gastec Detector Tubes	http://w	ww.zef	on.com/s	store/gas	stec-		
	<u>methyln</u>	nercapta	an-detect	tor-tubes	<u>s.html</u>		
Compound						VOC	
compound					As	BENZENE [C ₆ H ₆]	
	[ppm]	10 min	1 hr	4 hr	8 hr		
STEL = 2.5 ppm		120	52	10	<u>م</u>	Handheld	Fixed
IDLH =500 ppm		2000	92 000	100	200		
	AEGL 2	2000	800	400	200		
KAE Instruments	nup://w	ww.rae	systems.	<u>com/pro</u>	<u>ducts/a</u>	AreaRAE Gamma Steer	
	<u>100100-</u>	samma-s	steel			specific 50 pph detection	
						miniBAE 2000	
						nnhBAE	
						10,000 ppm	
						10,000 ppm	
						A series of handheld VOC	IVOC fixed monitor
	<u> </u>					monitors	
ODOUR MANAGEME	NT PLAN FI	NAL.DOCX	(CINVINUL

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Compound	Odour	Handheld	
BigDipper	http://www.big-	pAir2000EFF Multi-	
	dipper.us/Products/Industry/Atmospher e/pAir2000 EFF IntE.pdf	parameters Olfactometer	
Nasal Ranger field olfactometer	http://www.nasalranger.com/		



ODOUR MANAGEMENT PLAN - KINDER MORGAN CANADA

Appendix E Staff Contact and Responsibilities

ODOUR MANAGEMENT PLAN FINAL.DOCX

POSITION	NAME, & CONTACT INFO UPDATED ON (DD/MM/YY)	RESPONSIBILITIES
Control Centre Operator	 Name Tel: Cell: Email: 2. Name: Tel: Email: 	 √ Receives odour complaint from community and/or information on any incident that would potentially lead to an odour event. √ Completes sections A C of an OCR taking the time, location, nature, duration and other basic description and operation data. √ Initiates applicable Emergency Response Procedure (i.e. ERL) if appropriate.
FIRST RESPONDER: Site Operator	 Name: Tel: Email: Name: Tel: Substitutes: Name: Tel: Email 	 ✓ Receives complaint information from CC. ✓ Conducts field investigation and mobile chemical sampling according to established procedures, both for initial field investigation and detailed field investigation in case of proposed limits exceedances. ✓ Contacts emergency personnel (i.e., fire department) as required. ✓ Records details of investigation in Odour Complaint Field Investigation Form and compare to prescribed criteria; Contact CC to discuss results and observations. ✓ Responds to complaint.

Staff Contact and Responsibilities

84-----

POSITION	NAME, & CONTACT INFO UPDATED ON (DD/MM/YY)	RESPONSIBILITIES
Environmental Advisor	 Name: Tel: Email: Name: Tel: Email: 	 √ Responsible for fixed instrumentation for chemical sampling. √ Reviews Field Investigation Forms and supplemental data √ Provides support in data analysis (operational and meteorological) and documentation. √ Supports Environment Department Manager in initiating Air Monitoring Plan for Unplanned Petroleum Releases √ Maintains database of all complaints and analyzes complaints for trends
District EHS Coordinator	 Name: Tel: Name: Name: Tel: Email: 	✓ Provides recommendations on regular basis and during odour incidents on chemical monitoring and sampling protocols as well as on detecting and eliminating/reducing and mitigating the odour occurrence.
District Supervisor	 Name: Tel: Name: Tel: Email: 	 ✓ Provides recommendations for each odour complaint and signs off on complaint form
Regional Director	 Name: Tel: Name: Name: Tel: Email: 	 ✓ Provides recommendations for each odour complaint and signs off on complaint form



ODOUR MANAGEMENT PLAN - KINDER MORGAN CANADA

Appendix F Odour Complaint Report (OCR)

KINDER

For office use only

OCR#

Odour Complaint Report

This report is to be:

 Used when an odour complaint is received by the Control Centre.
 Distributed in a timely manner to ensure adequate follow up. Notification Requirements:

