Proposed Vancouver Harbour Ready Mix Concrete Plant Environmental Assessment

Terrestrial Habitat and Wildlife Component

Prepared By:

Martin Gebauer
Gebauer & Associates
12634 28th Avenue
Surrey, B.C. V4A 2P3

Prepared For:

Lafarge Canada Inc.
#200 – 7455 132nd Street
Surrey, B.C. V3W 1J8

July 2001

TABLE OF CONTENTS

1. INTRODUCTION

The proposed Vancouver Harbour Ready Mix Concrete Plant is located on the south side of Burrard Inlet along Commissioners Street in Vancouver, just southwest of the Versacold facility. The majority of the site is bare with only a few trees and shrubs in peripheral areas. Gebauer & Associates was retained by Lafarge Canada Inc. to conduct a site assessment of terrestrial habitats and wildlife.

The objectives of this report are to: a) provide a general description of habitat types; b) describe wildlife observed or expected to occur; c) identify valued ecosystem components; d) describe potential impacts of the proposed Ready Mix Concrete Plant, and d) make recommendations to maintain and enhance terrestrial habitats and wildlife.

2. METHODOLOGY

A wildlife and habitat assessment of the subject property was conducted on 31 January and 02 February 2001. All habitat types were visited to determine their significance to wildlife, particularly rare and endangered species. Wildlife occurrence was determined by visual observation, with the aid of 8x40 binoculars and 20x scope, and calls. Utilization of the property by wildlife not observed during the site reconnaissance was inferred from available habitats, local information, and known distributions. Valued ecosystem components (e.g., wildlife trees) were also noted during the survey.

3. PROJECT DESCRIPTION

The Vancouver Harbour Ready Mix Concrete Plant being proposed for the Vancouver Port Authority's industrial waterfront will include: a concrete mixing facility with silos; aggregate storage bins (for sand, crushed stone and gravel); a barge berthing and unloading facility; materials handling conveyors; and an office and maintenance building.

Construction of the proposed Plant will require removal of existing vegetation including Black Cottonwood (*Populus balsamifera*) and blackberry thickets. Facilities have been carefully designed to minimize potential for spills of aggregate or other contaminants into marine and intertidal areas. A comprehensive planting scheme in shoreline and upland areas will reintroduce many indigenous trees and fruit-bearing species to the site.

4. HABITAT DESCRIPTION

4.1 Terrestrial

The majority of the proposed development area is already highly disturbed. Several rows of Black Cottonwood are present along the edges of the property and along existing chain link fences. Three noteworthy patches of Himalayan Blackberry (*Rubus discolor*) are present: a) along the northern property line adjacent to the Versacold building; b) along a fence line just above the high tide mark in the north central part of the lot; and c) on and along the southern end of two decrepit wharves. The only other naturally established plant species observed were grasses and fireweed (*Epilobium angustifolium*).

Several ornamental plants (e.g., Mahonia, English Ivy etc.) have been planted along the parking lot adjacent to Commissioner Street. Man-made habitats include buildings, concrete and other rubble, and old wharves, pilings and a floating dock.

4.2 Intertidal

A relatively shallow intertidal area is present in the western portion of the study area, and is mostly situated between and underneath two old and unused wharves. Intertidal organisms provide food for a number of terrestrial bird species.

4.3 Marine

Extensive marine habitats lie north of the study area and are utilized by numerous wintering waterbirds. Two old wharves, several dolphins, and a floating dock provide perching and roosting opportunities for crows, gulls and other birds.

4.4 Rare and Endangered Plant Species

The Conservation Data Centre designates rare and endangered plant species in British Columbia as either Red or Blue. The Red List includes any indigenous species or subspecies (taxa) considered to be extirpated, endangered or threatened in British Columbia, but do occur elsewhere. Endangered taxa are facing imminent extirpation or extinction, whereas threatened taxa are likely to become endangered if limiting factors are not reversed. Species on the Blue List are taxa considered to be vulnerable or particularly sensitive to human activities or natural events.

Given the highly disturbed nature of the site, rare and endangered plant species are not expected to occur on the site.

