SAMPLING REPORT:

FIELD COLLECTION OF SEDIMENTS FOR PACIFIC LAMPREY TOXICITY STUDY

PREPARED BY STRATUS CONSULTING

FOR THE

PORTLAND HARBOR

NATURAL RESOURCE TRUSTEE COUNCIL

January 28, 2011

Sampling Report:
Field Collection of Sediments for Pacific Lamprey Toxicity Study

Prepared for:

Portland Harbor Natural Resource Trustee Council

Confederated Tribes of the Warm Springs Reservation of Oregon
Nez Perce Tribe
Confederated Tribes of Siletz Indians
Confederated Tribes of the Umatilla Indian Reservation
Confederated Tribes of the Grand Ronde Community of Oregon
National Oceanic and Atmospheric Administration
Oregon Department of Fish and Wildlife
U.S. Department of the Interior

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January 28, 2011
SC12320

1. Introduction

This sampling report describes the collection of sediments from the Willamette River, near Portland, Oregon. Sediments were collected in order to study the potential toxicity of sediments in the Portland Harbor Study Area (PHSA) to Pacific lamprey ammocoetes (*Lampetra tridentata*; hereafter designated as PLA).

The Portland Harbor Natural Resource Trustee Council (the Trustee Council) conducted the collection process. Methods for sediment collection were documented in the *Sampling Plan: Field Collection of Sediments for Pacific Lamprey Toxicity Study* (Sampling Plan; Stratus Consulting, 2010).

1.1 Background

Contaminants such as chlorinated hydrocarbons, petroleum-related compounds, metals, and other hazardous substances have been released from various sources and have come to be located in Portland Harbor (the Harbor) sediments. Levels of many of these compounds are elevated in the Harbor compared to upstream locations. Sediments from specific areas in the Harbor have been shown to be toxic to benthic invertebrates, and sediment-associated biota and fish collected from the area have accumulated contaminants (Windward Environmental, 2009). Habitat in the Harbor may be an important resting and foraging area for PLAs as they transition to the lower Columbia River and prepare for their marine life stage. PLAs collected from the Harbor have been found to contain higher concentrations of some organochlorine compounds than PLAs collected upstream (Integral Consulting and Windward Environmental, 2007).

The Trustee Council is evaluating potential natural resource injuries to PLAs. Insufficient information is available to determine if contaminant exposures to PLAs exceed concentrations that could cause injuries to, or prevent colonization of the Harbor by, PLAs. In addition, restoration efforts for PLAs could be more successful if sediment toxicity to the species were better understood.

The toxicity of contaminated sediments collected from within the PHSA to PLAs will be evaluated through multiple laboratory experiments. PLAs collected from the Siletz River will be used to test PLA sensitivity to contaminated PHSA sediments by exposing PLAs to sediment collected from PHSA and to reference and (or) control sediments.

The testing facility for this study will be the Fish Performance and Genetics Laboratory (FPGL), 34349 Electric Road North, Corvallis, OR 97331. FPGL is operated by the Oregon State University (OSU) Department of Fisheries and Wildlife – U.S. Geological Survey Cooperative Fish and Wildlife Research Unit.

1.2 Objective

The purpose of the activity described in this sampling report was to collect surface sediments (defined as the upper 10 centimeters) for use in PLA toxicity evaluations conducted in the summer of 2010.

1.3 Document Organization

A description of the sediment collection process is presented in Section 2 of this report. Detailed maps and coordinates for sampling locations are presented in Appendix A. Appendix B contains a copy of the field notebook maintained by Jeff Morris. Photographs taken during sediment collection are presented in Appendix C. Chain of custody forms documenting the delivery of collected sediment to OSU are presented in Appendix D.

2. Sample Collection Process

This section describes sediment collection from the Willamette River, which was conducted during July 26–29, 2010.

2.1 Personnel

Stratus Consulting coordinated the overall field effort, provided on-water navigation support, and was responsible for handling sediment in the field as well as transport to FPGL. Jeff Morris served as the Field Study Coordinator. Dale Dickinson of Marine Sampling Services (MSS) provided and operated the sample-collection boat and power grab sampler. Jeremy Buck and Mike Szumski, U.S. Fish and Wildlife Service (USFWS), and Bill Brice, USFWS volunteer, provided and operated a second boat that assisted in transport of equipment and samples.

2.2 Sampling Locations

Contaminated sediments were collected from nine Harbor locations (Figure 1; Table 1). One proposed location from the Sampling Plan (Swan Island 2a) was not utilized because the property owner denied access. Reference sediments were collected from three Willamette River locations upstream of the Harbor (Figure 2; Table 1). Two of these locations were proposed in the Sampling Plan (Stratus Consulting, 2010), and the third was added during the collection.

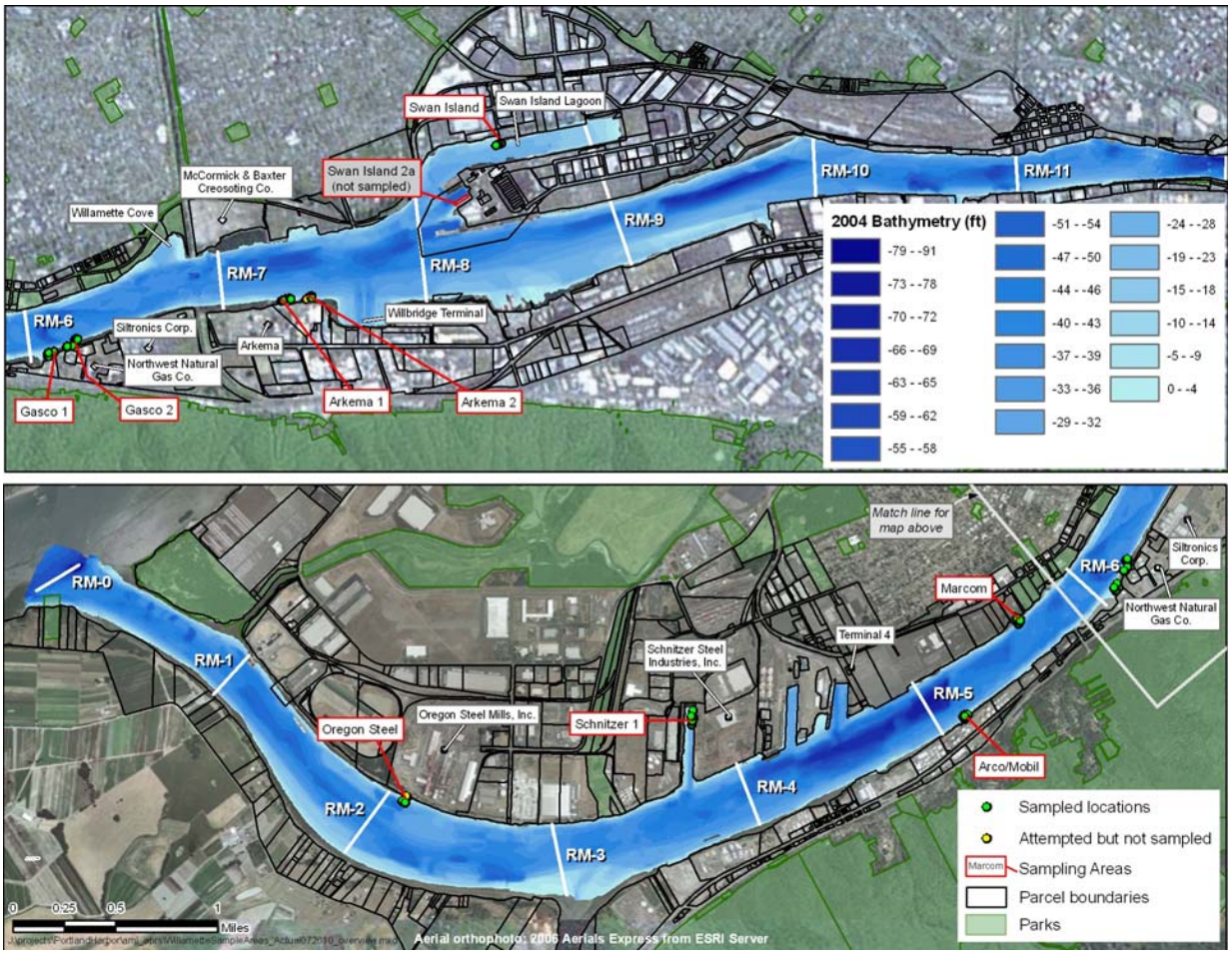


Figure 1. Proposed and actual sediment sampling locations in Portland Harbor.