(First Responders) – Primary – Immediately after information is received by Control Centre and documented (Distribution List) – Secondary – As per Control Centre General Procedure 2.2.9 Odour Complaint Notification

DATE & TIME	SECTION A - COMPLAINAN	NT DETAILS	2019-20
Complaint received MM/DD/YEAR	Name	Address	
24 Hour (MST)	City / Municipality	Provin	ce / State
2411001 (110 17	Home Phone Number	Alt Ph	one Number
SECTION B - NATURE O	OF COMPLAINT (QUESTIONS TO ASI	(COMPLAINANT)	÷
ODOUR TYPE / DESCRIPTION	N:		
🔲 Natural Gas 🔲 Rotte	en Egg (H2S) 🔲 Gasoline 🔲	Diesel 🔲 Sulfu	ur 🔲 Sewer 🔲 Other:
ODOUR LOCATION:	Home Other (Describe):		
LOCATION OF ODOUR NEA	R KMC FACILITIES / PIPELINE?	Ves I	⊐ No
HOW LONG HAVE ODOURS	BEEN PRESENT?		
(i.e. City crews including vegetat	ion maintenance, power tools being used):	□Yes	□ No
Wind speed:	🗌 calm 🗌 slight breeze	🔲 windy	🔲 unknown
Wind from the:	N ONE DE OSE O	s 🗆 sw 🗆	
Humidity:	dry 🗌 humid 🗌 rain/	snow	nut sector
CALLER ADVISED OF POTE	NTIAL SAFETY HAZARD?	□ Yes] No
FIRE DEPARTMENT NOTIFI	ED?	□ Yes]	No If not, why?
FOLLOW UP REQUESTED? Note: All complaints will be follo unless specific time and date red SECTION C – ADDITION	☐ Yes ☐ No Best tim wed up with complainant unless specifically quested. NAL INFORMATION / ACTIVITIES BY	e and date for call k requested not to. Ind KINDER MORGAN	nack: licate we will call back during daylight hour / PERSONNEL INVOLVED
AFFECTED PIPELINE SYST	EM & REGION	Pipeline	Region
TANK ACTIVITES IN PROGR	RESS (landing/refloating tank roof)?	□ Yes □ No	Delivery Tank: Receipt Tank: Product:
OTHER SITE PROJECTS IN mixing, etc.)?	PROGRESS (tank cleaning, venting,	🗆 Yes 🗆 No	Describe:
FIELD OPERATOR NOTIFIE	D: Name:	Location:	
OTHER EMPLOYEES INVOL	VED:		
Notify via phone: Field	i Operator		
Notify via email EHS (attach form): Aote	Coordinator, Environmental Adviso If investigation will be completed immedia	r, Control Centre S tely, form can be forw	Supervisor and District Supervisor arded after investigation is complete.

October 2012

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SECTION D - ODOUR INVESTIGATION (1st responder)

INVESTIGATION COMPLETED BY: (Print)

FINDINGS:

Refer to the Odour Compliant Field Investigation Procedure and complete the Odour Complaint Field Investigation Form.

Notify via phone: Con

Control Centre

CHEMICAL SAMPLING - FIXED CONTINUOUS MONITORING (FENCELINE) *Only applicable for Sumas Tank Farm and Burnaby Terminal

HYDROGEN SULPHIDE [H ₂ S] [units] TOTAL	VOCs [units]	1	MERCAPTANS [a	s CH₄S] [units]
AEGL-1 = 0.75 ppm AEGL STEL = 5 ppm	-2 = 41 ppm AEGL-1 =	ppm AEGL-2 =	ppm STEL = 5 ppm	AEGL-1 = ppm AEGL	2 = ppm STEL = 5 ppm
Instantaneous reading 🛛 @	hr/min: Instantaneo	s reading	@ hr/min:	Instantaneous reading	g @ hr/min:
15 min average starting h	r/min: 15 min ave	age starti	ing hr/min:	15 min average	starting hr/min:
Last 2 hr- Hourly averages:	and Last 2 hr- H	ourly averages:	and	Last 2 hr- Hourly ave	erages: and
24 rolling average from h	/min: 24 rolling av	erage fro	m hr/min:	24 rolling average	from hr/min:
Were any exceedances noted al	oove? Please check the comp	onent(s) and the	criteria that were	exceeded:	
H2S: Yes II	No If yes, criteria exceed	ed: 🔲 AEGL-1	AEGL-2	STEL	
: 🛛 Yes 🗖 N	lo If yes, criteria exceede	d: 🔲 AEGL-1	AEGL-2	STEL	
Mercaptans: Yes N	lo If yes, criteria exceede	d: 🔲 AEGL-1	AEGL-2	STEL	