5. WILDLIFE DESCRIPTION

5.1 Mammals

Only Harbour Seal (*Phoca vitulina*) was observed in marine areas within the property during the site reconnaissance. Several other species are expected to occur, including River Otter (*Lontra canadensis*), Norway Rat (*Rattus norvegicus*) and Black Rat (*Rattus rattus*) (McTaggart-Cowan and Guiguet 1965). Raccoon (*Procyon lotor*) and House Mouse (*Mus musculus*) likely also occur.

5.2 Birds

5.2.1 General

Because terrestrial habitats are quite limited on the subject property, bird diversity is low compared to other site with more natural, extensive and diverse habitats. Eighteen bird species were observed during the site reconnaissance (see Table 1), of which only eight were observed in terrestrial habitats.

With the exception of Ruby-crowned Kinglet (*Regulus calendula*), all bird species observed in terrestrial areas are resident year-round, whereas as birds observed in marine areas are generally only present in winter (Breault and Watts 1996). Terrestrial habitats are also expected to provide habitat for species such as Spotted Towhee (*Pipilo maculatus*), Dark-eyed Junco (*Junco hyemalis*) and swallows such as Barn Swallow (*Hirundo rustica*) (Campbell et al. 1997). Other species are a possibility, particularly during migration, but they are expected to occur infrequently and in low numbers.

Intertidal and marine habitats appear to attract the widest diversity of bird species. Large numbers of scaup and Surf Scoter in offshore waters suggest that foraging opportunities (likely for mollusks; Ehrlich et al. 1988) is excellent. Breault and Watts (1996) summarized the results of the Burrard Inlet Environmental Action Program, Bird Survey Results for the marine areas bordering the study area. The authors consistently found high numbers of scaup and Surf Scoter in this area. Based on their surveys, other waterbirds that can be expected to be common include, Canada Goose, Common and Barrow's goldeneyes, Red-breasted Merganser (*Mergus serrator*), Western Grebe, cormorants and gulls. Species known to occur in lower numbers include Common Loon (*Gavia immer*), Belted Kingfisher (*Ceryle alcyon*), American Wigeon (*Anas americana*), Mallard (*Anas platyrhynchos*), Pigeon Guillemot (*Cepphus columba*), Long-tailed Duck (*Clangula hyemalis*), Red-necked Grebe (*Podiceps grisegena*),

Horned Grebe (*Podiceps auritus*), Ring-billed Gull (*Larus delawarensis*), Common Merganser (*Mergus merganser*), Hooded Merganser (*Lophodytes cucullatus*) and Great Blue Heron (*Ardea herodias*) (Breault and Watts 1996).

Table 1: Bird species encountered during the site reconnaissance at the proposed Vancouver Harbour Ready Mix Concrete Plant.

Common Name	Scientific Name	Evidence of Occurrence
American Robin	*Turdus migratorius*	• three birds flying over site
Bald Eagle	*Haliaeetus leucocephalus*	• immature bird perched in cottonwood
Barrow's Goldeneye	*Bucephala islandica*	• several feeding offshore
Canada Goose	*Branta canadensis*	• one pair in intertidal area
Common Goldeneye	*Bucephala clangula*	• 10-20 feeding offshore
Double-crested Cormorant	*Phalacrocorax auritus*	• 2-3 flying by offshore
European Starling	*Sturnus vulgaris*	• many on and flying over site
Glaucous-winged Gull	*Larus glaucescens*	• many perched on old wharves, dolphins, offshore and flying overhead
House Finch	*Carpodacus mexicanus*	• flock of 15 in Himalayan Blackberry
Mew Gull	*Larus canus*	• several feeding offshore
Northwestern Crow	*Corvus caurinus*	• numerous perched in cottonwood and on-site structures; feeding in intertidal
Pelagic Cormorant	*Phalacrocorax pelagicus*	• small number feeding offshore
Rock Dove	*Columbia livia*	• numerous on buildings and flying over
Ruby-crowned Kinglet	*Regulus calendula*	• one in Himalayan Blackberry thicket
Scaup spp.	*Aythya ssp.*	• 1,000s in feeding flocks offshore
Song Sparrow	*Melospiza melodia*	• two in Himalayan Blackberry thicket
Surf Scoter	*Melanitta perspicillata*	• 1,000s in feeding flocks offshore
Western Grebe	*Aechmophorus occidentalis*	• 10 roosting on open water

