

Fish and Wildlife Application

Tracking Number: 100199779

Application Information

If approved, will the authorization be issued to an Individual or Company/Organization?

Company/Organization

What is your relationship to the

Employee

company/organization?

APPLICANT COMPANY/ORGANIZATION CONTACT INFORMATION

Applicant is an Individual or an Organization to whom this authorization Permit/Licence will be issued, if approved.-

Name: Margaret Mears

Doing Business As: Trans Mountain Pipeline ULC

Phone: 403-514-6462 **Fax:** 403-514-6427

Email: Margaret_Mears@Transmountain.com

BC Incorporation Number: Extra Provincial Inc. No: Society Number:

GST Registration Number:

Contact Name: Margaret Mears

Mailing Address: 2700-300 5th Avenue SW

Calgary AB T2P 5J2

TECHNICAL INFORMATION

APPLICATIONS

You may submit one or more application(s) Click on the 'Add Application' for each application you would like to add. In order to submit multiple applications together they must be for one applicant and in the same region.

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General Wildlife Permit

GENERAL WILDLIFE PERMIT

Please provide the following general information about you and your application.

APPLICATION TYPE

Please provide the following details regarding your application.

What type of permit are you applying for: New Permit

Applicant Date of Birth (DD/MM/YYYY) s.22

PROPOSED ACTIVITY

Please provide the following details regarding your proposed activity.

Wildlife Species - Common Name: Bald Eagle

Wildlife Species - Scientific Name: Haliaeetus leucocephalus

Location of Activity: Westridge Marine Terminal (d-047-D / 092-G-7)

Activity Start Date: Aug 10, 2017
Activity End Date: Jul 30, 2020

ACTIVITY DESCRIPTION

Provide a detailed description of the activity you require a permit for. Include methods and equipment to be used. If your activity involves the capture, transport, possession, release or export of live animals or viable eggs, you must also include a detailed safety plan

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that explains the measures you will take to ensure that public safety will be protected. (For example, how would you prevent escapes?) In your own words, also describe the purpose of this activity and any special circumstances the Ministry should be aware of.

Description:

Trans Mountain Pipeline ULC (Trans Mountain) submitted an Application to the National Energy Board (NEB) in December 2013 for the proposed Trans Mountain Expansion Project (TMEP). A Certificate of Public Convenience and Necessity (CPCN OC-064) allowing the Project to proceed, subject to 157 conditions, was issued and became effective on December 1, 2016. The Government of BC issued an Environmental Assessment Certificate on January 11, 2017. Project work at the Westridge Marine Terminal (WMT) located in Burnaby, BC will include constructing one new dock complex, with a total of three Aframax-capable berths, as well as a utility dock followed by the decommissioning of the existing berth. In addition, the Project includes the construction of a tunnel for two new 30-inch pipelines from the WMT to the Burnaby Terminal. This will involve construction of a tunnel portal and associated infrastructure at the WMT.

A bald eagle nest is located within the fenced boundary of the WMT. The nest will not be removed as a result of Project activity and is approximately 20 m southeast of the area to be cleared for the tunnel portal development. Construction at the WMT is anticipated to occur over 2 years within the provincially recommended protective buffer of the bald eagle nest (as per the Guidelines for Raptor Conservation during Urban and Rural Land Development in BC). The construction activities associated with the tunneling of Burnaby Mountain are complex and requires specialized technical teams and equipment and adherence to a strict schedule in order to facilitate technical sequencing of tunnel construction between the WMT and Burnaby Terminal. Project activities cannot be completed outside of the bald eagle nesting season due to the complex nature, lengthy timeframes (extending over 2 years of continuous activity) and significant costs associated with the tunnel construction. Given the high level of disturbances associated with construction activities (e.g., tunneling activities, pile driving, continuous human and construction equipment presence in close proximity to the nest) at the WMT, the risk of the eagles abandoning the nest is considered high in the event the nest is available and nesting occurs. Trans Mountain's strategy to manage Project construction while minimizing impacts to the bald eagles is to place a deterrent (i.e., a physical obstruction/barrier) within the nest to discourage the eagles from nesting in close proximity to Project activities. A site visit was completed on January 31, 2017 with a professional biologist from EDI Environmental Dynamics Inc. (EDI) and J. Gillis from BC MFLNRO and two alternate nest trees suitable for the installation of an artificial nest were identified.

The nest deterrent to be installed within the known bald eagle nest will be designed to prevent the bald eagles from nesting. It will not damage the integrity of the nest itself and will be removed following the completion of construction activities at the WMT. The nest deterrent will be installed following confirmation that the nest is not active and the adult eagles and fledglings have dispersed from the area. The nest deterrent and artificial nests will be installed by a qualified arborist who will install the nest structures by hand, some handheld power tools

may be required. At this time equipment such as cranes are not expected to be required. The installation of the alternate nest structures will be scheduled concurrently with the nest deterrent installation. These installations are expected to take 2-3 days and will be completed prior to the return of the eagles to the area to avoid the sensitive period associated with territory establishment and nest initiation. The two artificial nest structures will be installed in the selected trees at a suitable height with sufficient accessibility for flights to and from the nest and some pruning of branches may be necessary to improve access.

Additional Permit-Specific Information:

For further details, see attached Nest Management Plan

GENERAL WILDLIFE PERMIT - APPENDIX

Legislation

Failure to pay fine

- 85 (1) This section applies if a person
- (a) fails to pay, within the time required by law, a fine imposed as a result of the person's conviction for an offence under this Act or the Firearm Act, and
- (b) has been served with notice of this section.
- (2) In the circumstances referred to in subsection (1),
- (a) the person's right to apply for or obtain a licence, permit or limited entry hunting authorization under this Act is suspended immediately and automatically on the failure to pay the fine,
- (b) all licences, permits and limited entry hunting authorizations issued to that person under this Act are cancelled immediately and automatically on the failure to pay the fine
- (i) the person must not apply for employment as an assistant guide
- (ii) the person must not guide as an assistant guide
- (c) the person commits an offence if, before that fine is paid, the person
- (i) applies for, or in any way obtains, a licence, permit or limited entry hunting authorization under this Act, or
- (ii) does anything for which a licence, permit or limited entry hunting authorization under this Act is required.
- (iii) applies for emplyment as an assistant guide
- (iv) guides as an assistant guide

ATTACHED DOCUMENTS

Document Type	Description	Filename
Generic Document Upload	Nest Management Plan	TMEP_WMT_Nest_Management_
		Pl

PRIVACY DECLARATION

☑ Check here to indicate that you have read and agree to the privacy declaration stated above.

IMPORTANT NOTICES

Please review the clauses and conditions associated with your application below.

DECLARATION

☑ I acknowledge that the information I have provided is true and that I fulfill the requirements for the applications.