Table 1. Proposed and actual sediment sampling locations

Sampling Site ID	Name	Approximate river mile	Primary contaminants of interest	Sampled	Comment
OST	Oregon Steel	2.1	PCBs, zinc, copper	7/26/2010	
SC1/SCA	Schnitzer 1/ Schnitzer 1 (alternate)	3.7	PCBs, phthalates, PAHs, zinc, copper	7/27/2010	SC1 sampled
ARM	Arco/Mobil	5.1	PAHs, TPH (diesel)	7/26/2010	
MAR	Marcom	5.6	Tributyl tin, zinc, copper, PAHs	7/26/2010	
GA1/GAA	Gasco 1/Gasco 1 (alternate)	6.1	Cyanide, PAHs, DDx	7/28/2010	GAA sampled
GA2	Gasco 2	6.2	PAHs, DDx	7/28/2010	
AR1	Arkema 1	7.3	DDx, dioxins/furans, chlordane	7/27/2010	
AR2	Arkema 2	7.4	Perchlorate, DDx	7/27/2010	
S2A	Swan Island 2a	8.2	Tributyl tin, zinc		Access denied
SWI	Swan Island	8.5	Copper, zinc, PAHs	7/27/2010	
RE1	Reference Site 1	19.1	None	7/29/2010	
RE2	Reference Site 2	23.2	None	7/29/2010	
RE3	Reference Site 3	23.2	None	7/29/2010	Site added

PAH: Polycyclic aromatic hydrocarbon.
PCB: Polychlorinated biphenyl.
TPH: Total petroleum hydrocarbon.

Latitude and longitude positions for each power dredge sample were recorded using a geographic positioning system mounted on the power grab unit. Positions were recorded as degrees, minutes, and decimal minutes in the North American Datum of 1983. Maps and tables of the coordinates of the actual dredge locations are presented in Appendix A.

2.3 Sample Collection

Samples were collected according to the sample collection procedures described in Section 4 of the Sampling Plan (Stratus Consulting, 2010). The collection was documented in the field notebook (Appendix B) and with photographs (Appendix C).

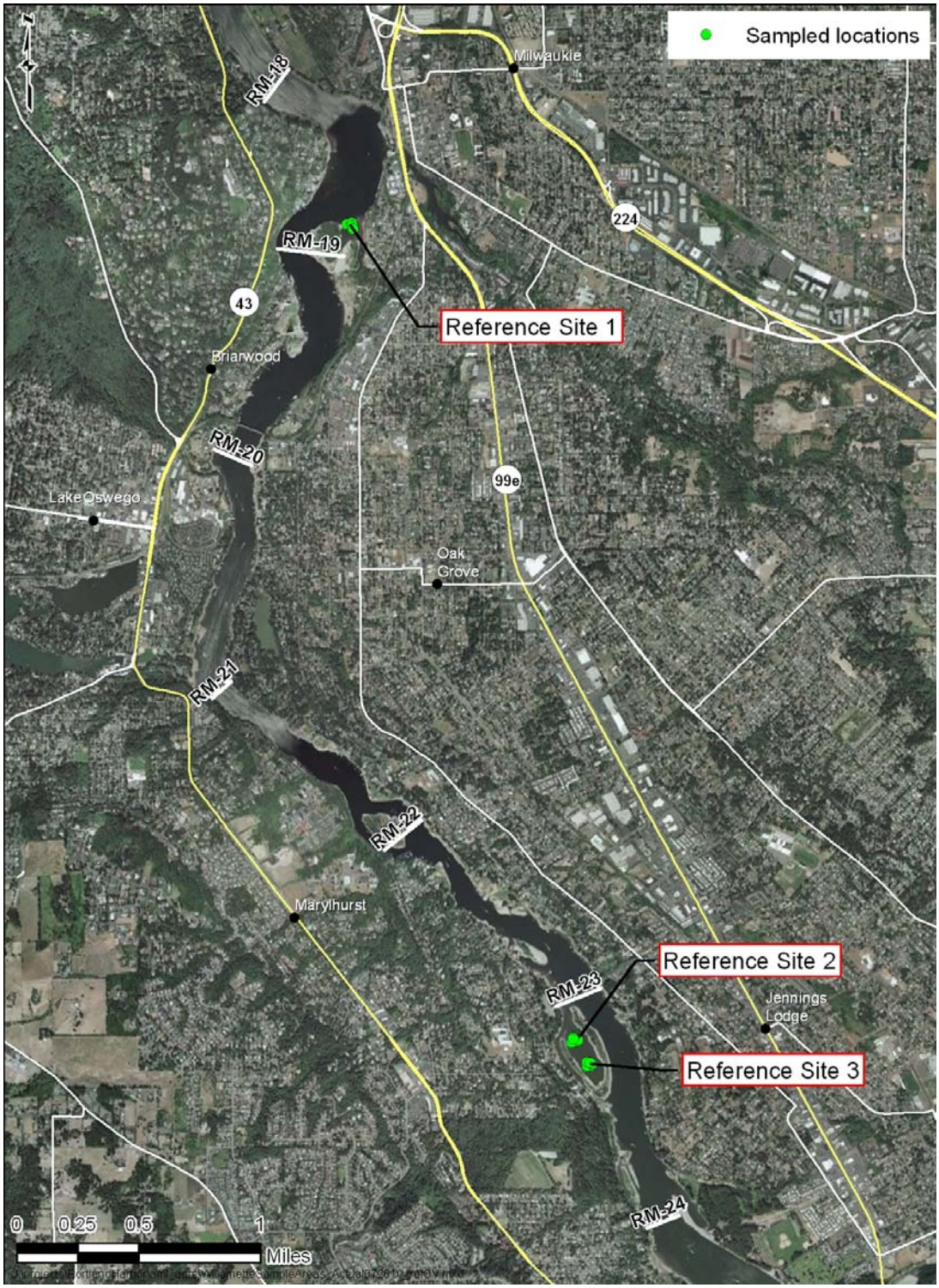


Figure 2. Proposed and actual reference sediment sampling locations in the Willamette River upstream of Portland Harbor.

2.4 Sample Custody

Samples remained in the custody of the Field Study Coordinator or a representative of the USFWS during sample collection. Samples were transferred to the custody of the FPGL by Jeremy Buck, USFWS, on July 30, 2010.

References

Integral Consulting and Windward Environmental. 2007. Portland Harbor RI/FS Round 3 Sampling for Lamprey (*Lampetra* sp.) Tissue Data Report. Draft. Prepared for the Lower Willamette Group by Integral Consulting Inc. and Windward Environmental LLC. August 24.

Stratus Consulting. 2010. *Sampling Plan: Field Collection of Sediments for Pacific Lamprey Toxicity Study. Draft Report*. Prepared for the Portland Harbor Natural Resource Trustee Council. Stratus Consulting Inc., Boulder, CO. July 13.

Windward Environmental. 2009. Portland Harbor Remedial Investigation Appendix G. Baseline Ecological Risk Assessment. Draft under review by U.S. EPA. Prepared for the Lower Willamette Group by Windward Environmental LLC.

A. Sampling Location Maps and Coordinates

Figure A.1. Oregon Steel (OST).

Table A.1. Sampling site: Oregon Steel

Dredge location	Latitude (N)	Longitude (W)
OST-01	45 37.87071	122 47.12277
OST-02	45 37.87387	122 47.13306
OST-03	45 37.86253	122 47.12333
OST-04[a]	45 37.86558	122 47.11573
OST-05	45 37.88156	122 47.14394
OST-06	45 37.86962	122 47.15451

a. No sample collected, rocks in dredge.