5.2.2 Bald Eagles

Several mid-aged Black Cottonwood present along the shoreline edge of the property and existing chain link fences are used as perch sites and vantagepoints for Bald Eagles. Eagles generally prefer cottonwood in many coastal areas because they are the tallest trees within a stand and have an open structure (Stalmaster and Newman 1979). In Burrard Inlet, Bald Eagles occur commonly during the winter and spring (particularly April), and in low numbers during the summer and fall (Blood and Anweiler 1994; Watts and Breault 1996). Because of the highly developed nature of the south shore of Burrard Inlet in the vicinity of the subject property, very few perch trees are available for Bald Eagle. No other suitable trees appear to be present along the shoreline within at least one kilometre of the property (based on drive survey along Commissioner Street).

5.3 Amphibians and Reptiles

Due to the timing of the field reconnaissance, no amphibians or reptiles were observed at the site. Few species are expected because of the limited natural terrestrial and freshwater wetland habitats on the site (Green and Campbell 1984; Gregory and Campbell 1984). The only species that may occur are Common Garter Snake (*Thamnophis sirtalis*) and Western Terrestrial Garter Snake (*Thamnophis elegans*).

5.4 Rare and Endangered Wildlife

Several wildlife species classified as rare and endangered (i.e., blue and red-listed) are known to utilize the marine component within and north of the study area (Breault and Watt 1996; CDC 2000) (Table 2). Most of the species of concern occurring in marine and intertidal areas of Burrard Inlet in winter nest in other areas of the coast or in interior areas of the province (Fraser et al. 1999), and are therefore, not of management concern in the Inlet. Great Blue Heron occasionally nest in forested areas along Burrard Inlet (Campbell et al. 1990).

Table 2: Red and blue-listed wildlife species which are known or expected to occur on or in the vicinity of the proposed Vancouver Harbour Ready Mix Concrete Plant. Red and blue species are indicated with superscript 'R' and 'B', respectively.

Common and Scientific Names	Habitats and Distribution
Birds	
[R] Western Grebe *Aechmophorus occidentalis*	• occurs in small numbers in marine areas • breeds in only a few areas in the B.C. interior
[R] Brandt's Cormorant *Phalacrocorax penicillatus*	• occurs rarely as a non-breeder in marine waters • not known to nest locally
[B] California Gull *Larus californicus*	• wintering birds seen on Burrard Inlet surveys • breeds in B.C. interior
[R] Double-crested Cormorant *Phalacrocorax phalacrocorax*	• seen perched on dolphins; forages in marine waters • not known to nest locally
[B] Great Blue Heron *Ardea herodias*	• may occur occasionally on beaches and wharves • does not breed nearby
[R] Marbled Murrelet *Brachyramphus marmoratus*	• may occur occasionally in marine waters • does not nest along Burrard Inlet
[R] Peregrine Falcon *Falco peregrinus anatum*	• occasionally seen foraging on Rock Doves along Burrard Inlet • not known to breed locally
[B] Long-tailed Duck *Clangula hyemalis*	• occurs in small numbers during winter in marine areas • breeds in northwestern area of British Columbia
[B] Surf Scoter *Melanitta perspicillata*	• occurs in large numbers during winter in marine areas • breeds in northeastern interior of British Columbia
[B] Red-necked Phalarope *Phalaropus lobatus*	• occurs in small numbers during winter in marine areas • breeds in northwestern interior of British Columbia

6. VALUED ECOSYSTEM COMPONENTS

6.1 Wildlife Trees

Wildlife trees on the subject property include mid-aged cottonwood used by Bald Eagle and other birds such as Northwestern Crow for perching.

6.2 Wildlife Movement Corridors

Animals are known to move along shorelines of wetlands (e.g., intertidal areas). Mammals such as River Otter may move along shoreline areas of the property.

