TECHNICAL MEMORANDUM

Fishman Environmental Services, LLC

Date: July 13, 2000
Prepared for: Port of Portland South Rivergate-Ramsey Yard Project
Prepared by: Christie Galen, Ecologist
Subject: Wildlife Study of Behavioral Responses to Railyard Activities

1 PROJECT PURPOSE

Fishman Environmental Services (FES) conducted a wildlife behavior study at Bonneville Pond which is located approximately 1 mile from the proposed South Rivergate-Ramsey Yard project, west of North Lombard Street and Smith-Bybee Lakes in Portland, Oregon (Figure 1). The purpose of the project was to observe wildlife responses at Bonneville Pond to railyard activities at the Bonneville Yard to help identify potential impacts of the proposed Ramsey Yard project on wildlife species inhabiting Ramsey Lakes. Bonneville Pond was selected because it lies adjacent to railroad tracks where similar activities occur. Although Bonneville Pond and Ramsey Lakes are not comparable resource areas due to size and vegetation differences, they share some ecological features. They are both shallow water pondings located near the Columbia Slough. Ramsey Lakes is much larger than Bonneville Pond and vegetation and structure is more diverse and provide greater opportunities for food and cover. However, observing wildlife reponses at Bonneville Pond can be used as an indicator of behavioral responses of the same species at the proposed railyard.

The results and conclusions of this study are limited by the observational nature of the data and the one month study time-frame. Wildlife observations were made from one viewing location chosen to provide the broadest view possible of the study area. The study was not designed to gather detailed information about wildlife distribution, abundance, and behavior within the study area. Noise level measurements were made at locations thought to represent the loudest sounds related to train activity; actual noise levels experienced by wildlife vary with distance and were possibly lower than the noise meter readings.

2 METHODOLOGY

Observations were conducted by Christie Galen, Senior Ecologist, with the assistance of Carrie Stevenson, Port of Portland. Field surveys were conducted on June 2, 16, 23, and 30, 2000 to determine wildlife species use of the resource area, and to determine the effects of railyard activies on wildlife behavior. Each survey lasted approximately 2 to 3 hours and occurred between the hours of 7:00 AM and 12:00 PM when morning railyard activities were most likely to occur (Craig Levie, Port of Portland, pers. comm.). Wildlife behavior notes were recorded during train activities (whistles, hookups, passing) and when trains were not present. Wildlife behaviors included song, flight, foraging, perching and swimming.

Noise levels were recorded on June 2 using two Larson Davis Model 700 sound level meters (SLMs). The SLM's were provided and evaluated by Daly-Standlee and Associates Inc. Each SLM has a built-in microprocessor and memory which permits calculations and storage of a variety of statistical data. The microphone of each SLM was located about five feet above the ground level. Both SLMs were field calibrated prior to the noise measurement detector and set for "fast" response. One SLM recorded noise at 15 second intervals and was placed approximately 20 feet from the track for about 24 hours; the other SLM recorded noise levels at 1 second intervals; it was placed by the observers approximately 30 feet from the track and was used in association with specific train activities and wildlife responses recorded by the observers (Figure 2).

3 RESULTS

3.1 HABITAT

Bonneville Pond is approximately 2 acres; 0.21 miles in length and the width varies from approximately 10 feet to 175 feet. Observations were recorded on the east end at a view point overlooking most of the east bay. Bonneville pond contains a large amount of human debris such as tires and grocery carts. Aquatic vegetation is dominated by South American water weed with smaller amounts of curly-leaved pondweed, leafy pondweed and Canada waterweed (Hayes 2000). Emergent vegetation occurs in a narrow band fringing the waters edge around most of the pond where banks rise abruptly; there are also patches of broader emergent and scrub-shrub. Vegetation is dominated by reed canarygrass with pockets of cattail. Willows and red-osier dogwood also occur in scattered clumps. Hillslopes typically are covered with Himalayan blackberry with patches of teasel, bird's foot trefoil and Canada thistle also present.

Ramsey Lake consists of a much larger area of surface water and greater plant diversity. Vegetation at Ramsey Lake is described in the Port's Wetland Mitigation Annual Monitoring Report (FES 1999). Vegetation provides more diverse structure and forage opportunities for wildlife. Emergent vegetation is dominated by reed canarygrass but contains pockets of soft rush, small-fruited bulrush, water purslane, wapato and cattail. Willow, black cottonwood, and Oregon ash are common along the shorelines.

3.2 NOISE MEASUREMENTS

Background noise measurements were recorded at Bonneville Pond and the proposed Ramsey Yard. At Bonneville Pond noise levels ranged between 50 and 60 decibels at the location of the meter (Appendix); levels of 60 decibels occurred when semi-trucks passed the site on Lombard Street. Background levels at the proposed Ramsey Yard were 40 to 45 decibels which is in the range of typical suburban noise levels.

Train noise at Bonneville Pond ranged from 65 to 110 decibels at the location of the meter (Appendix). Lower levels occurred as the train approached or passed by. Levels increased to 80 decibels when trains crossed track seams or when cars bumped together. Train whistles in the immediate vicinity of the recorder increased noise levels to 110 decibels.