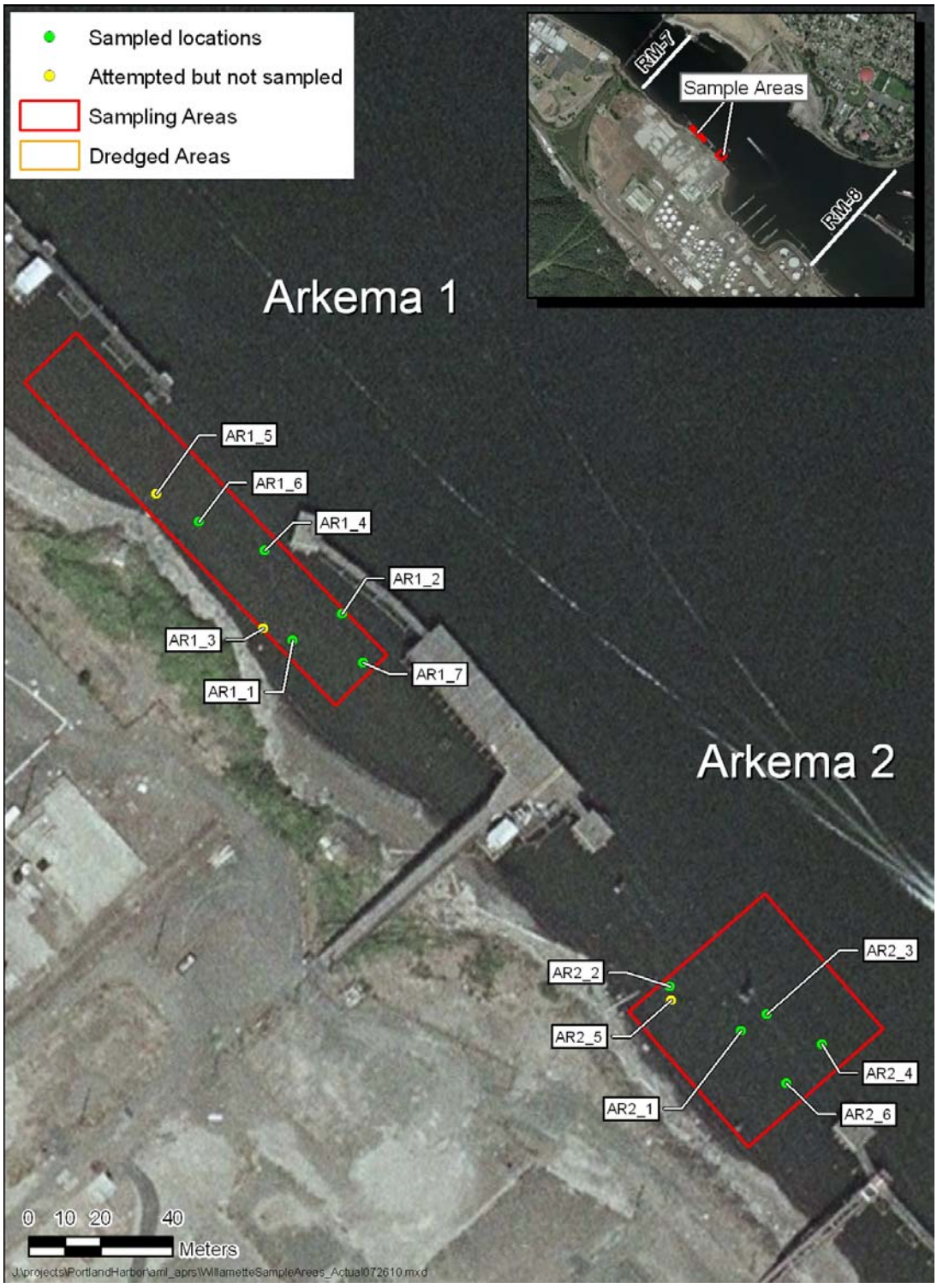


Figure A.2. Arkema 1 (AR1) and Arkema 2 (AR2).

Table A.2. Sampling site: Arkema 1

Dredge location	Latitude (N)	Longitude (W)
AR1-01	45 34.28006	122 44.54156
AR1-02	45 34.28403	122 44.53105
AR1-03[a]	45 34.28180	122 44.54790
AR1-04	45 34.29358	122 44.54753
AR1-05[b]	45 34.30220	122 44.57070
AR1-06	45 34.29798	122 44.56157
AR1-07	45 34.27660	122 44.52654

a. No grab attempted, location inaccessible.
b. No sample collected, gravel in dredge.

Table A.3. Sampling site: Arkema 2

Dredge location	Latitude (N)	Longitude (W)
AR2-01	45 34.22094	122 44.44576
AR2-02	45 34.22776	122 44.46110
AR2-03	45 34.22352	122 44.44020
AR2-04	45 34.21896	122 44.42841
AR2-05[a]	45 34.22563	122 44.46083
AR2-06	45 34.21306	122 44.43614

a. No sample collected, gravel in dredge.

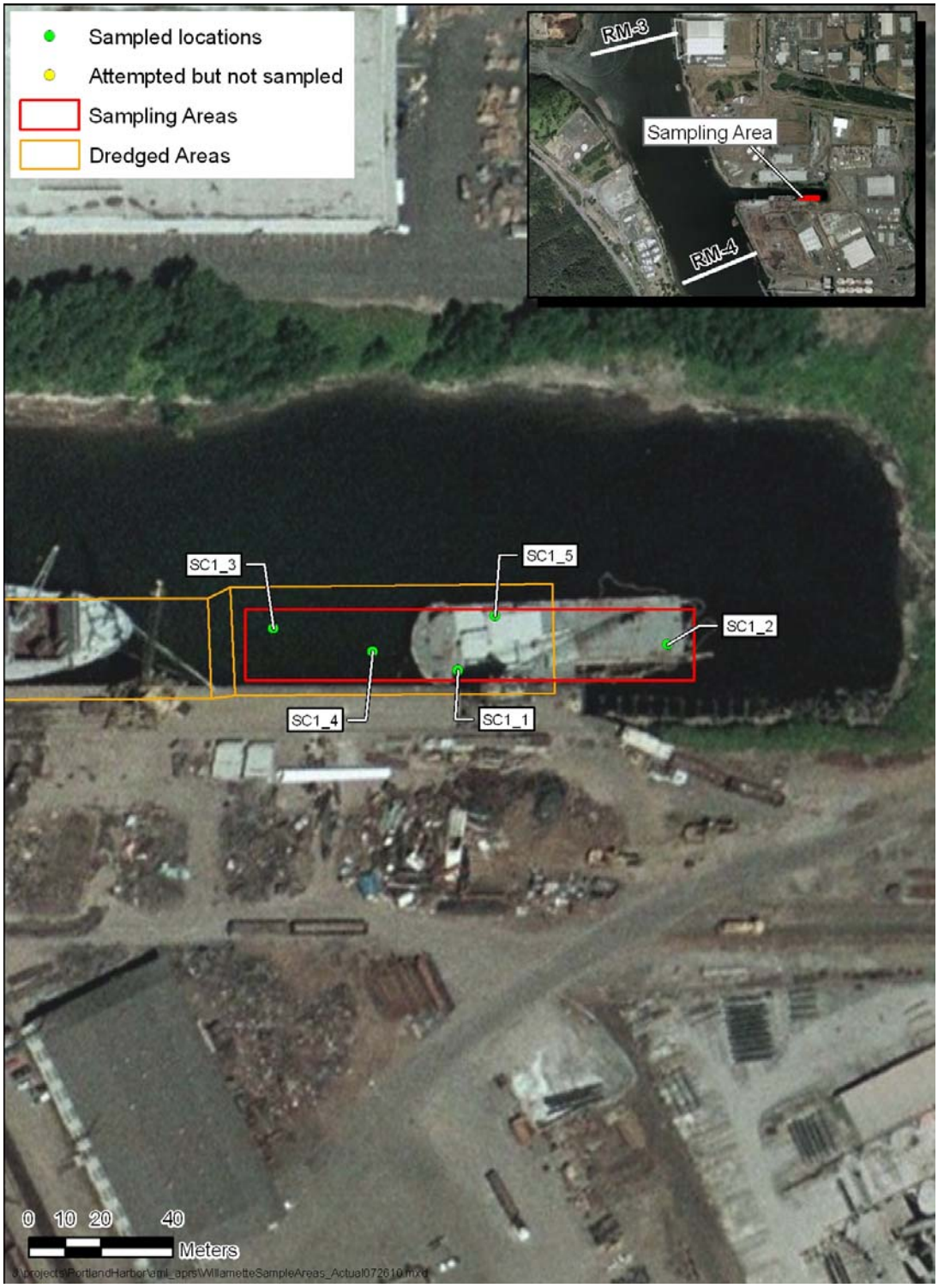


Figure A.3. Schnitzer 1 (SC1).

Table A.4. Sampling site: Schnitzer 1

Dredge location	Latitude (N)	Longitude (W)
SC1-01	45 36.65945	122 46.59338
SC1-02	45 36.66320	122 46.54847
SC1-03	45 36.66584	122 46.63303
SC1-04	45 36.66233	122 46.61170
SC1-05	45 36.66764	122 46.58553