OFFICE

Office to submit application to: Surrey

APPLICANT SIGNATURE	
Applicant Signature	Date

OFFICE USE ONLY		
Office	File Number	Project Number
Surrey		
	Disposition ID	Client Number



PERMIT

78470-45

WILDLIFE ACT

PERMIT SU17-264155

PERMIT HOLDER	Trans Mountain Pipeline ULC 2700-300 5th Avenue SW Calgary AB T2P 5J2
	ATTENTION: Margaret Mears PHONE: (403)-514-6462 FAX: (403)-514-6427

IS EXEMPT UNDER s. 3 (1)(d)(ii) of the Permit Regulation, B.C. Reg. 253/2000,

FROM	The prohibitions in section 34 (b) of the Wildlife Act against possessing, taking or							
461	place a deterrent (i.e., a physical obstruction/barrier) within the nest to discourage							
	the eagles from nesting in close proximity to Project activities, one nest of an Bald							
	Eagle (Haliaeetus leucocephalus), located at at the Westridge Marine Terminal							
	(WMT) located in Burnaby, BC							

SUBJECT TO THE FOLLOWING:

TERMS OF PERMIT	The permit holder must comply with the terms in Appendix A.										
COMPLIANCE ADVISORY	Failure to comply with any term of this permit is an offence under the <i>Wildlife Act</i> , and may result in any or all of prosecution, suspension of the permit, cancellation of the permit, ineligibility for future permits, and denial of future permit requests.										
PERIOD OF PERMIT	This permit is only valid from August 10, 2017 to July 30, 2020.										
DATE OF ISSUE	June 6, 2017	June 6, 2017									
Jan BM		lan Blackburn Regional Manager Recreational Fisheries & Wildlife Programs South Coast Region	PERMIT FEE \$150.00 HCTF SURCHARGE \$15.00								
SIGNATURE OF ISSU	ER										

Last Updated: 10-13-11 Page 1 of 3

APPENDIX A TERMS OF PERMIT

PERMIT SU17-264155

REPORTING REQUIREMENTS:

- 1. The permit holder must maintain an accurate up to date record of the wildlife hunted, trapped or killed under the permit, which includes the following information:
 - a) Common name of the wildlife
 - b) Location where the wildlife was taken
 - c) The date the wildlife was hunted, trapped or killed
 - d) The sex and age class of the wildlife taken
 - e) The bands or tags on the wildlife
 - f) A description of all nests, dams or other structures destroyed or removed
- The permit holder must submit the original copy of this record to FrontCounter BC within 21 days of the permit's expiry.
- 3. The permit holder must produce a copy of this record on the demand of an officer.

GENERAL CONDITIONS:

- 1. The permit holder must comply with all laws applicable to the activities carried out under this permit.
- 2. The permit holder must take all reasonably necessary steps to ensure that public safety is not jeopardized and fish or wildlife habitat is not damaged by any action taken under authority of the permit.
- 3. The permit holder must ensure that wildlife are treated in a humane manner, and are not subjected to any unnecessary harm or suffering.
- 4. The permit holder must carry a copy of this permit at all times when performing the activities authorized by the permit.



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APPENDIX B ADVISORY

PERMIT SU17-264155

GENERAL

- > It is the permit holder's responsibility to be aware of all applicable laws and the limits of this permit.
- The Province is not liable for any illness contracted through wildlife handling. It is the responsibility of the permit holder to inform themselves of possible health hazards, and to ensure that all reasonably necessary safety measures are undertaken.

LEGISLATION

Here are some, but not all, relevant excerpts from the Wildlife Act:

Documents not transferable

- 81 Except as authorized by regulation or as otherwise provided under this Act, a licence, permit or limited entry hunting authorization is not transferable, and a person commits an offence if the person
 - (a) allows his or her licence, permit or limited entry hunting authorization to be used by another person, or
 - (b) uses another person's licence, permit or limited entry hunting authorization.

Failure to pay fine

- 85 (1) This section applies if a person
 - (a) fails to pay, within the time required by law, a fine imposed as a result of the person's conviction for an offence under this Act or the *Firearm Act*, and
 - (b) has been served with notice of this section.
 - (2) In the circumstances referred to in subsection (1),
 - (a) the person's right to apply for or obtain a licence, permit or limited entry hunting authorization under this Act is suspended immediately and automatically on the failure to pay the fine,
 - (b) all licences, permits and limited entry hunting authorizations issued to that person under this Act are cancelled immediately and automatically on the failure to pay the fine,
 - (b.1) the person must not apply for employment as an assistant guide,
 - (b.2) the person must not guide as an assistant guide, and
 - (c) the person commits an offence if, before that fine is paid, the person
 - applies for, or in any way obtains, a licence, permit or limited entry hunting authorization under this Act,
 - (ii) does anything for which a licence, permit or limited entry hunting authorization under this Act is required,
 - (iii) applies for employment as an assistant guide, or
 - (iv) guides as an assistant guide.

Production of licence or permit

- 97 If a person who is required to hold a licence, permit or limited entry hunting authorization issued under this Act
 - (a) fails to produce it for inspection to an officer on request, or
 - (b) fails or refuses to state his or her name and address to an officer on request,

the person commits an offence.

REGULATIONS

This excerpt from the Permit Regulation, made under the Wildlife Act, is relevant:

8 A person who holds a permit under the Act or the Permit Regulation commits an offence if he or she fails to comply with a term of the permit.

Last Updated: 2015-04-15

BALD EAGLE NEST MANAGEMENT PLAN: WESTRIDGE MARINE TERMINAL FOR THE TRANS MOUNTAIN PIPELINE ULC TRANS MOUNTAIN EXPANSION PROJECT



Trans Mountain Pipeline ULC

Kinder Morgan Canada Inc. Suite 2700, 300 – 5th Avenue S.W. Calgary, Alberta T2P 5J2 Ph: 403-514-6400

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1.0 INTRODUCTION

Trans Mountain Pipeline ULC (Trans Mountain) submitted a Facilities Application (the Application) to the National Energy Board (NEB) in December 2013 for the proposed Trans Mountain Expansion Project ("the Project" or "TMEP"). On November 29, 2016, the Government of Canada concluded the Project was in the public interest of Canada. A Certificate of Public Convenience and Necessity (CPCN) and other authorizations allowing the Project to proceed, subject to 157 conditions, were issued and became effective on December 1, 2016. The physical components of the Project include: the installation of new pipeline segments and reactivation of existing pipelines that are currently maintained in a deactivated state; construction of pump stations; expansion of existing terminals through the addition of new tanks and other infrastructure. Project work at the Westridge Marine Terminal (WMT) located in Burnaby, British Columbia (BC) will include constructing one new dock complex, with a total of three Aframax-capable berths, as well as a utility dock followed by the decommissioning of the existing berth. In addition, the Project includes construction of a tunnel for two new 30-inch pipelines from the WMT to the Burnaby Terminal. This will involve construction of a tunnel portal and associated infrastructure at the WMT.