3.3 WILDLIFE

Wildlife observed at Bonneville Pond are representative of species that use wetland and riparian communities, including the Ramsey Lakes mitigation area (Table 1). Thirty species were observed including 11 water dependent species (mallard, wood duck, great blue heron, osprey, belted kingfisher, tree swallow, barn swallow, painted turtle, red-eared slider, bull frog, nutria), 3 wetland dependent species (song sparrow, red-winged blackbird, killdeer) and 16 riparian species (turkey vulture, bushtit, cedar waxwing, mourning dove, American goldfinch, scrub jay, Bewick's wren, rock dove, American crow, American robin, European starling, black-headed grosbeak, northern oriole, housefinch, eastern cottontail, California ground squirrel). Wildlife were observed throughout the east end of the Bonneville Pond resource area. The data, collected from one observation point, do not provide specific information on wildlife distribution within the resource area.

Over 100 wildlife species have been observed at Ramsey Lakes throughout the year (Stevenson 1999). There are approximately 55 summer residents that have been observed at Ramsey reflecting a larger, more diverse and well developed shrub and tree community. These species include 33 common summer residents. Common species are similar to those observed at Bonneville Pond with the addition of the following species: Canada goose, red-tailed hawk, American kestrel, lesser goldfinch, western wood peewee, common yellowthroat, black-capped chickadee, spotted towhee, cliff swallow, and violet-green swallow.

3.4 WILDLIFE BEHAVIOR

Wildlife rely on hearing to avoid predators, to forage and to communicate. Noise impacts their ability to hear. If too loud, noise could potentially impact wildlife such as owls, which depend on hearing to catch prey; bats, which depend on echolocating for flying precision; and song birds which vocalize for species recognition and territory establishment. Noise can startle wildlife and cause stress; excessive flight responses can reduce essential foraging, nesting and resting behaviors. Each species can be affected differently depending on their noise tolerance and seasonal activities; some species adapt better than others and appear to habituate to noise disturbances (Manci 1988).

After observing wildlife responses for approximately 12 hours with and without train activity, there were no observable and/or quantifiable differences in behaviors. Wildlife species at Bonneville Pond appeared to be habituated to train activities which typically occur 3 times a day during the morning, evening and the middle of the night. Daily train movements, cars bumping

together, and whistles elicited negligible changes in behavior. Bird song and bull frog chorus occurred before, during and after train activities. Bird flight occurred regularly with or without trains present. For example, a great blue heron and a mallard took flight with the approach of a train but on another occaison an individual of each species landed while a train passed. Nest building and courtship were observed for red-winged blackbird, black-headed grosbeak and mourning dove. Reproductive success, as evidenced by fledglings or young, was noted for mallard, wood duck, red-winged blackbird and western painted turtle. Birds also were observed perching, foraging and swimming with and without trains present at similar frequencies. There were also no observable changes in painted turtle behavior; they held their heads up, looked around, foraged and swam at all times. The lack of turtle responses to train activities was also noted by Dr. Marc Hayes during a more extensive study of the western painted turtle in the Rivergate area conducted during 1998-1999. Dr. Hayes observed that turtles responded to human presence but did not react to train activities (Hayes pers. com.). No apparent correlations between train noise events and wildlife behavior were observed during the course of this study.

4 IMPLICATIONS OF POTENTIAL IMPACTS AT PROPOSED RAMSEY YARD

Ramsey Lakes supports over 100 wildlife species (Stevenson 1999). Approximately 55 of these species are present during the summer with 33 species observed regularly (Stevenson 1999). Some of these species might be more sensitive to disturbance and may move farther away from rail activities or abandon the site altogether; the available data do not provide information that can predict the effects on specific animals. The majority of the common species, those species occurring at Bonneville Pond, most likely will habituate to train activities as these same species have done at Bonneville Pond.