	Name:	Location:		Position:		Date (DD/MM/YY):
	ODOUR SOUCE IDE	NTIFIED? Ves No				
EUS	COMPLAINT ATTRI	BUTABLE TO KINDER MORGAN?	🗆 Yes	No 🗆		
EHS Coordinator	,	RECOMMENDATIONS		Person Responsible	Expected Completion Date	Complete?

SECTION	F - FOL	LOW UP AND RECOMMENDATIONS (D	ISTRICT SUPERVISOR)		
		RECOMMENDATIONS	Person Responsible	Expected Completion Date DD/MM/YY	Complete?
District Supervisor					
	Name:		Date: DD/MM/YY		
Notify via	email:	Regional Manager			
October 2012					Page 2 of 3



	Is an add	litional investigation required?	Yes		No	(see below)	
	Have all	action items been completed?	Yes		No	(see below)	
Director	Nama					Data: DD/MMA/V	
Director	Name:		 			Date: DD/MM/YY	

SECTION H - FINAL SIGN-OFF & RECORD RETENTION (ENVIRONMENTAL ADVISOR)				
Environmental Advisor	Name:	Date: DD/MM/YY		

Accompanying Forms:					
Was an Odour Complaint Field Investigation Form completed? 🛛 Yes 🗌 No	Ref #				
Was an Operational Incident Report completed?	Ref#				

October 2012

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ODOUR MANAGEMENT PLAN FINAL.DOCX

Chor, Alan K ENV:EX

From:	Chor, Alan ENV:EX
Sent:	Wednesday, December 5, 2012 3:01 PM
То:	Enick, Oana V ENV:EX; Riedler, Harold ENV:EX
Subject:	Presentation on Proposed Kinder Morgan/Trans Mountain Pipeline Expansion Project, Permit PE13418

FYI, here's a presentation with proposed timelines.

Alan Chor Senior Environmental Protection Officer BC Ministry of Environment (South Coast)

From: Braman, Jonn ENV:EX
Sent: Wednesday, December 5, 2012 9:10 AM
To: Metcalfe, Shelley ENV:EX; Chor, Alan ENV:EX
Subject: FW: LFVAQCC Dec. 5 meeting - presentation on Trans Mountain Expansion Project

Graham is plugged into this, but I thought you might be interested. Ali is a Metro Van AQ expert.

Jonn Braman, Regional Director, Tsunami Debris

BC Ministry of Environment (604) 666-8108

From: Lizette Lee [mailto:Lizette.Lee@metrovancouver.org]

Sent: Wed, December 5, 2012 8:28 AM

To: Ali Ergudenler; Corinne Schiller; Dan Mahar; Dave Gourley; Derek Jennejohn; Fran McNair; Francis Ries; Garin Schrieve; Gary Olszewski; George Murray; Okrainetz, Glen R ENV:EX; Veale, J Graham ENV:EX; Jason Emmert; Braman, Jonn ENV:EX; XT:Zelazny, Julian ENV:IN; XT:Saxton, Julie ENV:IN; Kathy Preston; XT:Reid, Ken ENV:IN; Laurie Halvorson; Phillips, Lloyd ENV:EX; Mark Asmundson; Mark Buford; Monica Hilborn; Nick Roach; Ray Robb; Roger Quan; XT:Vingarzan, Roxanne ENV:IN; Sajan Joseph; Stacey Barker; XT:HLTH Eng, Steven; Wakelin, Tony ENV:EX