A bald eagle's nest is located within the fenced boundary of the WMT. Although the nest will not be removed as a result of Project activity, construction at the WMT is anticipated to occur over 2 years within the provincially recommended protective buffer of the bald eagle's nest (see Section 1.2). The following Nest Management Plan has been prepared to describe the location of the nest, relevant regulations and best management practices, Project activity and schedule, and a review of the options considered to reduce potential Project effects on the bald eagle's nest, as well as the recommended option and associated mitigation measures.

1.1 Bald Eagle's Nest

The bald eagle's nest is located in the forested area within the boundaries of the WMT. This area is bounded by the Barnet Highway (Hwy. 7A) to the southeast, Bayview Drive and housing to the south and west and facilities at the WMT to the west (Figure 1). The nest is located in a black cottonwood tree that is 134 cm diameter at breast height (dbh) and 53 m tall. This tree is located adjacent to the fence that surrounds the property (Appendix A, Plate 1) and within WMT property boundaries. The nest is approximately 30 m above ground level. The surrounding forest cover is comprised of black cottonwood, big-leaf maple, Douglas-fir and western hemlock.

The nest is located approximately 80 m from existing infrastructure (*i.e.*, roads and tanks) within the WMT and is 65 m northwest of the Barnet Highway. The nest is located adjacent to an existing pipeline right-of-way and a walking trail passes within approximately 45 m of the nest outside of the WMT property. Sensory disturbance at the nest includes activity at the WMT, highway traffic on the Barnet Highway, as well as human use of the walking trail.

The bald eagle nest was identified as being active on April 2, 2013 and again on July 22, 2016 by Environmental Dynamics Inc. (EDI). During the WMT site visit on July 22, 2016, adult eagles and a juvenile were observed (Appendix A, Plates 2 and 3). A site visit was completed on December 13, 2016 by professional biologists from EDI with bald eagle technical expertise to review the surrounding area for alternate nests that may be used, as well as the suitability of the surrounding forest for bald eagle nesting. Suitable nest trees were identified according to their ability to support an artificial nest structure (*i.e.*, overall health of the tree, dbh and position relative to the surrounding forest), as well as providing views and access to/from the tree, and existing sensory disturbances. The search extended within forested areas approximately 400 m from the boundaries of the WMT. The timing of the site visit provided an ideal opportunity to identify any existing nest structures within deciduous trees (*i.e.*, leaf-off conditions provided a clear view into the canopy). No other existing nests were found in the area searched and four potential alternate nest trees were identified for the construction of an artificial nest (see Section 4.2 for details).

A site visit was completed on January 31, 2017 by J. Gillis from BC Ministry of Forests, Lands and Natural Resource Operations (MFLNRO) and an EDI wildlife biologist to determine the nesting status of the bald eagle nest at the WMT as well as review the four potential alternate nest trees selected during the December 13, 2016 site visit. Two of the previously identified potential alternate nest trees were identified as highly suitable for the construction of artificial nest (see Section 4.2 for details).

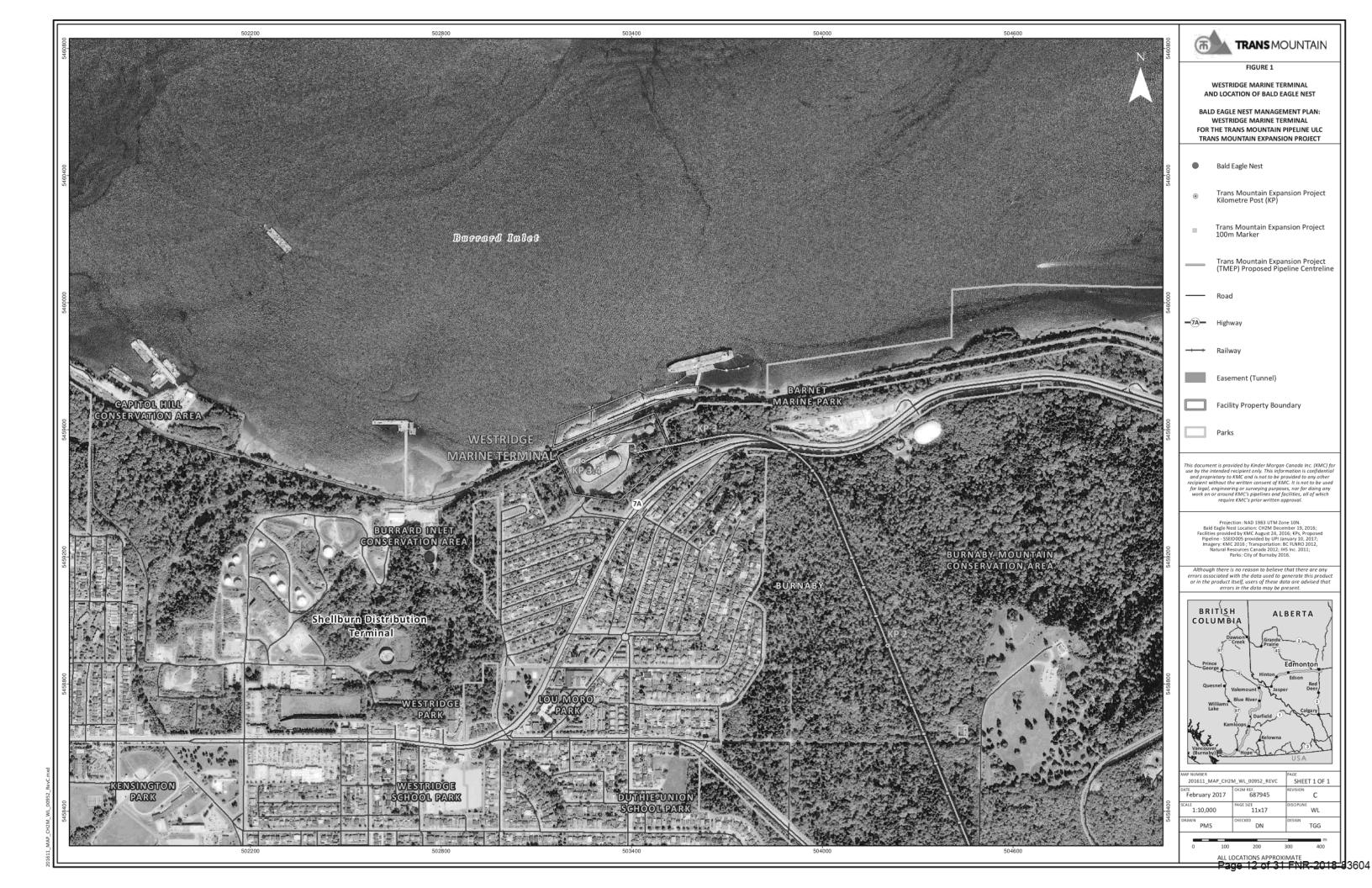
1.2 Regulations and Best Management Practices

Bald eagles are yellow listed in BC meaning they are apparently secure and not at risk of extinction (BC Conservation Data Centre 2017). Similarly, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) ranks bald eagles as a species that has been evaluated and found to be not at risk (COSEWIC 2017). Bald eagle nests are protected year-round by the BC *Wildlife Act*. The applicable best management practices that offer guidance for protecting bald eagles, that have been consulted in the development of this Plan, include:

- Guidelines for Raptor Conservation during Urban and Rural Land Development in British Columbia (2013). A companion document to Develop with Care 2012 (BC Ministry of Environment [MOE], 2013).
- Develop with Care 2014: Environmental Guidelines for Urban and Rural Development in British Columbia - Section 4 Environmentally Valuable Resources (BC MOE 2014a).
- Develop with Care 2014: Environmental Guidelines for Urban and Rural Development in British Columbia – Section 5.6 South Coast Region (BC MOE 2014b).