5 REFERENCES

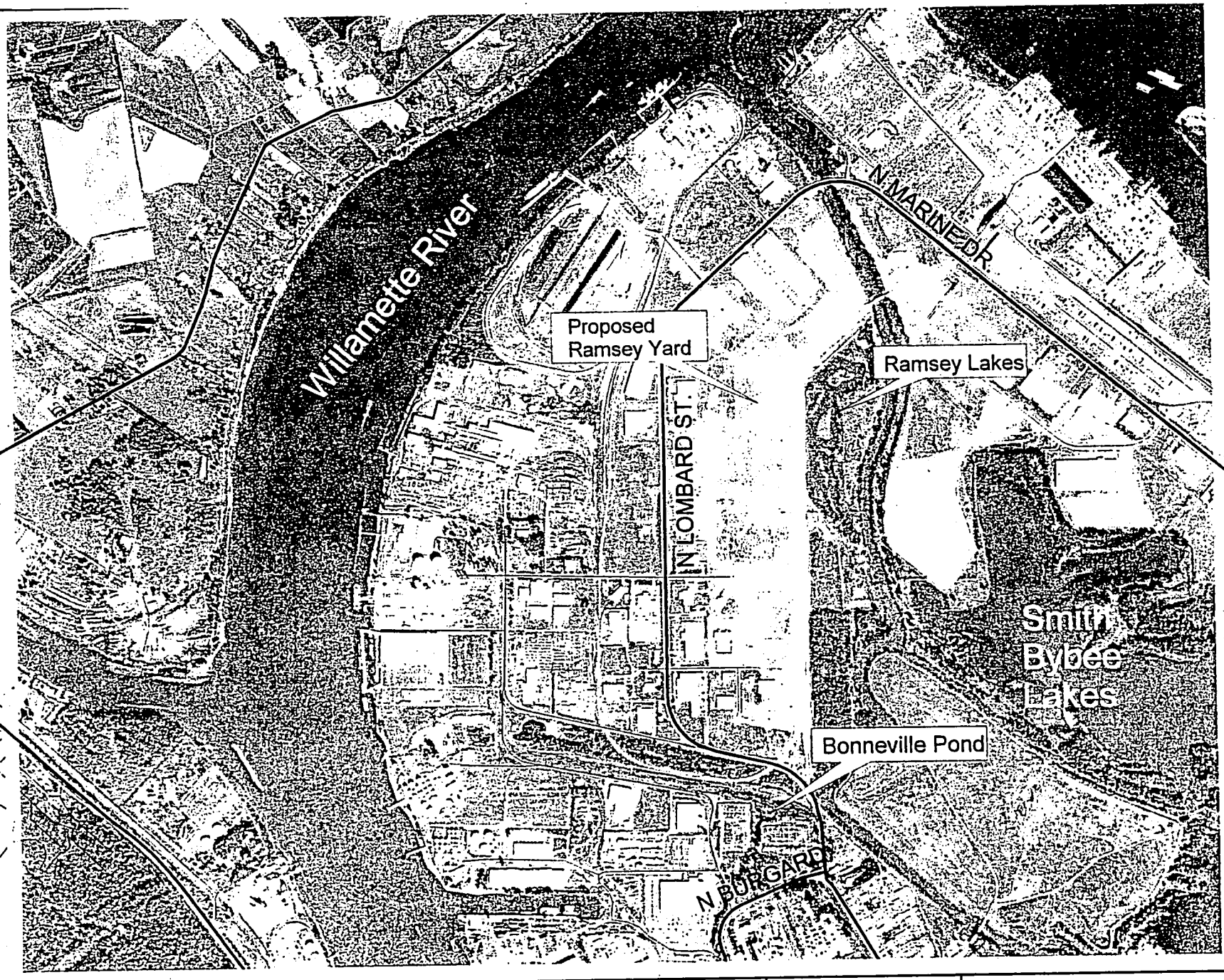
Fishman Environmental Services. 1999. *Ramsey Lakes Wetland Mitigation Monitoring Report.* Report prepared for the Port of Portland.

Hayes, Marc et al. 2000. *The Western Painted Turtle (Chrysemys picta belli) at Rivergate: Management Opportunities and Limitations (Draft Report)*. Report prepared for the Port of Portland.

Hayes, Marc. Personal Communication. May 31, 2000.

Regional Land Information System GIS database, 1999.

Stevenson, Carrie. 1999. *Ramsey Lakes Mitigation Monitoring Report 1999.* Report prepared for the Port of Portland.