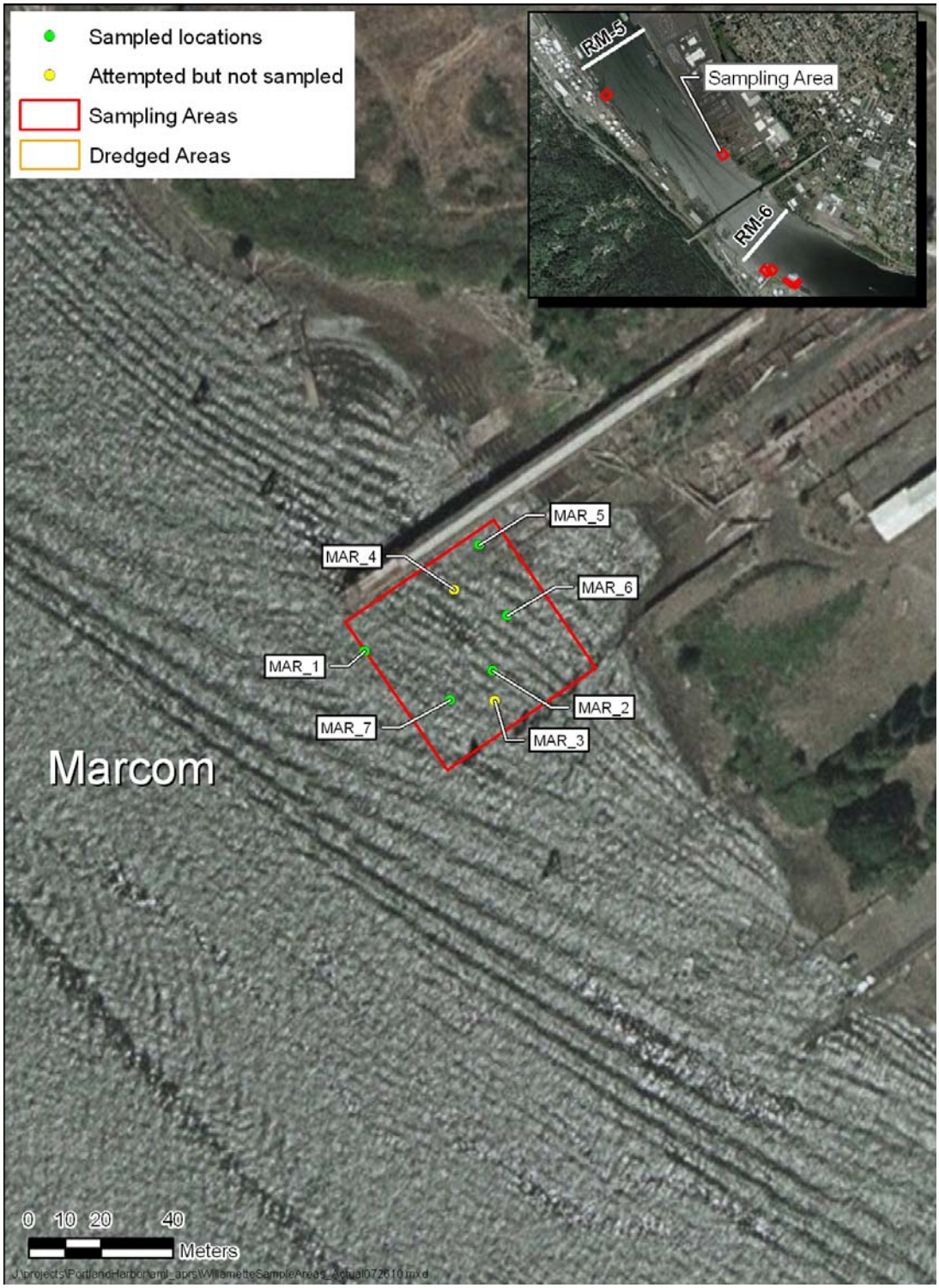


Figure A.4. Marcom (MAR).

Table A.5. Sampling site: Marcom

Dredge location	Latitude (N)	Longitude (W)
MAR-01	45 35.29315	122 45.97074
MAR-02	45 35.29017	122 45.94337
MAR-03[a]	45 35.28563	122 45.94300
MAR-04[b]	45 35.30230	122 45.95160
MAR-05	45 35.30907	122 45.94618
MAR-06	45 35.29848	122 45.94022
MAR-07	45 35.28577	122 45.95244

a. No sample collected, logs in grab.
b. No grab attempted, location covered with submerged timbers.

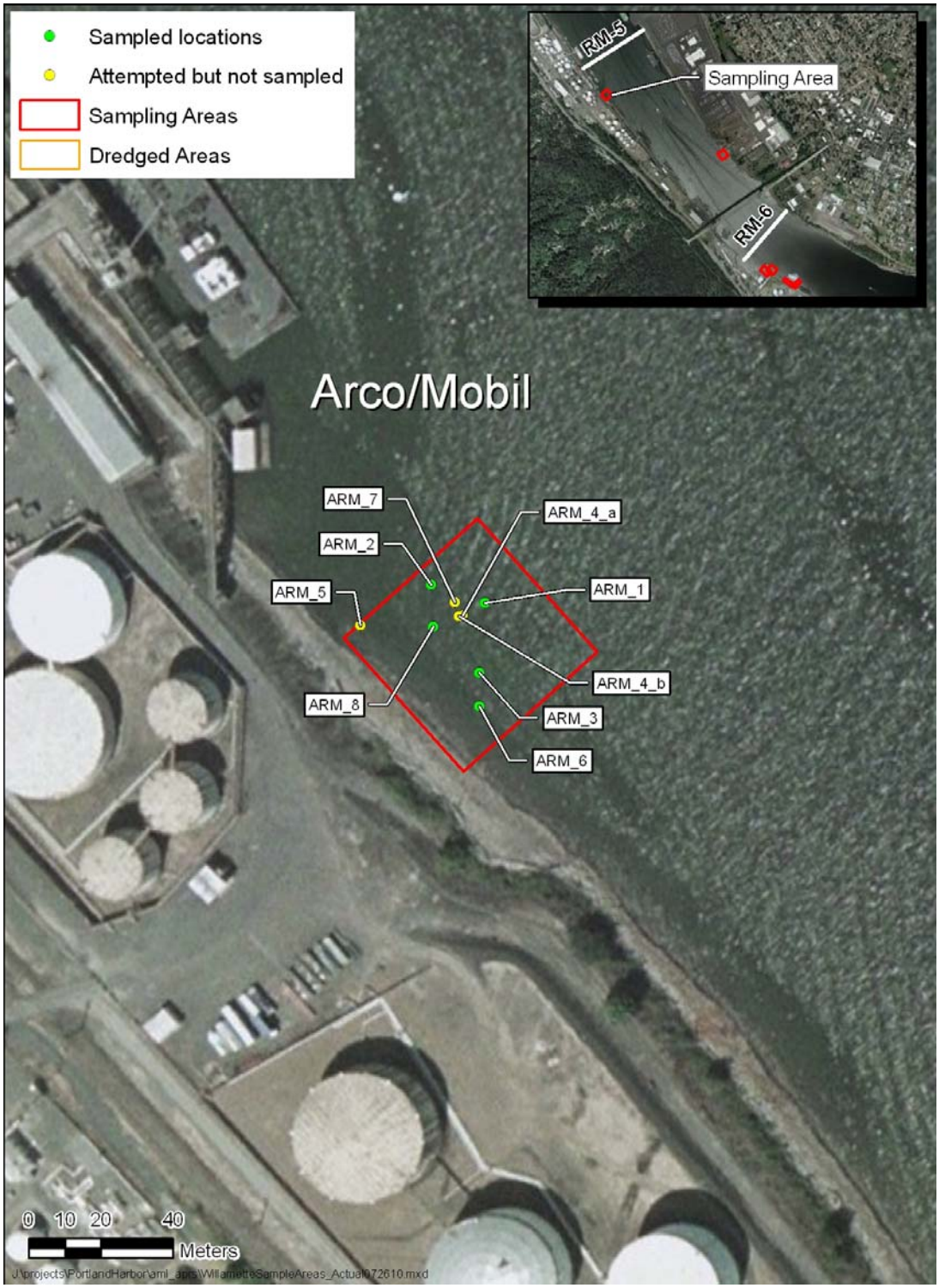


Figure A.5. Arco/Mobil (ARM).

Table A.6. Sampling site: Arco/Mobil

Dredge location	Latitude (N)	Longitude (W)
ARM-01	45 35.51251	122 46.52711
ARM-02	45 35.51535	122 46.53869
ARM-03	45 35.50209	122 46.52840
ARM-04-a[a]	45 35.51068	122 46.53198
ARM-04-b[b]	45 35.51059	122 46.53265
ARM-05[c]	45 35.50920	122 46.55380
ARM-06	45 35.49703	122 46.52833
ARM-07[b]	45 35.51267	122 46.53348
ARM-08	45 35.50898	122 46.53826

a. No sample collected, cable in grab.
b. No sample collected, rocks in grab.
c. No grab attempted, large visible rocks at sample location.

Figure A.6. Swan Island (SWI).

Table A.7. Sampling site: Swan Island

Dredge location	Latitude (N)	Longitude (W)
SWI-01	45 34.04884	122 42.98851
SWI-02	45 34.04764	122 42.98062
SWI-03	45 34.04507	122 42.97892
SWI-04	45 34.05305	122 42.99200
SWI-05	45 34.05706	122 43.00798

Figure A.7. Gasco 1 (alternate; GAA).

Table A.8. Sampling site: Gasco 1 (alternate)

Dredge location	Latitude (N)	Longitude (W)
GAA-01	45 34.87316	122 45.73597
GAA-02	45 34.88007	122 45.71103
GAA-03	45 34.88924	122 45.74487
GAA-04	45 34.88373	122 45.75524
GAA-05	45 34.89280	122 45.73742