These documents provide information on sensitive breeding and nesting time periods, buffers for raptor nests according to their tolerance to human disturbance and recommended mitigation measures. The Guidelines for Raptor Conservation during Urban and Rural Land Development in BC (BC MOE 2013) identifies bald eagles as having "moderate-high" tolerance to disturbance and identifies the recommended buffers based on surrounding land use specifically: 200 m buffer in undeveloped areas; 100 m buffer in rural areas; and 1.5 tree lengths or 50 m from a cliff in urban areas (BC MOE 2013). Given that the WMT is located within the City of Burnaby, a recommended buffer of 1.5 tree lengths is appropriate, which results in a 79.5 m buffer (the nest tree is 53 m in height). The least risk window for bald eagle is September 1 to December 31, and during the breeding season (when the nest is occupied by eagles) an additional 100 m "quiet" buffer is recommended (BC MOE 2014a).

Project activity at the WMT will occur within the recommended buffer as well as during the breeding season. For these reasons, Trans Mountain has prepared this Plan and has sought guidance from the Appropriate Government Authorities, as well as qualified professional biologists. The results of consultation specific to Project activity and the eagle's nest at the WMT completed to date are provided in Section 5.0.



2.0 PROJECT DETAILS

Project construction activities at the WMT include the construction of a new dock complex, with a total of three Aframax-capable berths, and utility dock (for tugs, boom deployment vessels and emergency response vessels and equipment) and the decommissioning of the existing berth. The construction of the marine berths will require the extension of the foreshore and high levels of noise disturbance will be experienced as a result of pile driving activities associated with the marine berth construction. A large volume of construction associated traffic will be experienced at the existing entrance/exit of the WMT (estimated peak rates of vehicles/equipment entering or exiting the WMT every 3-5 minutes). Extensive disturbances associated with the movement of equipment and handling of materials will also be present within the WMT.

Project work at the WMT in closest proximity to the bald eagle nest is for the construction of a tunnel portal and subsequent tunnel excavation activities to connect WMT and Burnaby Terminal. This undertaking is complex and requires specialized technical teams and equipment and adherence to a strict schedule in order to facilitate technical sequencing of tunnel construction between the WMT and Burnaby Terminal. The location of the area to be cleared for the tunnel portal in relation to the recommended buffers from the bald eagle nest are shown on Figure 2. The forested area between the Portal Development Area and the bald eagle nest will not be cleared.

Project activities cannot be completed outside of the bald eagle nesting season due to the lengthy timeframes and complexity of the work.

2.1 Burnaby Mountain Tunnel Schedule

The duration of Project activities is anticipated to extend over 2 years of continuous activity. Table 1 provides a simplified sequence of tunnel construction activities at the WMT, as well as a preliminary schedule that demonstrates the sequences of these tasks and their duration.

TABLE 1
WESTRIDGE MARINE TERMINAL TUNNEL PORTAL DEVELOPMENT
ACTIVITY AND PRELIMINARY SCHEDULE¹

Task	Estimated Start Date	Estimated Finish Date
Preliminary Site Preparation	mid-August 2017	January 2018
Portal Set-up	January 2018	April 2018
Westridge Setup for Tunneling	April 2018	May 2018
Tunnel Excavation	May 2018	April 2019
Pipe Installation	January 2019	J uly 2019
Tunnel Backfill (if applicable)	July 2019	November 2019
Demobilization and Grade Restoration	November 2019	November 2019

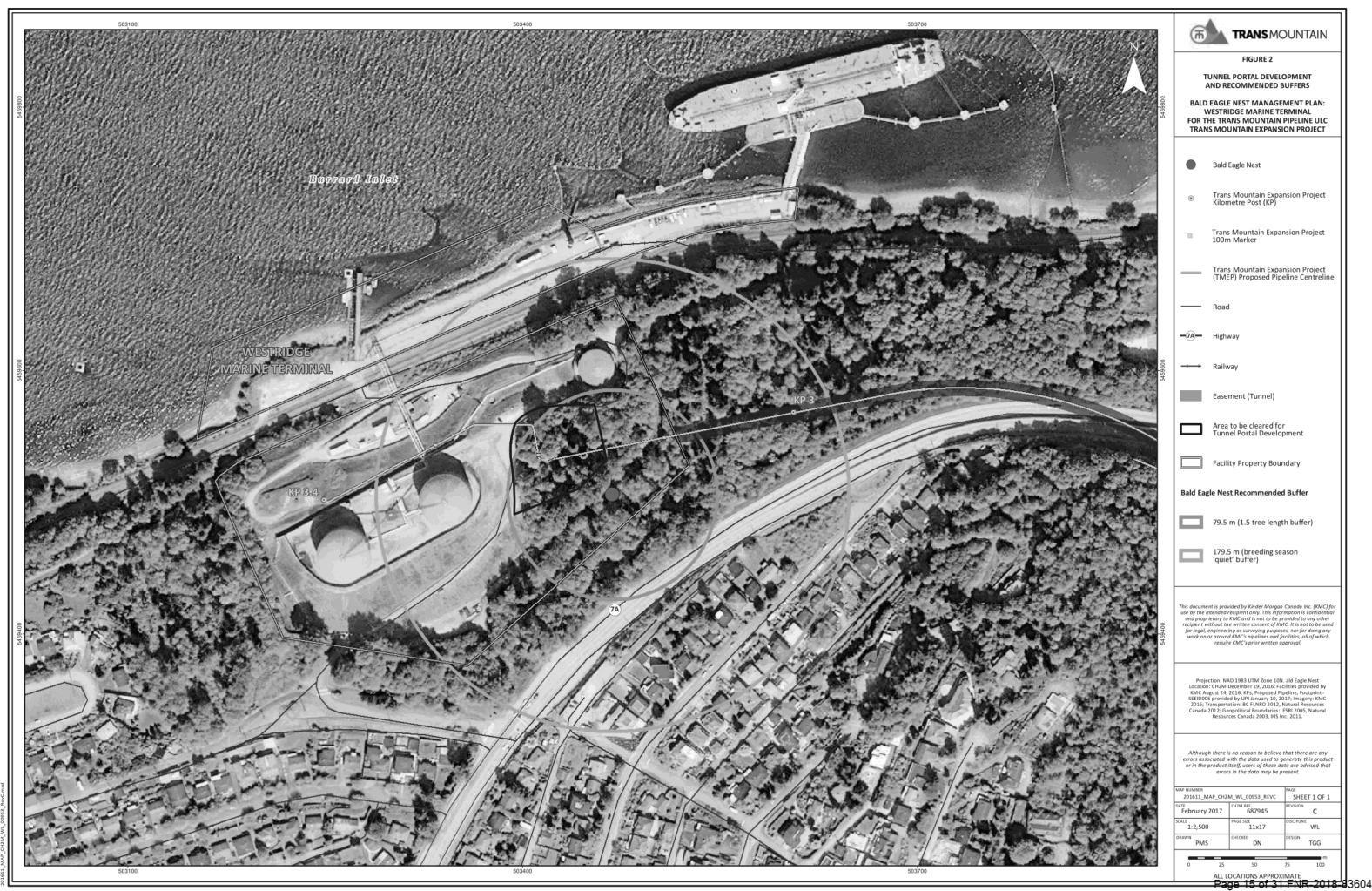
Notes: 1. Estimated start and end dates are subject to change.