N

1000 0 1000 2000 Feet

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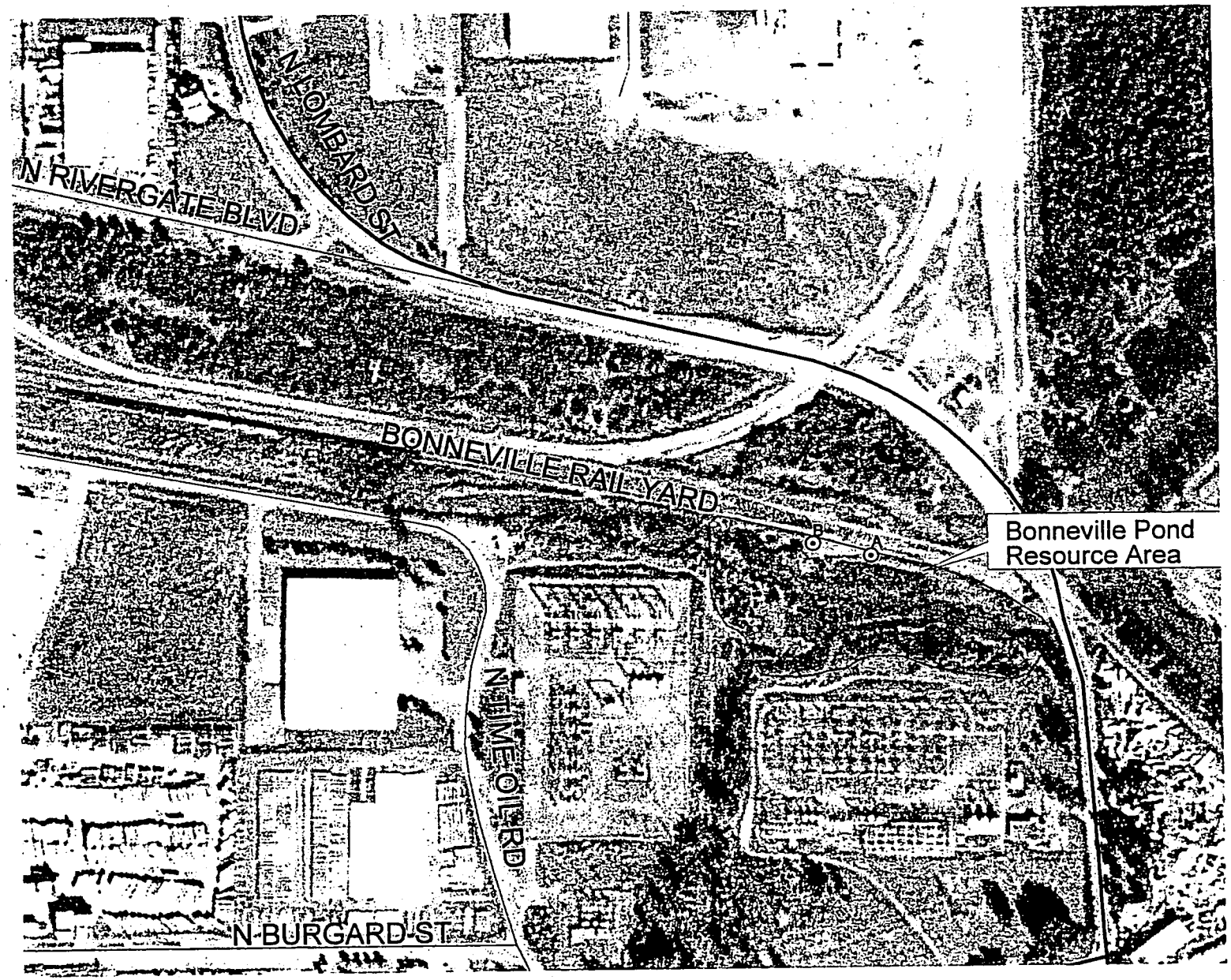
South Rivergate - Ramsey Yard
Wildlife Behavior Study

SITE LOCATION MAP

Figure # 1 | Project # 00024

Source: PLIS, photo date September 1997



LEGEND

Observation Area

A: Observer view point & 1 second SLM location

B: 24 hour (15 second interval) SLM location

Source: PLIS, photo date September 1997

N

200 0 200 400 Feet

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South Rivergate - Ramsey Yard
Wildlife Behavior Study

OBSERVATION & SLM LOCATIONS

Figure # 2 | Project # 00024

APPENDIX

Table 1. Wildlife Observed

Noise Data

Table 1. Wildlife Observed at Bonneville Pond	
Common Name	**Scientific Name**
WILDLIFE ASSOCIATED WITH OPEN WATER	
mallard	*Anas platrhynchos*
wood duck	*Aix sponsa*
barn swallow	*Hirundo rustica*
belted kingfisher	*Ceryle alcyon*
great blue heron	*Ardea herodias*
osprey	*Pandion haliaetus*
tree swallow	*Tachycineta bicolor*
bull frog	*Rana catesbeiana*
painted turtle	*Chrysemys picta belli*
red-eared slider	*Trachemys stricta*
nutria	*Myocaster coypus*
WILDLIFE ASSOCIATED WITH MARSHES AND WETLANDS	
killdeer	*Charadrius vociferus*
red-winged blackbird	*Agelaius phoeniceus*
song sparrow	*Melospiza melodia*
WILDLIFE ASSOCIATED WITH RIPARIAN HABITAT	
American goldfinch	*Carduelis tristis*
American crow	*Corvus brachyrhynchos*
American robin	*Turdus migratorius*
Bewick's wren	*Thryomanes bewickii*
black-headed grosbeak	*Pheucticus melanocephalus*
bushtit	*Psaltriparus minimus*

Table 1. Wildlife Observed at Bonneville Pond	
Common Name	**Scientific Name**
cedar waxwing	*Bombycilla cedrorum*
European starling	*Sturnus vulgaris*
housefinch	*Carpodacus mexicanus*
mourning dove	*Zanaida macroura*
northern oriole	*Icterus galbula bullockii*
rock dove	*Columba livia*
scrub jay	*Aphelocoma coerulescens*
turkey vulture	*Cathartes aura*
California ground squirrel	*Spermophilus beecheyi*
eastern cottontail	*Sylvilagus floridanus*