7. ENVIRONMENTAL SENSITIVITY OF SITE

Terrestrial areas on the subject property are not of high environmental sensitivity because of their highly man-modified nature. The most sensitive habitats within the subject property are intertidal and marine habitats. These habitats are of high importance to many wintering waterbirds, many of which are blue and red-listed in the province because of a restricted breeding range in other areas of the province.

8. POTENTIAL IMPACTS OF PROPOSED DEVELOPMENT

8.1 Habitat

8.1.1 Terrestrial

Existing terrestrial vegetation, including Black Cottonwood used as perch sites by Bald Eagle, will be removed. The revegetation plan will ensure that a high diversity of native tree and fruit-bearing shrubs is established on the site, resulting in increased structural heterogeneity and habitat diversity. Vegetation planted in shoreline areas will act as a buffer between sensitive intertidal areas and the proposed plant. Trees such as Sitka Spruce and Western Red Cedar will eventually become tall enough to become attractive perch sites for eagles.

8.1.2 Intertidal

Existing intertidal habitats will be improved with the establishment of a stable shoreline comprised of rock rip rap to the high water mark. Current shoreline areas are eroding rapidly and consist of anthropogenic materials and fine sediments. Further benefits will result from the proposed removal of anthropogenic material from intertidal areas. The potential for further contamination of intertidal areas is extremely low because of proposed concrete retaining wall for containing materials and fluids within the plant site, and presence of a pan under the aggregate conveyor which will collect aggregate that may fall off the conveyor.

8.1.3 Marine

The potential for aggregate spills between barges and the proposed plant is low due to the presence of a pan below the aggregate conveyor belt. During the construction phase, pile-driving activities may result in localized disturbance of marine sediments. Pile driving activities will be closely monitored and specialized mitigation options implemented (e.g., bubble curtain) if sedimentation or other impacts are unacceptable to the third-party on-site monitor. A spill contingency plan has also been developed, which includes the on-site presence of spill containment equipment.

8.2 Wildlife

8.2.1 Mammals

Negative impacts of the proposed plant on mammals are anticipated to be negligible, since few indigenous mammals currently inhabit the site. Proposed armoring of the shoreline and planting of native vegetation will enhance habitats on the site.

8.2.2 Birds

8.2.2.1 General

Removal of existing vegetation will remove nesting opportunities for species such as Song Sparrow, Spotted Towhee, House Finch and American Robin. Ample breeding opportunities will be provided for these species with the planting of native vegetation in upland and shoreline areas. Perching opportunities for Bald Eagle, Northwestern Crow and European Starling will be lost with the removal of Black Cottonwood on the site. Planting of spruce and cedar will

provide excellent perching opportunities in the short-term and the placement of perch poles will provide interim perching opportunities for eagles and other species.

Aggregate spills or inadvertent release of contaminants into the marine environment may impact marine biota and the birds (e.g., scoters and scaup) and mammals (e.g., River Otter) that feed on marine organisms. Design of barge unloading facilities, conveyor (e.g., pan under conveyor) and plant greatly reduces the potential for accidental spills of deleterious substances.

8.2.2.2 Bald Eagles

Removal of cottonwood would eliminate natural perching opportunities for Bald Eagle on the Burrard Inlet property. The loss of trees is not expected to have a significant detectable impact on Bald Eagle populations in Burrard Inlet, but will likely result in reduced use of intertidal and marine areas of the proposed Vancouver Harbour Plant site and adjacent properties. Even if existing cottonwood were retained, it is possible that the increased activity on the proposed site would limit eagle use of the trees (Stalmaster and Newman 1978; Buehler et al. 1991). Planting of tree species with the potential to attain a large size (e.g., spruce and cedar) will ensure that perching opportunities exist in the future. In the interim, placement of two artificial perch poles will provide perching opportunities for the eagles.

8.3 Amphibians and Reptiles

Because few amphibians and reptiles occur on the site, impacts of the proposed plant are expected to be negligible.

8.4 Rare and Endangered Wildlife

Most rare and endangered species with potential to occur on or in the vicinity of the subject property occur in small numbers. Generally, impacts are anticipated to be negligible for birds using marine environments. Potential spills of aggregate or other substances may impact marine biota and subsequently the birds that feed in this environment. For some species such as the Double-crested Cormorant, removal of pilings may reduce the availability of roosting opportunities in the vicinity of plant. Construction of new pilings, barge loading facilities and conveyor system will provide new perching opportunities. Great Blue Herons may occasionally forage in intertidal habitat. Proposed removal of anthropogenic materials will enhance intertidal habitats.