Cc: Eve Fichot; XT:Bates-Frymel, Laurie ENV:IN

Subject: LFVAQCC Dec. 5 meeting - presentation on Trans Mountain Expansion Project Attach: <u>\\Complex\S40073\EP\Share1\Other\Kinder Morgan Sumas Tank Farm\TRANS MOUNTAIN EXPANSION</u> <u>PROJECT.PPTX</u>

Dear LFVAQCC Members:

Good Morning, attached please find presentation for Item 7.1 Kinder Morgan Pipeline Expansion, Designated Speaker: Ali Ergudenler

Kind Regards, Lizette Lee

Metro VancouverLizette LeeMetropolitan Planning,
Environment and ParksAir Quality Policy & Management Division
Tel.: 604-456-8835 / Fax: 604-436-6701

TRANS MOUNTAIN EXPANSION PROJECT

- **Project Highlights**
- Timelines
- **Potential Sources of Air Impacts**
- **•LFV AQCC Inter-Agency Coordination**

Existing Operations

•Trans Mountain Pipeline – Owned and Operated by Kinder Morgan

In Operation since 1953 (1,150 km long)

•Petroleum Products Stored in Terminals and Transported in the Pipeline between Edmonton and Burnaby, B.C. and WA

•The Existing Line Carries Refined Products, Synthetic Crude Oils and Light Crude Oils

Initial capacity - 150,000 barrels/day

Current Capacity - 300,000 barrels/day

Project Highlights

- Projected Capital cost is **\$4.3 Billion**
- If approved, Trans Mountain Expansion Project (TMEP) would add new 900 km twined pipeline that would increase the capacity from 300,000 barrel/day to 750,000 barrel/day
- The proposed new line for heavier oils/crude
- New pump stations and expansion of existing stations along the route with 13 new/co-located stations
- Additional storage capacity at existing storage terminals in Strathcona County, Sumas and Burnaby
- Expansion of Westridge Marine Terminal in Burnaby
- New pipeline capacity between Burnaby Terminal and Westridge Marine Terminal

Timelines

- April 2012; Kinder Morgan announced that it wills proceed with capacity expansion of TM Pipeline
- April December 2012: Initial meetings and discussions with regulators, Aboriginal People, landowners, communities, stakeholders, etc.
- Late 2013: file a comprehensive Facilities
 Application with the National Energy Board in late
 2013 to start a regulatory project review.
- 2014-2015: Regulatory review (NEB and other)
- 2016-2017: Construction (if approved)
- 2017: Operation (if approved)

Potential Air Impacts:

Construction Phase

- Emissions from Construction Equipment (Heavy Duty Diesel Equipment: Diesel PM, NOx, ...)
- Emissions from Increased Truck Traffic (Heavy Duty Diesel Trucks: Diesel PM, NOx, ...)
- Fugitive Dust
- 0

• Operation of Pipeline

- Fugitive Emissions from Storage Tanks (VOCs)
- Emissions from Increased Tanker Traffic (Diesel PM, SOx NOx, ...)
- Emissions from Back-up Generators at Pump Stations (Potential)

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NEB Process and The Role for LFV AQCC

Coordination of Project Review

- >Independent Review by Each Agency?
- > Multi Agency Review- Technical Review Team?
- > Participation in the NEB Process?
 - Filing a Letter of Comment
 - Presenting Views at a Public Hearing
 - > Applying for Intervenor Status

Notification – Is this a type of project that B.C. needs to provide notification to the US Agencies?

MINISTRY OF ENVIRONMENT INFORMATION NOTE

Date: January 3, 2013 Files: 85000-40/9713 (Blue River Black Spruce) 85000-40/6818 (Finn Creek) 85000-40/0195 (North Thompson) 85000-40/0334 (Coldwater River) CLIFF: 183254

PREPARED FOR: Lori Halls, ADM, BC Parks and Conservation Officer Service.

ISSUE: Kinder Morgan pipeline twinning proposal.

BACKGROUND:

In the early 1950s, the province passed a number of orders in council approving the granting of an easement to the Trans-Mountain Oil Pipe Line Company for the purpose of "laying down, construction, operation, maintenance, inspection, alteration, removal, replacement, reconstruction and/or repair of one or more pipelines."