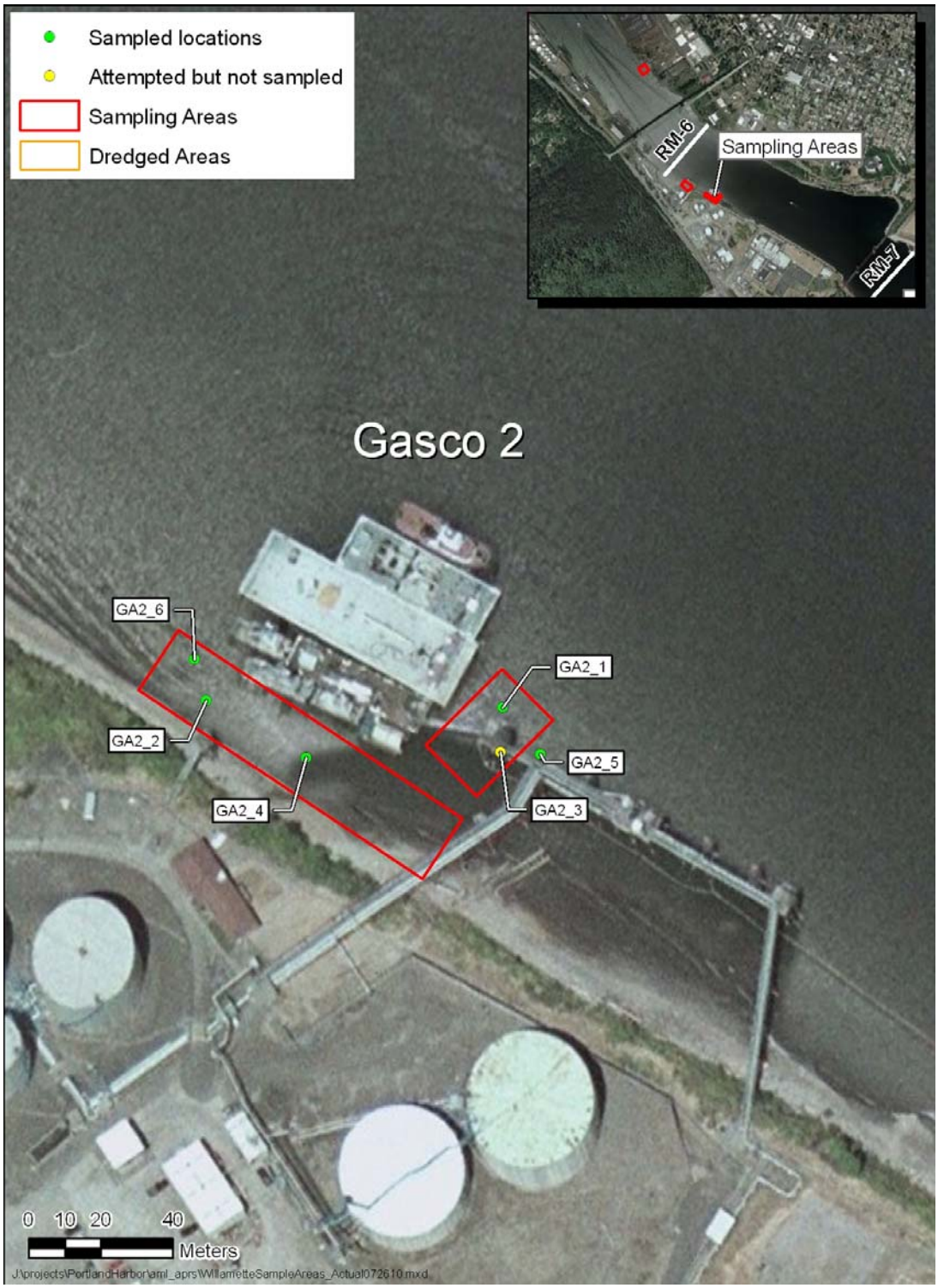


Figure A.8. Gasco 2 (GA2).

Table A.9. Sampling site: Gasco 2

Dredge location	Latitude (N)	Longitude (W)
GA2-01	45 34.84591	122 45.56854
GA2-02	45 34.84710	122 45.63199
GA2-03[a]	45 34.83920	122 45.56900
GA2-04	45 34.83841	122 45.61058
GA2-05	45 34.83881	122 45.56056
GA2-06	45 34.85331	122 45.63452

a. No grab attempted, location inside a group of pilings.

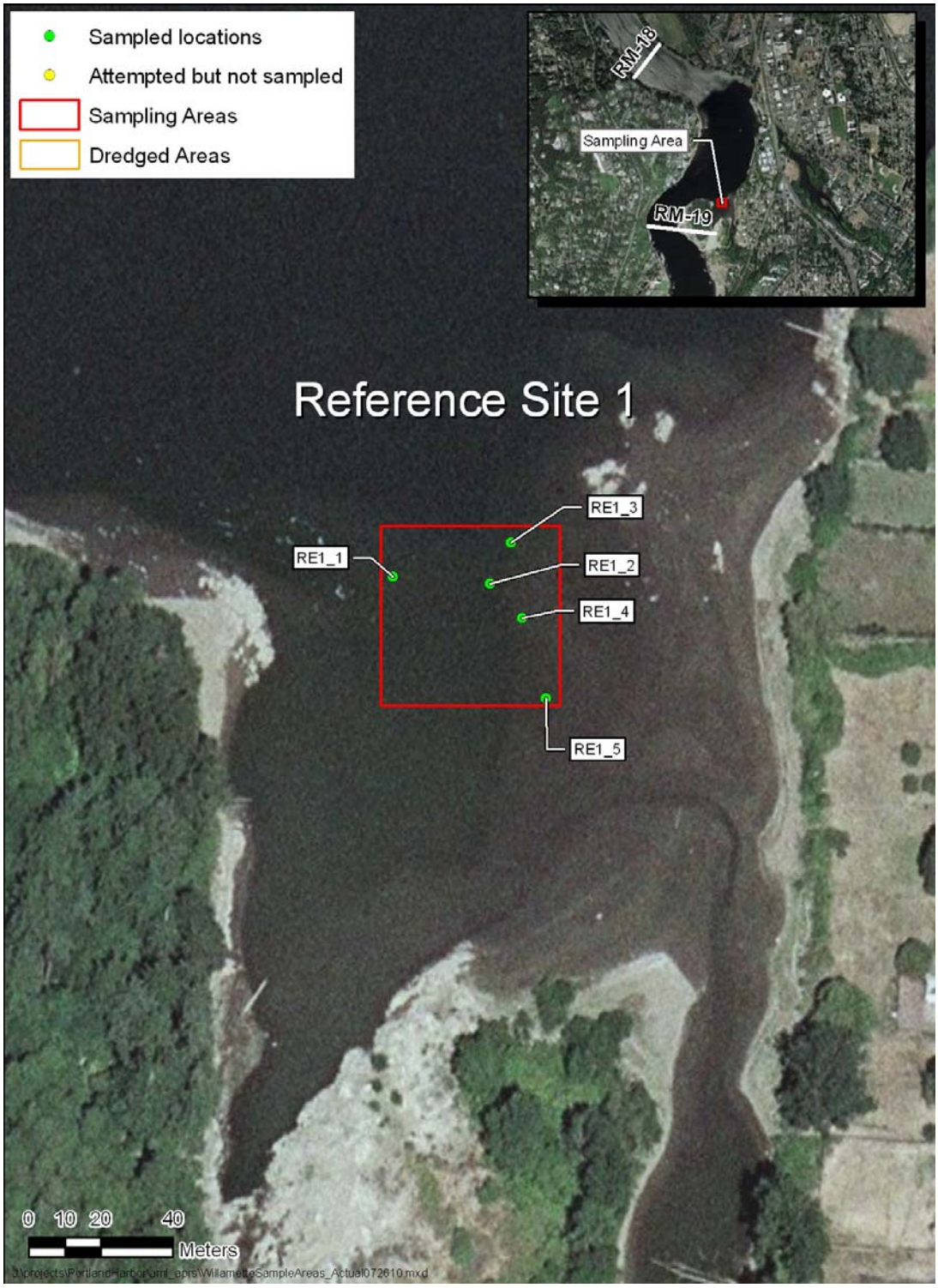


Figure A.9. Reference Site 1 (RE1).

Table A.10. Sampling site: Reference Site 1

Dredge location	Latitude (N)	Longitude (W)
RE1-01	45 26.23883	122 38.78575
RE1-02	45 26.23768	122 38.76493
RE1-03	45 26.24394	122 38.76043
RE1-04	45 26.23260	122 38.75805
RE1-05	45 26.22045	122 38.75316