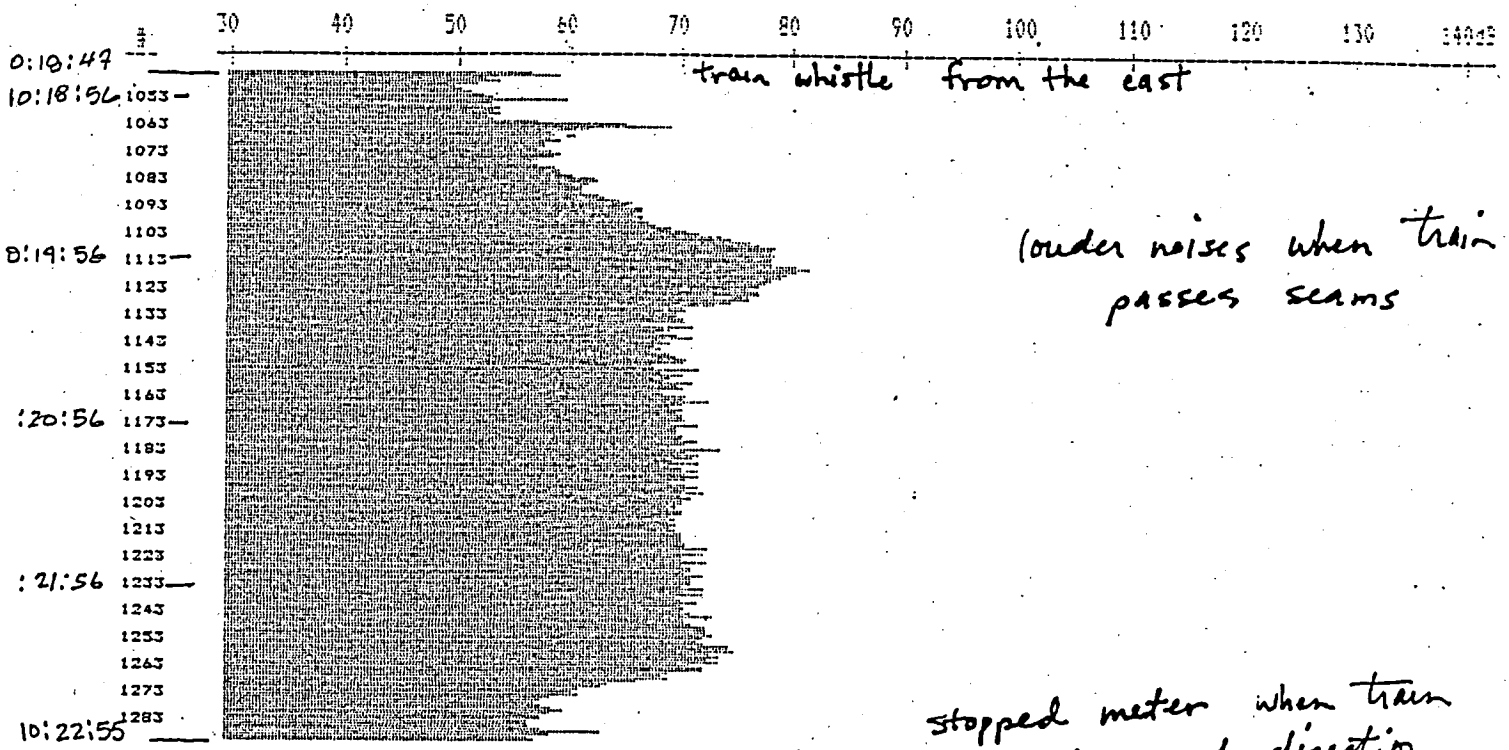
HISTORY SAMPLE GRAPH

LARSON-DAVIS LABORATORIES MODEL 700 DOSIMETER

HISTORY PERIOD = 1 sec
UNWEIGHTED PEAK IS OFF
FAST A WEIGHTING

FROM FILE:
145001-1

S/N B1118
06/02/00 15:03:25
CONDENSATION = 1



train whistle from the east

louder noises when train passes seams

stopped meter when train reversed direction

HISTORY PERIOD = 1 sec
UNWEIGHTED PEAK IS OFF
FAST A WEIGHTING

FROM FILE:
145001-1