9. MANAGEMENT RECOMMENDATIONS

9.1 General

1) Ensure that land clearing is conducted during the land-clearing window of 01 August to 31 March to avoid undue impacts to nesting and breeding wildlife. Disturbance or destruction of nesting or breeding wildlife contravenes Section 35 of the B.C. Wildlife Act. Proceed with land-clearing activities outside the clearing window only if an on-site survey prior to land clearing determines that nesting or breeding wildlife are absent.

9.2 Terrestrial Habitats

1) Plant native vegetation between proposed industrial areas and intertidal and marine areas. Recommended plants include, Sitka Spruce (*Picea sitchensis*), Western Red Cedar (*Thuja plicata*), and low shrubs such as Snowberry (*Symphoricarpos albus*), Red-osier Dogwood (*Cornus stolonifera*), Evergreen Huckleberry (*Vaccinium ovatum*), Thimbleberry (*Rubus parviflorus*), Kinnickinnick (*Arctostaphylos uva-ursi*) and Salmonberry (*Rubus spectablis*). Creation of a vegetated buffer between proposed future industrial activities and intertidal and marine areas will: a) provide some wildlife habitat, particularly for migratory terrestrial birds; and b) and act as a screen between human activities and wildlife utilizing intertidal and marine areas. Once spruce mature, they will provide perching opportunities for birds such as Bald Eagle. A detailed planting scheme is presented by Phillips, Farevaag, Smallenberg Landscape Architects.

2) Since retention and leaf management of the cottonwood is not possible, the impact of tree removal on Bald Eagles can be compensated and mitigated by planting native coniferous trees such as Sitka Spruce (*Picea sitchensis*) and Western Red Cedar (*Thuja plicata*). Coniferous trees are known to provide perching and roosting opportunities for eagles, particularly mature trees with an open structure (Keister et al 1983; Isaacs et al. 1993 and 1996).

3) In selected upland areas within the subject property, plant with Douglas-fir (*Pseudotsuga menziesii*), Western Red Cedar, and with shrubs described above. Small patches of native vegetation would provide some foraging and nesting opportunities for terrestrial birds.

4) Erect two artificial perch trees. Design specifications include treated wooden pole (i.e., typical Class 3 pole used for BC Hydro operations with ability to carry load of 1.5 tons at top) approximately 90 feet in length. Top is generally 10 inches in diameter. Option A: bolt actual cedar crown on top of wooden pole. Cedar is preferred because of its resistance to decay. Thin branches so that 6 to 8 horizontal branches, located at different directions (eagles chose perch location depending on wind condition), remain. Ideally branches are 1.5 to 4 inches in diameter to allow eagles to grasp comfortably with their talons. Cut branches to approximately 3-foot length from main stem. Option B: bolt 2 to 3 small diameter (e.g., 3 to 4 inches) treated wood fence posts (6 to 8 foot lengths) to wooden pole. Place one fence post (i.e., cross piece) at top of wooden pole with braces. Centre post to create two branches from 3 to 4 feet in length. Mount other fence post 3 feet below and perpendicular to above.

9.3 Intertidal Habitats

1) Clean up anthropogenic material (e.g., garbage and industrial debris) to improve health and increase size of intertidal areas. Several bird species, such as Northwestern Crow and the blue-listed Great Blue Heron, feed in intertidal areas.

2) Remove deteriorating wharves, where possible, to assist in restoration of intertidal areas.

9.4 Marine Habitats

1) Ensure that contamination and sedimentation of marine areas is tightly controlled since impacts to waterbirds utilizing these areas could occur.