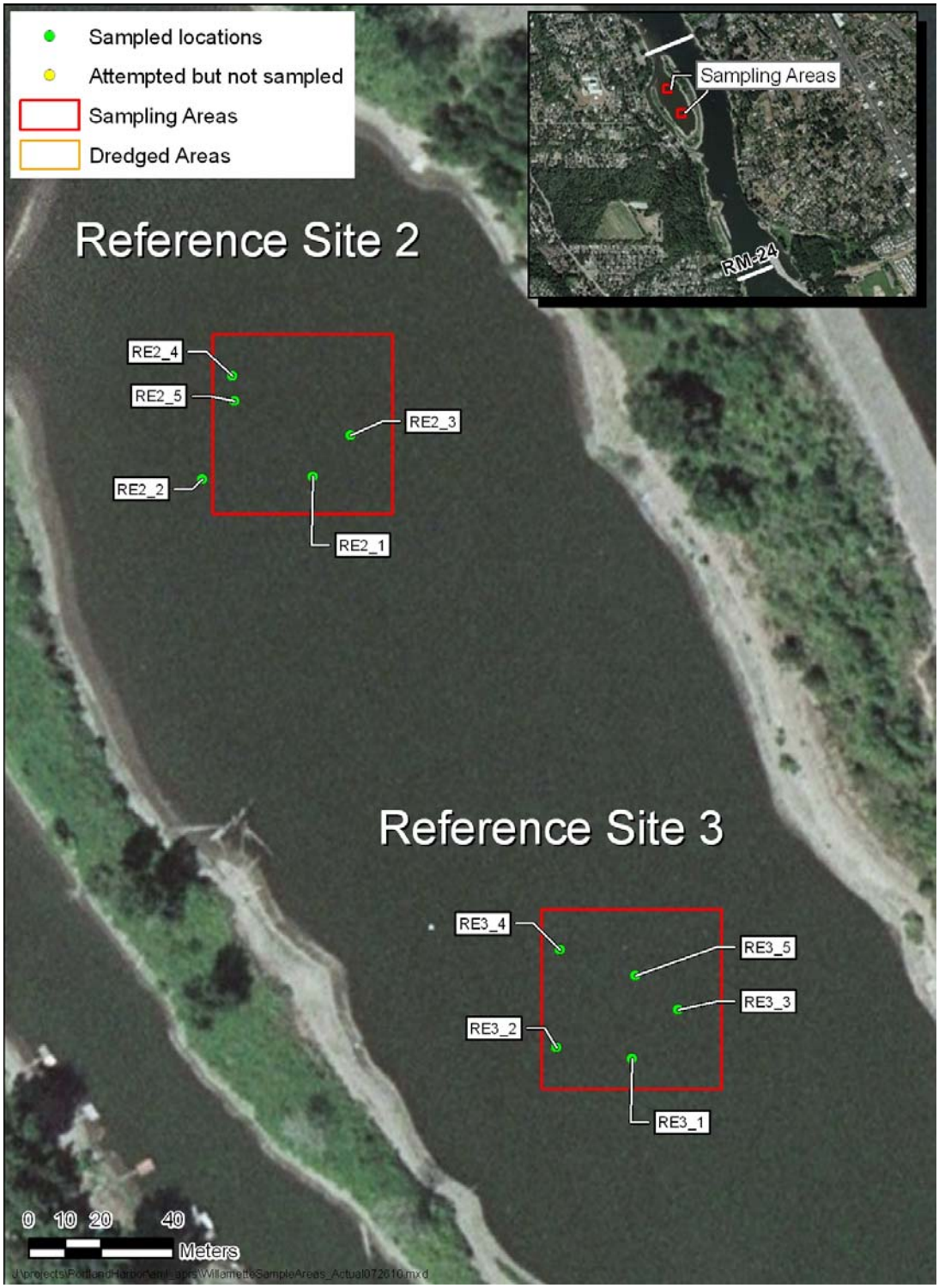


Figure A.10. Reference Sites 2 (RE2) and 3 (RE3).

Table A.11. Sampling site: Reference Site 2

Dredge location	Latitude (N)	Longitude (W)
RE2-01	45 23.30641	122 37.63971
RE2-02	45 23.30601	122 37.66320
RE2-03	45 23.31261	122 37.63156
RE2-04	45 23.32156	122 37.65665
RE2-05	45 23.31784	122 37.65630

Table A.12. Sampling site: Reference Site 3

Dredge location	Latitude (N)	Longitude (W)
RE3-01	45 23.21859	122 37.57224
RE3-02	45 23.22037	122 37.58826
RE3-03	45 23.22595	122 37.56226
RE3-04	45 23.23504	122 37.58741
RE3-05	45 23.23115	122 37.57139

B. Field Book from Sediment Collection

7-26-10

Sediment Sampling Portland Harbor

8:30 Safety meeting Dale Dickinson went over safety on the MSS vessel "Peter K" Jeff Morris went over sediment handling safety and PPE. Bill Price and Mike Szumski (USFWS) were present.
Jeff and Dale left for OST at 9:00AM - Bill and Mike waited for Jeremy Buck - USFWS with Speller USFWS Boat at Fred's Marina where both boats put in.

W/ gmds

7-26-10
oregon steel OST

Dale converted UTM target dredge coordinates to lat lons using Corpscon because the Reson's nav system doesn't have UTM - we will use these coordinates to position dredge and record dredge sample locations with a handheld GPS in UTM and with the ship's nav system in lat lons

10:10
Starting - equipment / reconfig

J. Buck, B. Price, M. Szumski
USFWS
S. Dickinson - MMS
S. Morris - Stratus

7-26-10

OST 1 UTM 10T 0516731
5053098

1015h
13.4 feet depth

Good scoop -4

OST 2 1035h Good scoop -5

10T 0516715, 5053098
depth water 23.4 feet

OST 3 1050h
10T 0516730, 5053080
water depth 10.3 feet
Good scoop -4

OST 4 1110h
10T 0516735, 5053086
water depth 3.0 feet
large rocks no sample
taken

7-26-10

OST 5 1OT 0516699
5053109
Depth water 41.3 feet
1130h Good scoop-4

OST 6 1140h
1OT 0516685
5053093
36' water depth
Good scoop-4

7-26-10 Acco/Mas:1 ARM

ARM 1 1245h
1OT 0517515
5048729
water depth 27.3 feet
Good scoop-4

ARM 2 1303h
1OT 0517498, 5048731
water depth 27.6 feet
Good scoop-4

ARM 3 1316h
1OT 0517509, 5048708
water depth 13.9 feet
Good scoop-4

ARM 4 1333h
1OT 0517505, 5048725
water depth 22.3 feet
Pulled up a cable - will
take another grab at same
location
1OT 0517505, 5048718
22.0 feet water depth

7-26-10

ARM 5 1350h
too close to shore, visible Rocks

ARM 6 1355h

10T 0517511, 5048699

8.4 feet water depth
Good scoop - 4

ARM 7 1402h
10T 0517506, 5048726
24.1 feet water depth
Rocks - close to ARM 4
Going to ARM 8 no sample

ARM 8 1420h
10T 0517499, 5048721
16.3 feet depth
Good scoop - 4

7-26-10 MarCom MAR

MAR 5
5.5 feet water depth
10T 0518273, 5048557
1505h
Good scopes - 4
removed some woody debris
Sampled this site first because was most difficult to access

MAR 1 1525h
10T 0518237
5048322
water depth 32.7 feet
Good scoop - 4

MAR 2 1536h
10T 0518271
5048315
water depth 16.5 feet
Good scoop - 4

12 14

7-26-10
MAR3 1545h
10T 0518277
5048312
- water depth 16.6 feet
pulled up a bunch of big sticks - no sample
re-sampling MAR3

10T 0518274
5048309
- water depth 14.8 feet
sheen on water
Big logs in dredge - no sample

MAR4 - not accessible
submerged timbers

MAR6 1605h
10T 0518277, 5048334
water depth 13.8 feet
Good scoop - 4

15

7-26-10
MAR7 1618h
10T 0518262
5048307
water depth 25.8 feet
Good scoop - 3

7-27-10

0750h Safety meeting
Dale Dickinson and Jeff
Morris
we are meeting USF&WS
staff at the first site
today - left Fred's @ 0800h

7-27-10 0830h
Schnitzer SC1-1
UTM 10T 0517419
5050850
water depth 25.1 feet
Good scoop - 4

SC1-2 0845h
UTM 10T 0517479 5050860
water depth 20.3 feet
Good scoop - 4

SC1-3 0851h
UTM 10T 0517369 5050867
water depth 27.0 feet

7-26-10

SCI-4 0907h
UTM 10T 0517398, 5050863
water depth 26.7 feet
Good scoop-4

SCI-5 0916h
UTM 10T 0517434
5050868
water depth 26.6 feet
Good scoop-4

7-26-10 Swan Island

SWI-1 1035h
10T 0522121, 5046033
water depth 27.1 feet
Good scoop-4

SWI-2 1045h

10T 0522137, 5046029

water depth 24.8 feet
pulled up an old umbrella
still got 4 small scoops
of sediment

SWI-3 1102h
10T 0522136, 5046026
water depth 25.0 feet
Good scoop-4

SWI-4 1115h
10T 0522122, 5046039
water depth 25.1 feet
Good scoop-4

7-26-10

SW I-5 1130h
10T 0522100, 5046046
water depth 26.9 feet
Good scoop-3

7-26-10 Arkema 1

ARI-1 1230h
10T 0520101, 5046452
water depth 7.0 feet
Good scoop-4

ARI-2 1240h
10T 0520114, 5046461
water depth 11.3 feet
Good scoop-4

ARI-3 1250h
spot in the middle of pilings - NO sample

ARI-4 1253h
10T 0520093, 5046477
water depth 10.3 feet
Good scoop-4

7-26-10
AR1-5 1303h
target coordinates over a visible pipeline - moved down stream slightly to avoid pipe

IOT 0520065
5046497
water depth 6.8 feet
gravel in bottom of scoop - no sample

AR1-6 1315h
IOT 0520079, 5046489
water depth ~~7.1~~ 7.3 feet
Good scoop - Gravel - 4

AR1-7 1327h
IOT 0520120, 5046447
water depth 8.4 feet

7-26-10 Arkema 2
AR2-1 1400h
IOT 0520224, 5046342

water depth 17.3 feet
Good scoop - 4 - black anaerobic leading

AR2-2 1405h
IOT 0520209, 5046358
water depth 12.6 feet
Good scoop - 4

AR2-3 1415h
IOT 0520235
5046349
water depth ~~25.8~~ feet
26.0
Good scoop - 4

AR2-4 1433h
IOT 0520252
5046341
Water depth 28.3 feet
Good scoop - 4

7-26-10
AR2-5 1443h
IOT 0520208
5046351
water depth 11.9 feet
large gravel close to
shore - no sample

~~AR6~~ AR2-6 1456h

IOT 0520241
5046330
water depth 18.6 feet
Good scoop - 4

7-28-10
0750h Safety meeting
D. Dickinson & J. Morris
Left Fred's @ 0755h.