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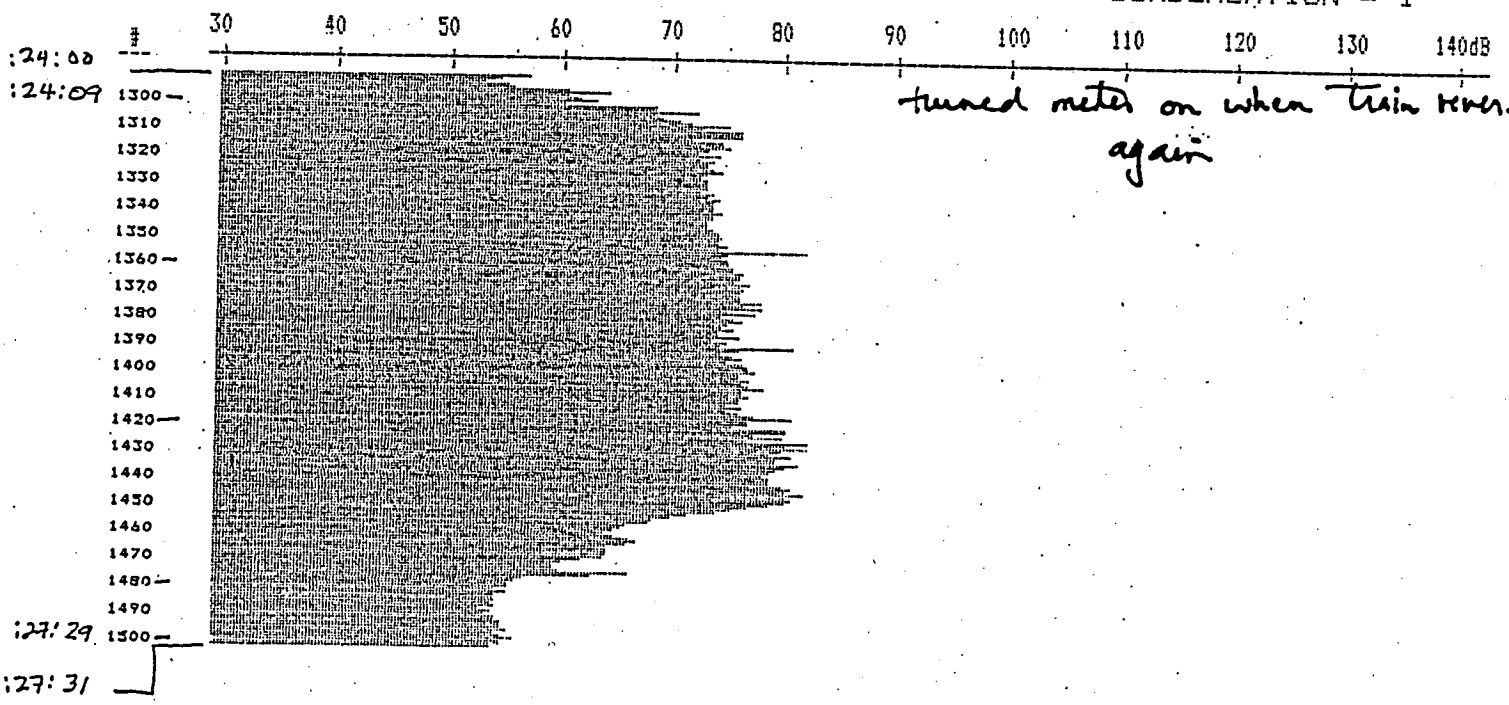
CONDENSATION = 1



turned meter on when train reversed again

HISTORY SAMPLE GRAPH

LARSON-DAVIS LABORATORIES MODEL 700 DOSIMETER

HISTORY PERIOD = 1 sec
UNWEIGHTED PEAK IS OFF
FAST A WEIGHTING

FROM FILE:
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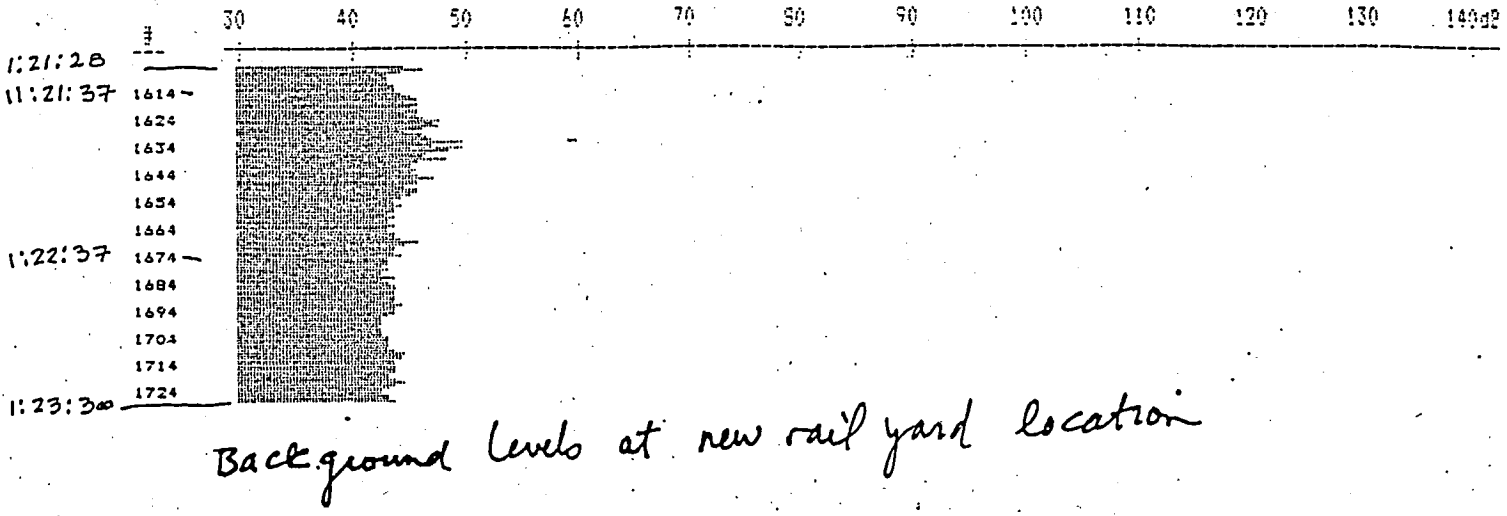
S/N B1118
06/02/00 15:03:25
CONDENSATION = 1