2.2 Environmental Protection Measures

Extensive Project planning has been undertaken to mitigate potential Project effects on the environment at the WMT. Table 2 lists relevant Plans that contain mitigation measures to be implemented at the WMT.

TABLE 2 SUMMARY OF RELEVANT PLANS FOR THE WESTRIDGE MARINE TERMINAL

Plan (and NEB Condition)	Description
Burnaby Mountain Tunnel Option: Design, Construction, Operation. (NEB Condition 26)	This will provide technical details and drawings for the tunnel between the WMT and Burnaby Terminal.
Burnaby Mountain Tunnel Environmental Protection Plan (EPP) (NEB Condition 72)	This will communicate Trans Mountain's environmental procedures and mitigation measures to Project construction and inspection personnel to be implemented during the tunnel construction between the WMT and Burnaby Terminal. The EPP:
	 Identifies mitigation measures to be implemented during construction activities;
	 Provides instructions for carrying out construction activities in a manner that will avoid or reduce adverse environmental effects; and
	 Serves as reference information to support decision-making and provides direction to more detailed information (i.e., resource-specific mitigation, management and contingency plans).
Westridge Marine Terminal EPP (NEB Condition 81)	This will communicate Trans Mountain's environmental procedures and mitigation measures to field personnel to be implemented during the construction of the WMT in a clear, concise and user-friendly format, to avoid or reduce potential adverse environmental effects. The EPP:
	 identifies mitigation measures to be implemented during Project construction activities;
	 provides recommendations for carrying out construction activities in a manner that will avoid or reduce adverse environmental effects; and
	 serves as reference information for the Project personnel to support decision making process and provides direction to more detailed information (i.e., resource- specific mitigation, management and contingency plans).
	Wildlife Species of Concern Discovery and Encounter Contingency Plan:
	 provides procedures and contingency measures for the discovery of terrestrial or marine wildlife species of concern prior to and during construction of the WMT and associated components (e.g., access roads)
Light Emissions Management Plan for the Westridge Marine Terminal (NEB Condition 82)	This will provide details on procedures and mitigation measures to manage light emissions during construction activities at the Westridge Marine Terminal.
Burnaby Mountain Tunnel Construction Noise Management Plan (NEB Condition 86)	This will provide details on procedures and mitigation measures to control sound levels during construction related to activities including tunnel construction, heavy equipment, pile driving and back-up alarms.
Post-Construction Noise Surveys (NEB Condition 141)	To demonstrate compliance with the BC Oil and Gas Commission's BC Noise Control Best Practices Guideline (2009)
Authorization(s) under paragraph 35(2)(b) of the Fisheries Act – Westridge Marine Terminal (NEB Condition 109)	In the event that Fisheries and Oceans Canada determines that the WMT expansions requires authorization under paragraph 35(2)(b) of the <i>Fisheries Act</i> , Trans Mountain will file a copy of the authorization with the NEB at least 10 days prior to commencing works.
	Within 30 days after commencing operations Trans Mountain will confirm that any Fisheries Act Authorization(s) were obtained from Fisheries and Oceans Canada and filed with the NEB as described above, or notify the Board no Authorization(s) were required.



3.0 CONSIDERATION OF OPTIONS

Trans Mountain has considered the following options for managing Project construction while minimizing impacts to the bald eagles:

- 1. do not remove tree/nest, use a deterrent to discourage eagles from nesting in close proximity to Project activities and provide alternate nest sites.
- 2. do not remove tree/nest, and allow eagles to decide whether to nest or select an alternate nest;
- 3. remove tree/nest to influence the eagles to use an alternate nest structure in their nesting territory.

These are described in more detail below in consideration of their benefits and risks. Note that modifying the Project schedule to avoid the breeding/nesting season is not an option since the proposed activity at the WMT is extensive and expected to be continuous over an approximate 2-year period. Modifying the construction schedule to reduce or halt activity for extended periods of time while the eagle's nest is active was not considered feasible given the nature of the work and the associated costs.

3.1 Option 1: Use a Nesting Deterrent and Provide Alternate Nest Sites

This option would involve the installation of a deterrent that would prevent the bald eagles from using the nest within the WMT. This option would not result in the destruction of the nest structure itself, and upon completion of Project activities, the deterrent would be removed and the nest will be available for use by the eagles. In order to reduce the risk of a lost nesting opportunity, two alternative nest structures would be installed within suitable nest trees within 300 m of the existing nest tree. The installation of alternate nests at greater distances is not recommended, as other eagle pairs are likely to have established territories at high densities along the shores of Burrard Inlet. A summary of existing information on the use of these mitigative approaches is provided below followed by a discussion of the site-specific conditions and recommendations for the bald eagle nest at the Westridge Marine Terminal.

The use of a nesting deterrent has been successfully implemented for other large-bodied raptors with a high degree of nest site fidelity. A deterrent technique was implemented in 2016 by BC Hydro for work at the Bennett Dam. BC MFLNRO in Fort St John authorized a *Wildlife Act* Permit to use a deterrent approach for an osprey nest at the Bennett Dam. A deterrent was installed using a helicopter in early spring 2016 and successfully prevented the osprey from using the nest in 2016. Alternate nest structures were not constructed as part of this plan. The deterrent is presently in place and at this time it is unknown if the osprey will return to the nest upon the removal of the deterrent.

There have been several documented cases of previous success of artificial nest platforms. For example, a platform and nest constructed in a black cottonwood at the MacKay Creek Estuary was used by eagles in 2014. This artificial platform was constructed as compensation for the removal of a bald eagle nest that facilitated the construction of the Highway 91 Interchange project (Habitat Conservation Trust Foundation 2015). The approach of installing artificial nest platforms was also recently approved by BC MFLNRO (Permit FJ14-154018) for use in the construction of the BC Hydro Site C Project, where 38 alternate nest platforms (2 alternate nest platforms for each bald eagle nest removed) will be installed to compensate for the removal of 19 bald eagle nests (BC Hydro 2015).