B. Price and Jeremy Bucks
are meeting us at Gascon

7-28-10
Basco 1 Alternate

GAA-1 0825h
10T 0518548, 5047546
water depth 14.2 feet
Good scoop-4

GAA-2 0843h
10T 0518575, 5047566
water depth 10.2 feet
Good scoop-4

GAA-3 0855h
10T 0518535 5047579
water depth 17.3 feet
Good scoop-4

GAA-4 0907h
10T 0518520
5047567
water-depth 18.1 feet
Good scoop-4

7-28-10
GAA-5 0917h
IOT 0518544
5047584
water depth 14.9 feet
Good scoop - 4

Oil sheen and petroleum smell at all GAA grab locations

Decon with liquinox and simple green

7-28-10
Gasco 2

GA2-1 0944h
IOT 0518761, 5047498
water depth 42.1 feet
Good scoop - 4

GA2-2 1004h
IOT 0518679, 5047499
water depth 6.3
Good scoop - 4

GA2-3
in pilings
no sample

GA2-4 1019h
IOT 0518710
5047484
water depth 5.3 feet
Good scoop - 4

7-28-10

GA2-5 1037h

location under catwalk - bad GPS reading - backed up about 15 ft. to take sample.

lot 0518776, 5047487

water depth 35.9 feet

Good scoop - 4

GA2-6 1052h

lot 0518673, 5047512

Water Depth 8.9 feet

Good scoop - 4

decon with liquinox and simple green

7-29-10

0750h Safety meeting D. Dickinson & J. Morris @ Meldrum Bar Park boat ramp. Departed the Park @ 0800h for Ref 1 - USFWS members are going to meet us at Ref 1.

7-29-10

REI-1 0850h

IOT 0527650, 5031591

water depth 18.4 feet
Good scoop-4

REI-2 0905h

IOT 0527675, 5031587

water depth 8.0 feet
Good scoop-4

REI-3 0917h

IOT 0527684
5031601
water depth 7.8 feet
Good scoop-4

7-29-10
RE1-4 09254

10T 0527686
5031580
water depth 4.2 feet.

Good scoop-4

RE1-5 09354

10T 0527692, 5031561

water depth 3.7 feet
Good scoop-4

7-29-10
RE3-1 10264

10T 0529259, 5026004

water depth 16.9 feet
Good scoop-4

RE3-2 10374
10T 0529239 5026011
water depth 15.0 feet

Good scoop-4

RE3-3 10474

10T 0529272, 5026022

water depth 14.6 feet
Good scoop-4

7-29-10
RE3-~~5~~ 5 1056h
10T 0529262, 5026032
water depth 14.0 feet
Good scoop-4

RE3-4 1107h
10T 0529238, 5026038
water depth 10.8 feet
Good scoop-4

7-29-10
RE2-1 1120h
10T 0529169
5026170
water depth 21.1 feet
Good scoop-4

RE2-2 1133h
10T 0529141
5026171
water depth 13.0 feet
Good scoop-4

RE2-3 1136h
10T 0529183
5026182
water depth 28.4 feet
Good scoop-4

RE2-4
10T 0529149, 5026199
water depth 16.6 feet
Good scoop-4

7-29-10
RE2-S 1206h

10T 0529151
5026192

Water depth 20.6 feet

Wood scoop - 4

C. Photographs of Sediment Sampling Collection

Figure C.1. Marine Sampling Services' collection vessel "Peter R", D. Dickinson (MMS) near the cab and M. Szumski (USFWS) working with the power grab.

(a)

(b)

(c)

Figure C.2. Oregon Steel (OST). View (a) upriver, (b) downriver, and (c) sediment in power grab.

(a)

(b)

Figure C.3. Arkema 1 (AR1). Attempted sampling site for (a) AR1-5 and (b) sediment in power grab.

(a)

(b)

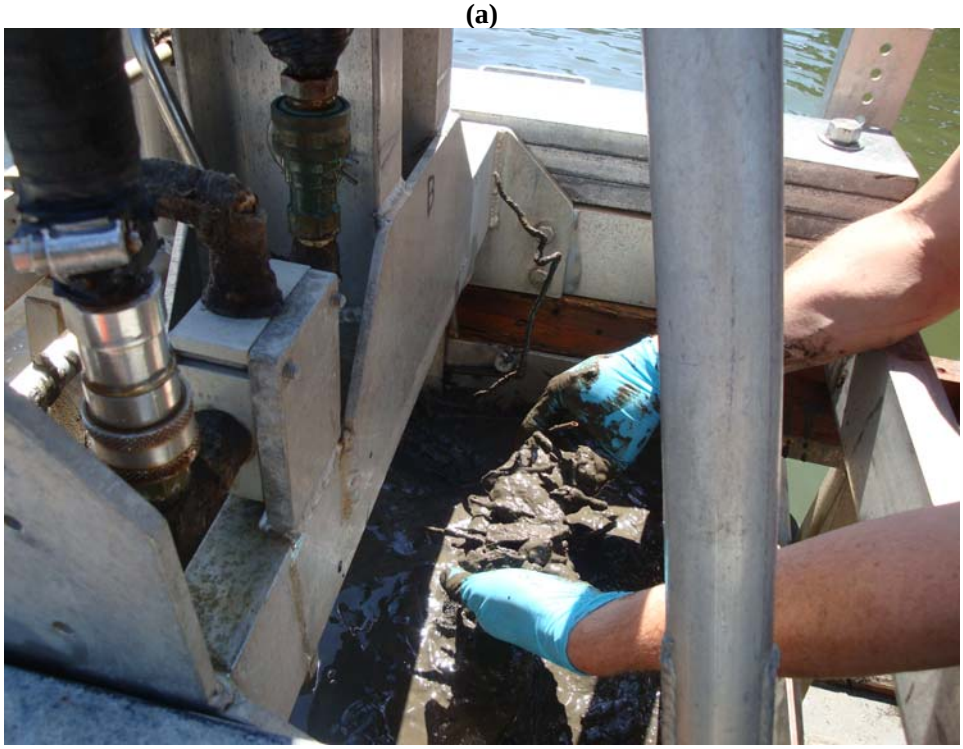
Figure C.4. Arkema 2 (AR2). View (a) upriver and (b) across river.

(a)

(b)

Figure C.5. Schnitzer 1 (SC1). View of (a) end of slip and (b) beginning of slip.

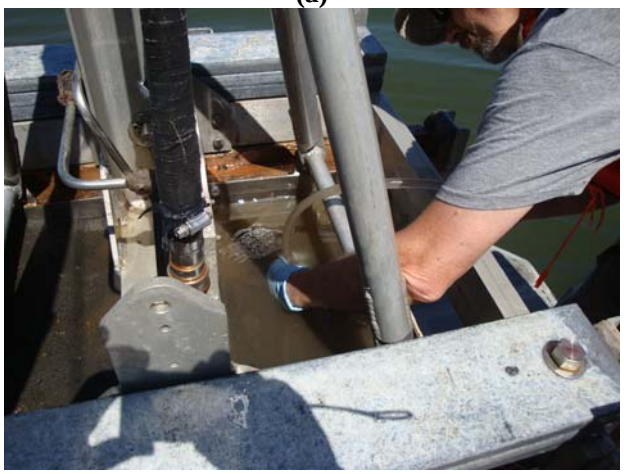
(a)



(b)

Figure C.6. Marcom (MAR). View of (a) sampling MAR-5 and (b) debris in MAR-5 grab.

(a)



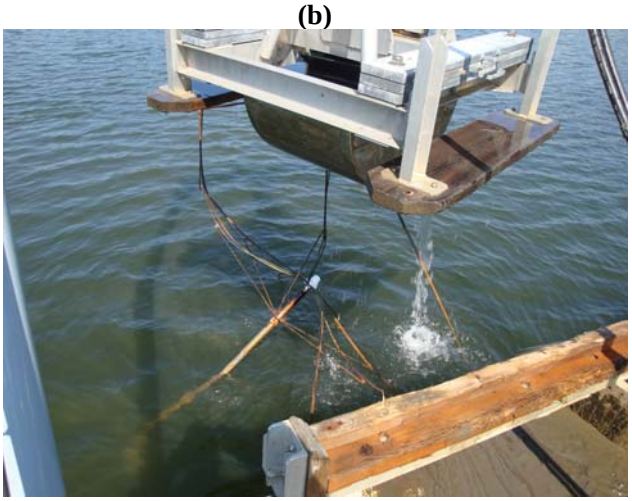
(b)

(c)

Figure C.7. Arco/Mobil (ARM). View (a) downriver, (b) siphoning standing water off the top of the sediment in the grab from ARM-6, and (c) sediment in a collection bucket.