Kinder Morgan Canada is the present operator of the Trans-Mountain Pipeline that transports oil products from Alberta to Burnaby. The pipeline has been in operation since 1953. In 2008, Kinder Morgan completed the Anchor Loop Project which traverses Mount Robson Park and required a boundary modification to the park.

Kinder Morgan is now proposing to "twin" the existing pipeline to increase its capacity to 750,000 barrels per day, an increase of approximately 450,000 barrels per day. This will require the installation of an additional 900 km of pipeline, with an estimated capital cost of \$4.1 bn. Construction on the project is planned to begin in 2016 and it is scheduled to be in service by 2017. The pipeline expansion will be regulated by the National Energy Board and will be reviewed under the *Canadian Environmental Assessment Act*.

Representatives from Kinder Morgan Canada and Tera Environmental Consultants presented the pipeline history and twinning proposal (see Attachment #1) to BC Parks staff in Kamloops on November 20, 2012. The project is in the initial planning stages to determine routing options, conduct field assessments, public consultation and develop required regulatory applications.

The existing pipeline traverses or is adjacent to 8 Class A parks and one recreation area in three regions (see Attachment #2), with the new twinning proposal likely following the same route.

The existing Trans Mountain Pipeline right of way passes through residential areas in Kamloops. s.21

DISCUSSION:

Kinder Morgan has various authorizations (e.g. orders in council; easements; park use permits) in place for the pipeline in those situations where it traverses the Class A parks and recreation area.

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Attachments:

Attachment #1: Trans Mountain Expansion Project presentation Attachment #2: Class A Parks and Recreation Areas Traversed by or Adjacent to the Existing Trans Mountain Pipeline

Contact:

Alternate Contact:

Lori Halls, ADM BC Parks & Conservation Officer Service 250-387-9997 Jeff Leahy, Regional Director Thompson Cariboo Region

250-371-6304

Prepared by: *Peter Weilandt, Regional Planner Thompson Cariboo Region*

250-371-6235

Reviewed by	Initials	Date
DM		
DMO		-
ADM	LH	Jan 10/13
Exec. Dir - PPM	BB	Jan 4/13
Exec. Dir - RO	RCA	Dec 14/12
Reg. Dir C T	JL	Dec 5/12
Author	PW	Dec 5/12

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TRANSMOUNTAIN	In operation since 1953 1,150 km from Edmonton to Burnaby Transports refined	products, synthetic crude oils, light and heavy crude oils Regulated by National	Energy board Last expansion completed in 2008 Current capacity: 200.000 harrels per day	KINDERZMORGAN
Trans Mountain Pipeline				

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TRANSMOUNTAIN	In-Service Capacity (bpd)	225,000	ns April 2007 260,000		May 2008 285,000 Nov 2008 300,000	Anchor Loop Project (AL)	。Completed in 2008	 Anchor Loop Project viewed by many as a legacy project and exceeded expectations in many areas. 	 Most Challenging Pipeline Project in Canada in Decades 	 Received Alberta Emerald Award, Environmental Leadership and Excellence 	
Projects		Initial System	Phase I – Pump Statio	Phase II - Anchor Loop	-100 kms Jasper Spread -60 kms Robson Spread -2 New Stations						
TMX1 Expansion F	Albertis Olisande of			A start of statutes and the second se						Emerald Awards	

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Ц	-acilities Application - Status	MOUNTAIN
•	Building our Project Description per NEB Filing Manu	al
•	Designing our approach to Environmental and Socio	
	Economic Assessment (ESA)	
	 Environmental Field Program 	
	 Ex: Pipeline route impacts to wildlife, groundwater, soils etc. 	
	 Socio-Economic Assessment 	
	 Ex: Employment, Human health, Traditional Land and Resourc Use 	Q
	 Marine Environmental Assessments 	
	 Mammals, Fish, Vegetation and Riparian Areas, Marine Birds 	12
•	Routing studies	