The installation of artificial nest platforms would involve trimming non-dominant stems/branches from the selected tree and building and installing a frame within the tree to support nesting material. Additional branches are added to the frame to attract eagles to select the platform for nesting (Habitat Conservation Trust Foundation 2015).

Following the confirmation that the eagles have dispersed from the area the installation of the artificial nest platforms in the area of the WMT would be scheduled for late summer, prior to the commencement of Project activities and prior to the typical period when bald eagles begin to initiate nesting. The installation of the deterrent within the bald eagle nest within the WMT would occur after the nest is confirmed to be inactive (anticipated to be inactive by approximately late July to mid-August).

During the site visit on December 13, 2016 no existing alternate nests were observed and four potential alternative nest trees were identified in the vicinity of the WMT. These potential alternate nest trees were reviewed by BC MFLNRO during the site visit conducted with EDI biologists on January 31, 2017. The potential alternate nest trees identified by EDI biologists in December as well as the alternate nest trees identified by BC MFLNRO as suitable for the installation of artificial nests are detailed in Table 3.

TABLE 3

ALTERNATE NEST TREES IDENTIFIED DURING EDI AND BC MFLNRO SITE VISITS

Alternate Nest Tree	UTM (NAD 83, Zone 10)	Breeding Season Buffer (m) ¹	Distance to Portal Development Area (m)	Distance from Existing Bald Eagle Nest (m)	Land Ownership	Comment and Photo Plate (see Appendix A)
1: Black cottonwood (110 cm dbh; 41 m tall)	503185E, 5459361N	161.5	245	315	City of Burnaby	Identified by BC MFLNRO as ideal for installation of artificial nest. Located north of pedestrian pathway and Bayview Road (Plate 4)
2: Black cottonwood (90 cm dbh; 25 m tall)	503308E, 5459373N	152.5	148	205	City of Burnaby	Identified by BC MFLNRO as ideal for installation of artificial nest. Located at corner of pedestrian pathway and Bayview Road (Plate 5)
3: Western hemlock (141 cm dbh; 40 m tall)	503643E, 5459584N	160	190	190	City of Burnaby	Located within forested area 45 m north of Barnet Highway (Plate 6) Pruning of branches is likely required to facilitate the installation of an artificial platform
4: Western hemlock (30-40 cm dbh; 30 m tall)	503897E, 5459651N	145	445	455	City of Burnaby	Located adjacent to closed cement plant (Plate 7) Pruning of branches is likely required to facilitate the installation of an artificial platform

Note: all measurements and distances are approximate

1. Buffer is calculated as 1.5 times the height of the tree plus an additional 100 m "quiet" buffer (BC MOE 2013)

Alternate Nest Trees 1 and 2 are located a suitable distance from the known bald eagle nest and have adequate line of sight from the existing bald eagle nest. However, Alternate Nest Tree 1 and 2 are both located within close proximity to the existing access road into the WMT. A large volume of construction traffic is expected in this area. If the disturbance associated with the construction traffic is too high, there may be a risk of neither alternate nest site being selected and consequently a nesting opportunity may be lost. Alternate Nest Tree 3 is located the closest to the known bald eagle nest site and has an intact vegetated buffer. Trans Mountain proposes Alternate Nest Trees 1 and 3 for the installation of artificial nest structures. This will provide the eagles with the option of selecting a nest site to the southwest (Alternate Nest Tree 1) or to the northeast further from the potential disturbances in the vicinity entrance/exit of the WMT. All of the potential alternate nest trees as well as the trees selected for the installation of artificial nests are shown on Figure 3. Prior to the installation of the artificial nests, a tree health assessment is recommended to ensure they are capable of supporting the artificial nest structures. Consultation with the City of Burnaby will be undertaken to discuss the installation of the artificial nest structures.

3.2 Option 2: Do Not Remove Nest or Implement a Nest Deterrent

This option would involve initiating activity at the WMT between nest completion and nest establishment. The recommended period for initiation of activity is late-August to early September (after confirmation that the nest is no longer being used). Activity during this period would include clearing of trees at the WMT and any site preparation in closest proximity to the nest. At the time when the eagles begin to re-establish a nest for the breeding/rearing period, Project activity would continue with an onsite wildlife monitor. If the eagles remained at their existing nest despite ongoing Project activity, this would demonstrate their tolerance of sensory disturbance. Alternatively, the eagles could also choose to nest at an alternate nest within their territory.

This option is not favored since the eagles may nest and appear tolerant of the Project activity at first, but as activities at WMT begin to overlap (i.e. pile driving, tunnel excavation, material handling), there is the risk that the eagles may experience stress and abandon the nest. As indicated, once initiated Project activities must be continuous given the technical complexities of tunneling, as well as the significant timelines necessary for this development.

3.3 Option 3: Remove Nest

Removal of the tree would result in the permanent loss of a known bald eagle nest. This option is not considered appropriate since the nest tree is not located within the required area for clearing to facilitate Project activities and would result in the permanent loss of the nest when potential impacts associated with construction activities are expected to be temporary (*i.e.*, approximately 2 years).



4.0 RECOMMENDED OPTION

4.1 Use a Nest Deterrent and Provide Alternate Nests

Trans Mountain's preferred option is to use a nesting deterrent and provide alternate nest sites (Option 1). This option reduces the risk of the bald eagles nesting at the existing nest site, which is in closer proximity to anticipated sources of disturbance and may result in elevated stress to the eagles and/or nest abandonment and the loss of a successful nesting season. The use of a nesting deterrent conflicts with Section 34(b) of the BC *Wildlife Act*, therefore a permit is required to authorize the use of a deterrent and implementation of this approach. A permit is not required for the installation of artificial nest structures.

The existing nest tree will not be removed and will be available for use following completion of Project activities (anticipated to be over two years in duration). Two artificial nest platforms will be installed within suitable trees that have been identified by qualified biologists and reviewed by BC MFLNRO in the vicinity of the existing nest.

This recommended option considers that bald eagle's typically reuse nests annually and often have alternate nest sites within their territory (Blood and Anweiler 1994). The size of the breeding territory for bald eagles vary and are thought to be influenced by the availability of food resources, with average territory sizes ranging from 0.5 km² to 2 km² (*review in* Buehler 2000). The installation of artificial nest platforms in suitable trees in the vicinity of the known nest at the WMT will ensure that a suitable nest site is available within this breeding territory.

4.2 Implementation

The nest deterrent to be installed within the known bald eagle nest located within the WMT facility boundary will be designed to prevent the bald eagles from accessing the nest structure. It will not damage the integrity of the nest itself and will be removed following completion of construction activities at the WMT.

Trans Mountain will engage a local conservation group with experience in bald eagle nesting ecology and the installation of artificial nesting structures within suitable nest trees. Generally, the artificial nest structure will be installed in the selected trees at a suitable height (*i.e.*, within the upper 1/3 of the tree) with sufficient accessibility for flights to and from the nest, some pruning of branches may be necessary to improve access. The nest frame (built of natural materials) is attached to the tree with additional branches and nesting materials (*e.g.*, moss and grass) added to encourage nesting.