Background levels at new rail yard location

HISTORY SAMPLE GRAPH

LARSON-DAVIS LABORATORIES MODEL 700 DOSIMETER

HISTORY PERIOD = 1 sec
UNWEIGHTED PEAK IS OFF
FAST A WEIGHTING

FROM FILE:
145001-1

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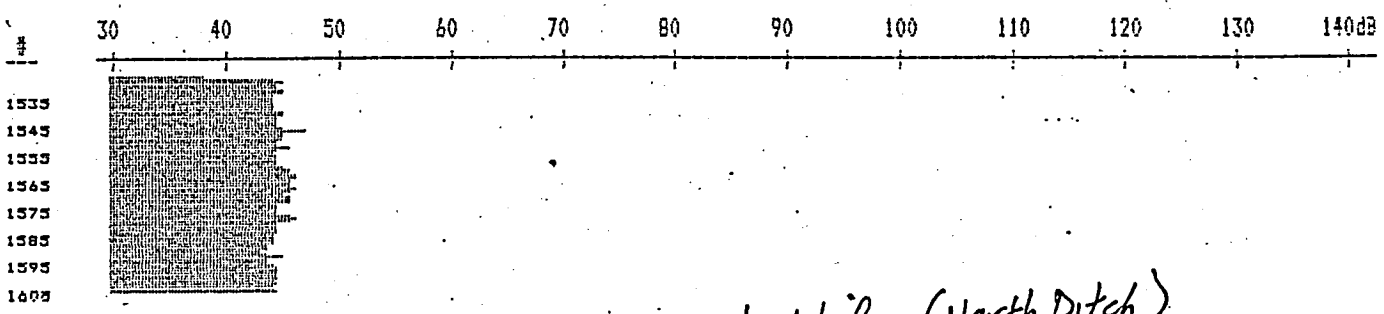
06/02/00 15:03:25
CONDENSATION = 1



Background noise levels at emergent ditch. (North Ditch)

TECHNICAL MEMORANDUM

Fishman Environmental Services, LLC

Date: July 14, 2000
Prepared for: Port of Portland South Rivergate-Ramsey Yard Project
Prepared by: Christie Galen, Ecologist
Subject: North Ditch wildlife surveys

1 BACKGROUND INFORMATION

Fishman Environmental Services (FES) conducted 3 wildlife surveys of the north ditch in the proposed South Rivergate-Ramsey Yard project area. Surveys were conducted on June 2, 9, and 16, 2000. The purpose of the surveys was to provide background information for project planning.

2 WILDLIFE

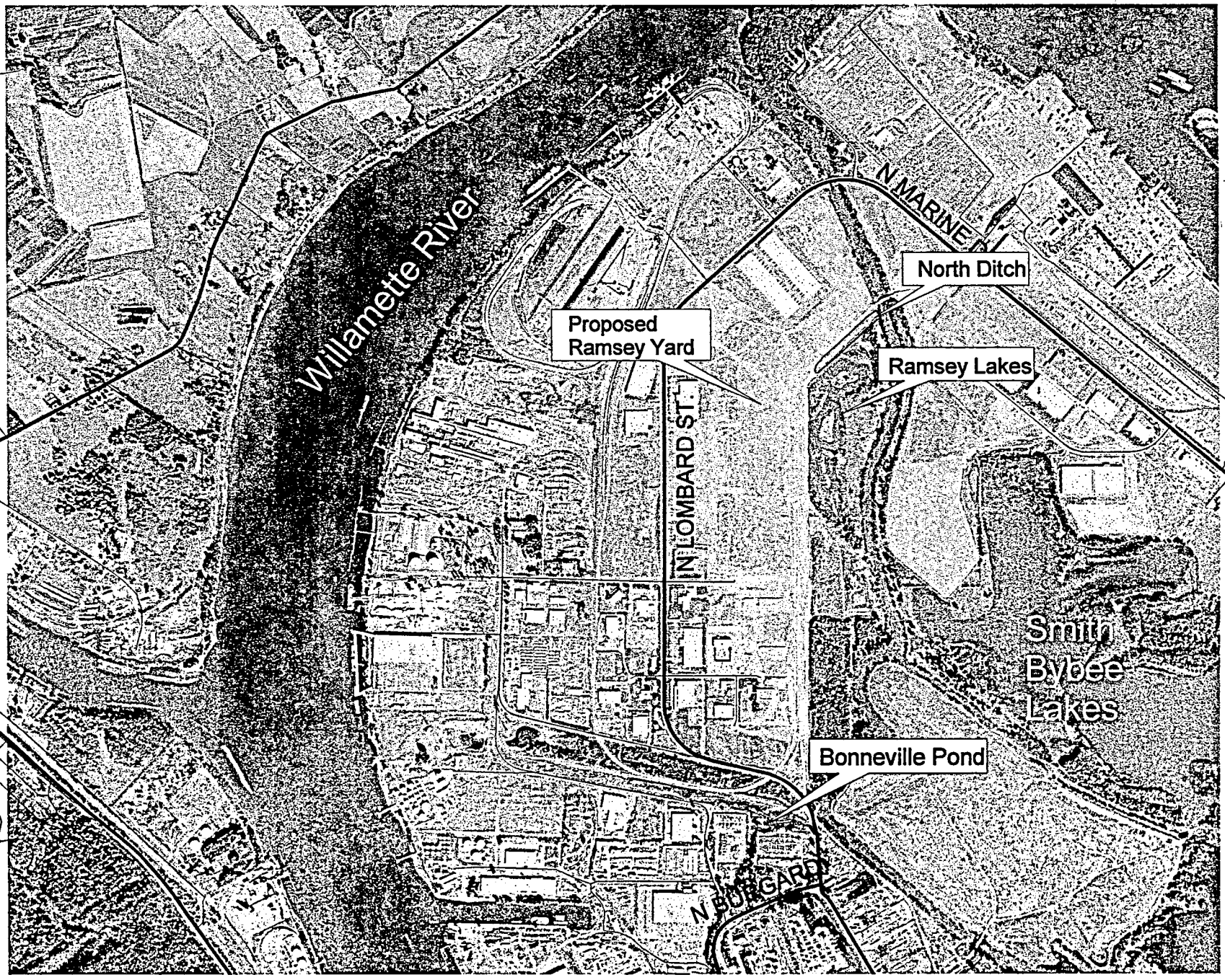
Wildlife observations at the north ditch were limited due to the scope and timing of the project which occurred during the late breeding season. Four species were observed in or immediately adjacent to the ditch including bullfrog, red-winged blackbird, tree swallow, and European starling. Bullfrogs (tadpoles and adults) were abundant in the permanent ponding; they breed and inhabit the pond throughout the year. Red-winged blackbird were observed perching in willow surrounding the pond. Nesting habitat is limited in the ditch as there are few scattered willow and limited tall emergent vegetation. Nesting was not evident during the 2000 survey. Tree swallow were observed foraging over the pond. European starling foraged in the grass adjacent to the ditch at the top of slope.