Stakeholder, Public, and Aboriginal Engagement

KINDERZMORGAN

erever pr th since options uncture ructure	
 Routing Studies Routing Objective: will follow existing ROW whe soluting Objective: will follow existing ROW whe pipeline will require identification of new routing optionations In locations requiring identification of routing optare to: Follow established transportation and utility corridors Minimize impact on Aboriginal communities Minimize impact on environment Minimize impact on public Identify 150 meter study corridor to support application of support application in the study corridor of support application is support application. 	· ·

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ATTACHMENT #2

Class A Parks and Recreation Areas Traversed by or Adjacent to the Existing Trans Mountain Pipeline

Park or Recreation Area	rk or Recreation Designation Area		Comments		
South Coast Region	1	<u> </u>	1		
Bridal Veil Falls Park	Class A park in Schedule C of the Protected Areas of British Columbia Act	33	Pipeline traverses the park. No park use permit in place. A park use permit was previously in place to access the pipeline right of way.		
Coquihalla River Park	Class A park in Schedule D of the <i>Protected Areas of</i> <i>British Columbia Act</i>	103	The pipeline traverses the park. At one time the pipeline was excluded from the park but this does not appear to be the case at this time, likely due to an administrative error. Park use permit does not appear to be in place.		
F.H. Barber Park	Class A park in Schedule C of the Protected Areas of British Columbia Act	8.5	The pipeline is outside (adjacent) to the park.		
Coquihalla Summit Recreation Area	recreation area established by order in council under the <i>Park Act</i>	5,750	The pipeline traverses the recreation area. Resource use permits do not appear to be in place.		
Northern Region					
Rearguard Falls Park	Class A park named and described in Schedule C of the Protected Areas of British Columbia Act	46			
Thompson Cariboo Regio	n				
Blue River Black Spruce Park	Class A park named and described in Schedule C of the <i>Protected Areas of</i> <i>British Columbia Act</i>	172	The pipeline alignment is outside (adjacent) to the park. A park use permit is in place to access the pipeline right of way.		
Finn Creek Park	Class A park named and described in Schedule C of the <i>Protected Areas of</i> <i>British Columbia Act</i>	384	The pipeline traverses the northern section of the park. A park use permit is in place for the purpose of inspecting and repairing the pipeline.		
North Thompson River Park	Class A park named and described in Schedule C of the <i>Protected Areas of</i> <i>British Columbia Act</i>	126	The pipeline traverses the park but is excepted from the park.		
Coldwater River Park	Class A park named and described in Schedule C of the <i>Protected Areas of</i> <i>British Columbia Act</i>	69	The pipeline is outside (adjacent to) the park. The pipeline was removed from the park in 2005.		

1 of 1

Jackson, Vickie ENV:EX

From:Jackson, Vickie ENV:EXSent:Thursday, January 10, 2013 11:03 AMTo:ENV Executive CommitteeSubject:FYI: Call from KinderMorgan re: Announcement in 1 hour

Importance:

High

Vickie Jackson Manager, Executive Operations Ministry of Environment 5th floor-2975 Jutland Rd. Victoria 250 356-5763

From: Lee, Bonnie ENV:EX
Sent: Thursday, January 10, 2013 11:02 AM
To: Loiacono, Sabrina ENV:EX; Wright, Jenn ENV:EX; Shoemaker, Wes ENV:EX
Cc: Johnston, Karen GCPE:EX; Murphy, Bernadette GCPE:EX; Jackson, Vickie ENV:EX
Subject: Call from KinderMorgan re: Announcement in 1 hour
Importance: High

Good afternoon,

I just spoke to Ian Anderson of Kinder Morgan. He wanted to give the Minister and Wes a heads up that they will be making an announcement in just over an hour regarding the increase in size of the planned expansion for the Trans Mountain Pipeline (from 750,000 up to 890,000 barrels/day) It will not change their planned approach to consultation and engagement.

lan can be reached at s.22 if you require further information.

Thanks, Bonnie

Bonnie Lee | Senior Executive Assistant | Deputy Minister's Office | Ministry of Environment | Phone 250.387.5429