The nest deterrent and artificial nests will be installed by a qualified arborist who will install the nest structures by hand, some handheld power tools may be required. Equipment, such as cranes, are not expected to be required.

Bald eagle fledglings are expected to be leaving the nests by mid- to late August, with adults returning to the nest in early winter to initiate nesting. The nesting deterrent will be installed following confirmation of the fledging of the bald eagle young. This activity will require a qualified environmental professional to monitor the nest to confirm that the nest is inactive prior to the installation of the nest deterrent. The installation of the alternate nest structures will be scheduled concurrently with the nest deterrent installation following the fledging of the young and dispersal of eagles from the area prior to October, 2017.

It is important to note that eagles may abandon a nest site if they observe disturbances in close proximity to the nest and the evaluation of nest sites and territory establishment may occur from early October to late December (BC MOE 2014b). The timing of bald eagle expected use in the area in relation to construction activities and monitoring and installation of the nest deterrent and alternate nests is shown on Figure 4.

FIGURE 4 PRELIMINARY SCHEDULE FOR NEST DETERRENT AND ALTERNATE NEST INSTALLATION

	2017													2018												
August September October N					November December							January														
4		11	18	25	1	8	15	22	29	6	13	20	27	3	10	17	24	1	8	15	22	29	5	12	19	26
Е	agle F	Fledgir	ng	Eagle nest site evaluation / territory establishment									Eagle nest initiation													
					Construction activities at the WMT																					
		Mon	itor / In	stall Deterrent																						
		Mon	itor / In	stall Alt Nests																						

Note: The initiation of construction activities is estimated and subject to change

4.3 Monitoring

Monitoring of the alternate nests and nest deterrent will be conducted to determine use of the alternate nest structures and condition of the deterrent within the bald eagle nest during the construction period (expected to be over 2 years) and the first year of operations. The monitoring efforts will include a visual inspection of the alternate nest structures to evaluate nest structure integrity and use by bald eagles (or other species). The timing of monitoring activities will be scheduled to coincide at the appropriate time to determine nesting activity as well as during the expected fledging period to determine nesting success and nest conditions.

If the alternate nest structures are not utilized by the eagles (*i.e.*, if both structures are not used) or are observed to be deteriorating structurally, corrective measures will be implemented after it is confirmed that the eagles have left the area and prior to their return for nest site evaluation and territory establishment. These corrective measures may include:

- Supplemental additions of nesting materials (*e.g.*, branches, mosses, grasses)
- Supplemental pruning of adjacent branches to improve access to the nest
- Repair or replacement of nest structure if structural integrity is deteriorating

5.0 CONSULTATION

Trans Mountain has initiated consultation and will continue to work with MFLNRO and technical experts to ensure that the measures to avoid, minimize and mitigate Project effects on the eagle's nest are implemented. A summary of consultation conducted to date is provided in Table 4.

TABLE 4
SUMMARY OF CONSULTATION

Name and Title	Method of Contact	Date	Comments
BC Ministry of Forests, Lands and Natural Resource Operations (MFLNRO), South Coast Region			
William (Bill) Harrower Manager, Major Projects Review and A/Manager, Regional Initiatives Office	Telephone	August 30, 2016	Discussed with MFLNRO the eagle's nest at the WMT and options for mitigation, as well as clarification on whether a Wildlife Permit was necessary. September 6, 2016: MFLNRO responded via e-mail
William (Bill) Harrower Manager, Major Projects Review and A/Manager, Regional Initiatives Office	Telephone	October 19, 2016	MFLNRO confirmed that a Permit is only required when a nest is removed, and not when work occurs within the protective buffer of a nest. In this case a Nest Management Plan is needed.
Joel Gillis Ecosystem Specialist / Spotted Owl Biologist,	Telephone	January 16, 2017	Discussion with MFLNRO regarding the eagle's nest at the WMT, proximity to construction activities, options for mitigation and installation of nest deterrent and alternate nest sites.
Joel Gillis Ecosystem Specialists / Spotted Owl Biologist	Site Visit	January 31, 2017	MFLNRO and EDI biologists conducted site visit at WMT. MFLRNO selected two suitable trees for the installation of artificial nest trees. Noted that existing nest was not active, however it should be monitored into mid-late March to determine nesting status for 2017.
Joel Gillis Ecosystem Specialist / Spotted Owl Biologist	Email	February 1, 2017	MFLNRO provided summary of results of site visit, indicated selection of suitable alternate nest trees for installation of artificial nests as well as recommended timing of activities.
Joel Gillis Ecosystem Specialist / Spotted Owl Biologist	Telephone	February 17, 2017	Discussion with MFLNRO regarding the potential alternate nest trees for the installation of artificial nest structures. Information regarding planned construction activities in the vicinity of alternate nest trees and expected levels of disturbance were provided.
Jason Ladyman Land Officer			

6.0 SUMMARY

The bald eagle nest within the boundaries of the WMT has been observed as active in 2013 and 2016. This Plan proposes measures to mitigate potential impacts to the bald eagles in consideration of constraints associated with the complexity and lengthy timeframes associated with construction activities at the WMT. The recommended approach is to manage these potential impacts is to install a nesting deterrent within the known eagle nest and provide two alternate nest sites to reduce the risk of lost nesting opportunities. Four potentially suitable alternative nesting locations were identified by qualified biologists, and were reviewed by BC MFLNRO. Trans Mountain has selected two alternate nest trees for installation of the artificial nests that considers consultation with BC MFLNRO and sources of potential disturbance associated with construction activities. Following the completion of construction activities (anticipated to be approximately 2-years in duration) the deterrent would be removed to allow nesting at the original nest site. Trans Mountain will submit a General Permit Application under the BC *Wildlife Act*, for authorization to install a nesting deterrent within the known bald eagle nest at the WMT.