Over the last few years Carrie Stevenson, Port of Portland, has conducted seasonal surveys of the ditch (Stevenson 2000). Her data provide a more complete view of species use of the ditch throughout the year. Nineteen species have been observed utilizing the ditch throughout the year (1998-2000). Nine species were observed in the ditch on more than one occasion which suggests that they could be regular visitors to the ditch. These species include American coot, bullfrog, Canada goose, common snipe, great blue heron, mallard, red-winged blackbird, song sparrow and tree swallow. Mallard and American coot were observed in the winter and early spring; the site provides forage with limited cover nearby. Canada goose with goslings were noted during the early spring. Tree swallow are summer residents that forage over the north ditch and vicinity. Common snipe migrate through the area during the spring and fall and use the site to rest and forage. Great blue heron were observed in the winter and most likely were foraging. Table 1 lists species, the dates they were observed, and potential site utilization for each species.

3 REFERENCES

Stevenson, Carrie. 2000. Unpublished data related to *Ramsey Lakes Mitigation Monitoring Reports 1997-2000.* Reports prepared for the Port of Portland.

Table 1. Wildlife Observed at North Ditch in the Proposed Ramsey Yard Project Area			
Common Name	**Scientific Name**	**Dates Observed**	**Site Utilization**
American coot	*Fulica americana*	2/1, 12/29/98; 3/1/99	winter forage
bufflehead	*Bucephala albeola*	1/29/99	winter
bull frog	*Rana catesbeiana*	April - October	forage, breeding
Canada goose	*Branta canadensis*	6/6/98 (w/goslings); 3/1/99	forage and breeding nearby
cliff swallow	*Hirundo pyrrhonota*	5/28/99	forage
common snipe	*Gallinago gallinago*	3/15, 10/22/98	spring and fall migration
common yellowthroat	*Geothlypis trichas*	8/21/98	dispersal
dark-eyed junco	*Junco hyemalis*	12/1/99	winter
European starling	*Sturnus vulgaris*	6/2/00	forage
great blue heron	*Ardea herodias*	2/15, 11/25/98	forage
green-winged teal	*Anas crecca*	3/9/00	winter forage
hooded merganser	*Lophodytes cucullatus*	12/1/99	winter
house wren	*Troglodytes aedon*	5/2/98	migration
mallard	*Anas platyrhynchos*	3/26, 10/22/98; 3/1, 4/30, 12/30/99; 4/3, 5/3/00	winter and spring
painted turtle	*Chrysemys picta belli*	6/27/99 (on bank)	potential nesting
red-winged blackbird	*Agelaius phoeniceus*	5/3, 6/2, 6/16/00	forage; potential nesting
song sparrow	*Melospiza melodia*	2/3, 3/9, 4/3/00	forage; potential nesting
tree swallow	*Tachycineta bicolor*	5/28/99, 6/2/00	forage
Virginia rail	*Rallus limicola*	9/10/98	migration



Source: RLIS, photo date September 1997.

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1000 0 1000 2000 Feet

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South Rivergate - Ramsey Yard Wildlife Study

SITE LOCATION MAP

Figure # 1 | Project # 00024