10. CONCLUSIONS

Although some wildlife will be displaced by development activities and existing terrestrial habitats will be altered, overall impacts of the proposed Vancouver Harbour Ready Mix Concrete Plant are not anticipated to result in significant negative impacts to local wildlife populations. Creation of a vegetated buffer between proposed future industrial activities and intertidal and marine areas will: a) provide some wildlife habitat, particularly for migratory terrestrial birds; and b) and act as a screen between human activities and wildlife utilizing intertidal and marine areas. Trees planted in the vegetated buffer will provide future perching opportunities for eagles, and artificial perch poles will provide perching opportunities in the interim. Armoring of the existing shoreline with rip rap and removal of anthropogenic material from intertidal areas will have a positive impact on intertidal and marine habitats.

11. LITERATURE CITED

Blood, D.A. and G.G. Anweiler. 1994. Status of the Bald Eagle in British Columbia. Ministry of Environment, Lands and Parks, Wildlife Branch, Victoria, B.C. Wildlife Working Report No. WR-62.

Buehler, D.A., T.J. Mersmann, J.D. Fraser and J.K.D. Seegar. 1991. Effects of human activity on Bald Eagle distribution on the northern Chesapeake Bay. Journal of Wildlife Management 55(2): 282-290.

Breault, A. And P. Watts. 1996. Burrard Inlet Environmental Action Program (BIEAP), Bird Survey Project: Survey Results. Burrard Inlet Environmental Action Program Technical Report.

Campbell, R.W., N.K. Dawe, I. McTaggart-Cowan, J.M. Cooper, G.W. Kaiser and M.C.E. McNall. 1990a. The birds of British Columbia, Volume 1: Nonpasserines, Introduction and loons through waterfowl. Royal British Columbia Museum and Canadian Wildlife Service.

Campbell, R.W., N.K. Dawe, I. McTaggart-Cowan, J.M. Cooper, G.W. Kaiser, M.C.E. McNall and G.E.J. Smith. 1997. The birds of British Columbia, Volume 3: Passerines, Flycatchers through vireos. B.C. Ministry of Environment, Lands and Parks and Canadian Wildlife Service.

CDC, Conservation Data Centre. 2001. Rare vertebrate animal tracking list, Chilliwack Forest District (April 2001).

Ehrlich, P.R., D.S. Dobkin and D. Wheye. 1988. The birder's handbook: a field guide to the natural history of North American birds. Simon & Schuster Inc., Toronto.

Fraser, D.F., W.L. Harper, S.G. Cannings, and J.M. Cooper. 1999. Rare birds of British Columbia. Ministry of Environment, Lands and Parks Wildlife Branch and Resources Inventory Branch, Victoria, B.C.

Green, D.M. and R.W. Campbell. 1984. The amphibians of British Columbia. Handbook No.45 British Columbia Provincial Museum.

Gregory, P.T. and R.W. Campbell. 1984. The reptiles of British Columbia. Handbook No.44, British Columbia Provincial Museum.

Isaacs, F.B., R. Goggans, R.G. Anthony and T. Bryan. 1993. Habits of Bald Eagles wintering along the Crooked River, Oregon. Northwest Science 67(2): 55-62.

Isaacs, F.B., R.G. Anthony, M. Vander Heyden, C.D. Miller and W. Weatherford. 1996. Habits of Bald Eagles wintering along the upper John Day River, Oregon. Northwest Science 70(1): 1-9.

Keister, G.P., Jr. And R.G. Anthony. 1983. Characteristics of Bald Eagle communal roosts in the Klamath Basin, Oregon and California. Journal of Wildlife Management 47(4): 1072-1079.

McTaggart-Cowan, I. and C.J. Guiguet. 1965. The mammals of British Columbia. Handbook No.11, British Columbia Provincial Museum.

Stalmaster, M.V. and J.R. Newman. 1978. Behavioral responses of wintering Bald Eagles to human activity. Journal of Wildlife Management 42(3): 506-513.

Stalmaster, M.V. and J.R. Newman. 1979. Perch-site preferences of wintering Bald Eagles in northwest Washington. Journal of Wildlife Management 43(1): 221-224.

Watts, P. and A. Breault. 1996. Burrard Inlet Environmental Action Program (BIEAP) Bird Survey Project: seasonal and spatial trends in the distribution and abundance of water birds in Burrard Inlet. Burrard Inlet Environmental Action Program Technical Report.