7.0 REFERENCES

7.1 Literature Cited

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- British Columbia Conservation Data Centre. 2017. Red, Blue and Yellow Lists. BC Ministry of Environment. Website: http://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/conservation-data-centre/explore-cdc-data/red-blue-yellow-lists. Accessed: February 2017.
- British Columbia Hydro. 2015. Vegetation and Wildlife Mitigation and Monitoring Plan. Site C Clean Energy Project. Version 1: June 5, 2015. 629 pp.
- British Columbia Ministry of Environment. 2013. Guidelines for Raptor Conservation during Urban and Rural Land Development in British Columbia (2013). A companion document to Develop with Care 2012: website:

 http://www.env.gov.bc.ca/wld/documents/bmp/raptor conservation guidelines 2013.pdf. Accessed: February 2017.
- British Columbia Ministry of Environment. 2014a. Develop with Care 2014: Environmental Guidelines for Urban and Rural Development in British Columbia Section 4 Environmentally Valuable Resources. Website: http://www.env.gov.bc.ca/wld/documents/bmp/devwithcare/DWC-Section-4.pdf. Accessed: February 2017.
- British Columbia Ministry of Environment. 2014b. Develop with Care 2014: Environmental Guidelines for Urban and Rural Development in British Columbia Section 5.6 South Coast Region. Website: http://www.env.gov.bc.ca/wld/documents/bmp/devwithcare/DWC-Section-5-6-South-Coast-Region.pdf. Accessed: February 2017
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- Committee on the Status of Endangered Wildlife in Canada (COSEWIC). 2017. Canadian Species at Risk. Website: http://www.cosewic.gc.ca/default.asp?lang=En&n=A9DD45B7-1. Accessed February 2017.
- Habitat Conservation Trust Foundation. 2015. New Nesting Platform Eagle-Approved. December 15, 2015. Website: http://www.hctf.ca/communications/blog/entry/new-nesting-platform-eagle-approved. Accessed: February 2017.

7.2 GIS Data and Mapping References

- BC Ministry of Forests, Lands and Natural Resource Operations. 2012. Digital Road Atlas (DRA) Master Partially Attributed Road Data (digital file). Victoria, BC. Available: https://apps.gov.bc.ca/pub/dwds/home.so. Acquired: December 15, 2015. Last Update Check: December 15, 2015.
- CH2M HILL Energy Canada Ltd. 2016. Bald Eagle Nest/ Potential Alternate Nest Tree Location/Buffers (digital file). Calgary, AB. Acquired: December 13, 2016.
- City of Burnaby. 2016. Park Inventory (digital file). Data current to September 12, 2016. Downloaded from https://www.burnaby.ca/City-Services/Maps-Open-Data.html. Acquired January 3, 2017.
- IHS Inc. 2011. IHS Provincial Boundaries (digital file). Calgary, AB. Received: via DVD, visit http://www.ihs.comfor more info. Acquired: June 2011. Last Update Check: April 21, 2014.
- Kinder Morgan Canada. 2016. Facility Footprint (digital file). Acquired: August 24, 2016.

- Kinder Morgan Canada. 2016. B/W & Colour Imagery: 2008-2015 (digital files). Calgary, AB. Acquired September 2016.
- NRCan. 2003. Canadian Geographical Names (digital file). Ottawa, ON. Available: http://geobase.ca/geobase/en/data/cgn/index.html. Acquired: December 2011. Last Update Check: December 2011.
- NRCan. 2012. CanVec -Transportation 1020009 Railway (digital file). Sherbrooke, QC. Available: http://geogratis.cgdi.gc.ca/geogratis/en/download/topographic.html. Acquired: June 2012. Last Update Check: November 2012.
- UPI. 2016. Proposed KPs, Centerline, Project footprint SSEID005 (digital files). Calgary, AB. Received via FTP. Acquired: December 16, 2016.

APPENDIX A

PHOTOPLATES



Plate 1 Bald eagle nest (indicated by yellow circle) within the fenced boundary of the WMT (December 13, 2016).



Plate 2 Bald eagle pair at the WMT (July 22, 2016)

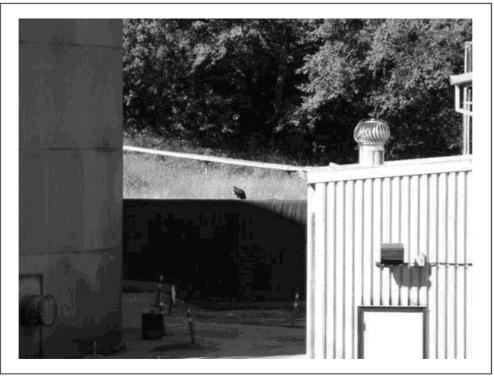


Plate 3

Juvenile bald eagle perched near tank at Westridge Marine Terminal (July 22, 2016).



Plate 4

View of Alternate Nest Tree 1 (black cottonwood) located north of pathway and Bayview Road (December 13, 2016).

Plate 6



Plate 5 View of Alternate Nest Tree 2 (black cottonwood) located at corner of pathway and Bayview Road (December 13, 2016).



View of Alternate Nest Tree 3 (western hemlock) located approximately 45 m north of Barnet Highway (December 13, 2016).



Plate 7 View of Alternate Nest Tree 4 (western hemlock) located adjacent to closed cement plant (December 13, 2016).

Jager, Brenda CSNR:EX

From: Blackburn, Ian FLNR:EX

Sent: Wednesday, April 12, 2017 3:17 PM

To: Pasch, Jessica FLNR:EX

Subject: RE: ACTION: 3 (1)(d)(ii) Permit for consideration – MEARS, Margaret (Trans Mountain

Pipeline ULU).264155

I approve

Ian Blackburn

Manager, Resource Stewardship South Coast Natural Resource Region B.C. Ministry of Forests, Lands and Natural Resource Operations

Ph: 604.586.4427 Fax: 604.586.2900

To Report a Natural Resource Violation:

Telephone: 1-877-952-7277 or #7277 on cell

Webpage: https://www.for.gov.bc.ca/hen/nrv/report.htm

From: Pasch, Jessica FLNR:EX

Sent: Wednesday, April 12, 2017 3:09 PM

To: Blackburn, Ian FLNR:EX
Cc: Russell, Veronica A FLNR:EX

Subject: FW: ACTION: 3 (1)(d)(ii) Permit for consideration – MEARS, Margaret (Trans Mountain Pipeline ULU).264155

From: Gillis, Joel FLNR:EX

Sent: Tuesday, March 28, 2017 11:53 AM

To: Pasch, Jessica FLNR:EX Cc: Blackburn, Ian FLNR:EX

Subject: RE: ACTION: 3 (1)(d)(ii) Permit for consideration – MEARS, Margaret (Trans Mountain Pipeline ULU).264155

Please approve – thank

From: Pasch, Jessica FLNR:EX

Sent: Friday, March 3, 2017 8:48 AM

To: Gillis, Joel FLNR:EX
Cc: Blackburn, Ian FLNR:EX

Subject: ACTION: 3 (1)(d)(ii) Permit for consideration – MEARS, Margaret (Trans Mountain Pipeline ULU).264155

Please find attached a 3 (1)(d)(ii) wildlife permit for consideration. MEARS, Margaret (Trans Mountain Pipeline ULU).264155

Supporting documents:

- 1. Draft (attached);
- Permit application (attached);
- Any other supporting documents (ie maps, project proposal, etc) received with application (attached);
- 4. COORS no history

1

The client does not wish to remove the nest so I am unsure if I have drafted this permit correctly. Sorry for the inconvenience,



Jessica Pasch Fish & Wildlife Permit Clerk FrontCounter BC

South Coast Region

Surrey Office: **(604) 586-4400** or Toll free: 1-877-855-3222

Suite 200, 10428 153rd Street Surrey, BC V3R 1E1

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Forests, Lands and Natural Resource Operations