(a)

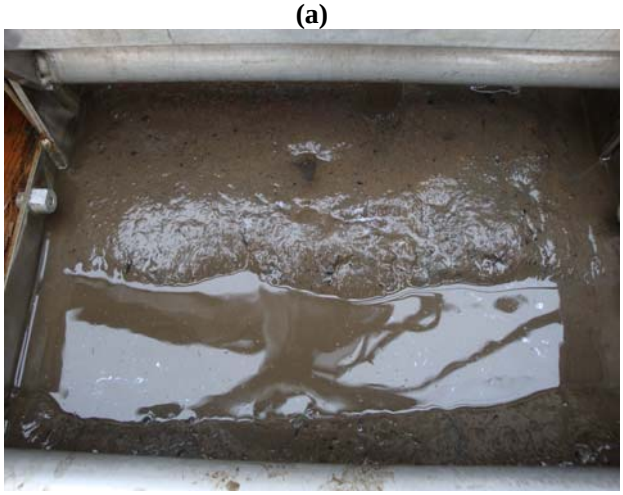
(b)



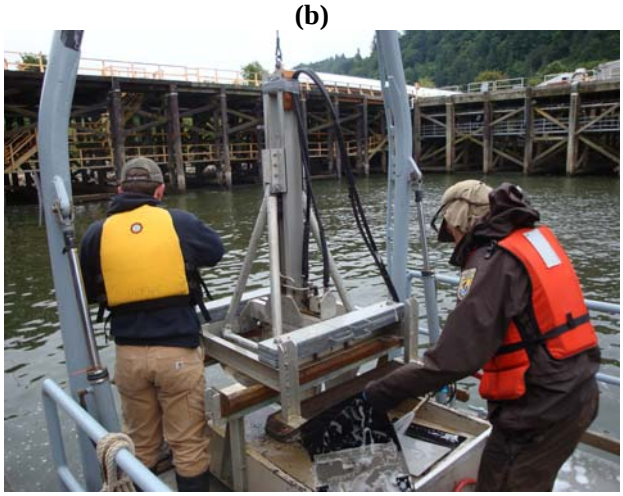
(c)

Figure C.8. Swan Island (SWI). View (a) towards shore, (b) shore just up-river from sampling site, and (c) debris in SWI-2 grab.

(a)

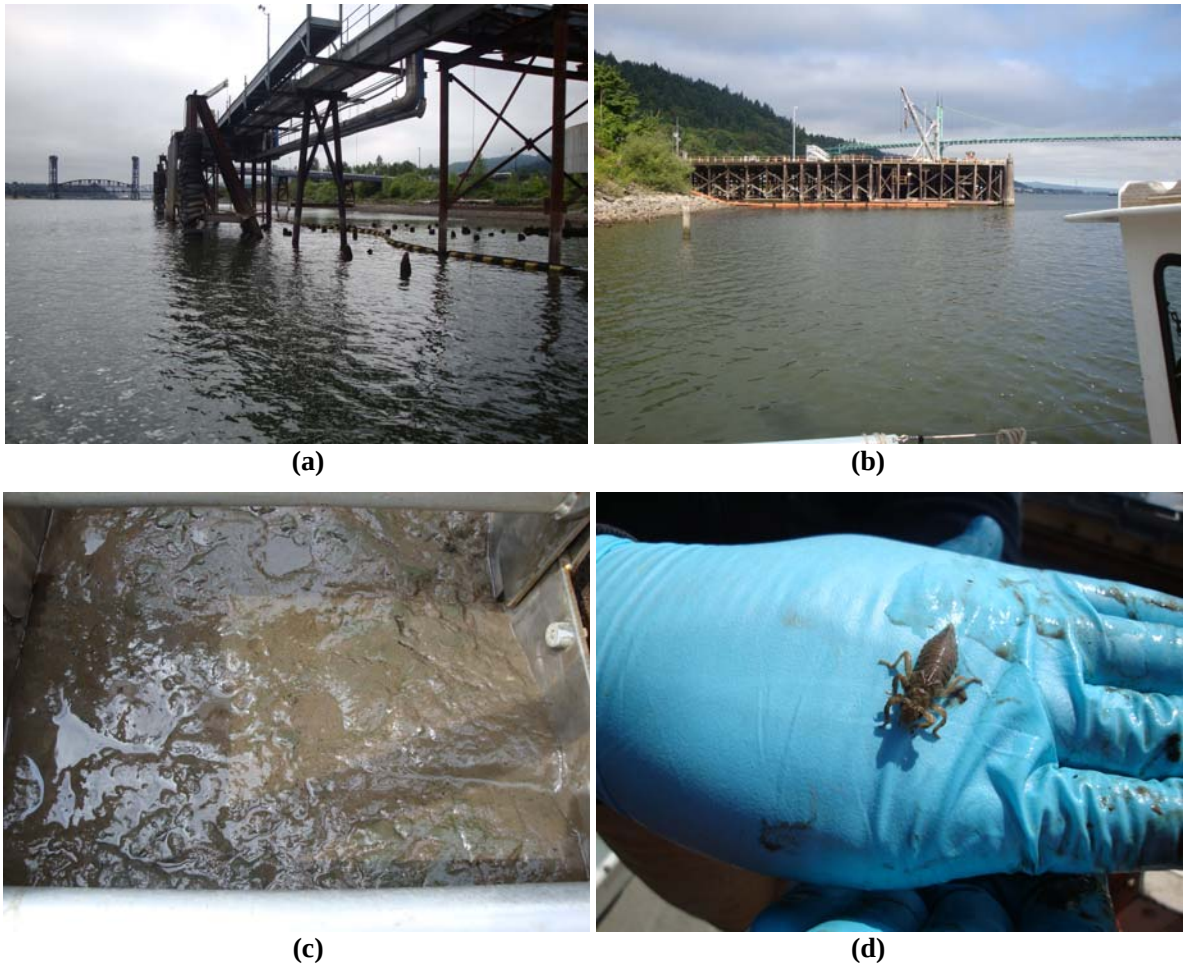


(b)



(c)

Figure C.9. Gasco 1 (alternate; GAA). View of (a) the site, (b) grab GAA-2 with visible sheen, and (c) J. Buck and J. Morris decontaminating grab equipment.



(a) **(b)**

(c) **(d)**

Figure C.10. Gasco 2 (GA2). View of the site (a) facing upriver, (b) facing downriver, (c) grab GA2-4, and (d) dragonfly nymph collected in GA2-6 grab.

(a)

(b)

(c)

Figure C.11. Reference Site 1 (RE1). View of the site (a) facing the east shoreline, (b) facing end of bay, and (c) RE1-2 grab.

(a)

(b)

Figure C.12. Reference Site 2 (RE2). View of the site (a) facing out of the bay, and (b) RE2-2 grab.

(a)

(b)

Figure C.13. Reference Site 3 (RE3). View of the site (a) facing out of the bay and (b) RE3-1 grab.

D. Chain of Custody Forms for Sediment Delivery to Oregon State University by U.S. Fish and Wildlife Service

CHAIN OF CUSTODY

Columbia Analytical Services™

1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222x07 • FAX (360) 636-1068

SR#: _____

PAGE 1 OF 3 COC #: _____

PROJECT NAME: Lamprey Ammocete Bioassay Study

PROJECT NUMBER:

PROJECT MANAGER: Jeremy Buck USFWS / Jeff Morris - Statistics

COMPANY/ADDRESS: USFish & Wildlife Service
2600 SE 98th Ave Suite 100

CITY/STATE/ZIP: Portland OR 97266

E-MAIL ADDRESS: Jeremy_Buck@FWS.GOV

PHONE #: 503-231-6179 FAX #: 503-231-6195

SAMPLER'S SIGNATURE:

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☐	Volatile Organics 624☐ 8260☐	Hydrocarbons Gas☐ Diesel☐ (*see below) Oil☐	BTEX☐ 8021☐	Fuel Fingerprint (FIQ)☐ NW-HCID Screen☐	Oil & Grease/TRPH 1664 HEM☐ 1664 SGT☐	PCB's Aroclors☐ Congeners☐	Pesticides/Herbicides 608☐ 8081A☐ 8141A☐ 8151A☐	Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐	PAHS 8310☐ SIM☐	Metals, Total or Dissolved (See list below)	Cyanide☐	Hex-Chrom☐	pH, Cond., Cl, SO_4, PO_4, F, NO_2, NO_3, BOD, TSS, TDS (circle)	NH_3-N, COD, Total-P, TKN, TOC DOC (circle) NO_2+NO_3	TOX 9020☐ AOX 1650☐ 506☐	Bioassay				REMARKS
MAR-01	7-30-10	0930		SED	1																✓					
MAR-02	7-30-10	0930		SED	1																✓					
OST-01	7-30-10	0930		SED	1																✓					
OST-02	7-30-10	0930		SED	1																✓					
SC1-01	7-30-10	0930		SED	1																✓					
SC1-02	7-30-10	0930		SED	1																✓					
RE1-01	7-30-10	0930		SED	1																✓					
RE1-02	7-30-10	0930		SED	1																✓					
RE2-01	7-30-10	0930		SED	1																✓					
RE2-02	7-30-10	0930		SED	1																✓					

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required

___ II. Report Dup., MS, MSD as required

___ III. Data Validation Report (includes all raw data)

___ IV. CLP Deliverable Report

___ V. EDD

INVOICE INFORMATION

P.O. # _____

Bill To: _____

TURNAROUND REQUIREMENTS

____ 24 hr. ____ 48 hr.

____ 5 Day

____ Standard (10-15 working days)

____ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER: _____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:

Sediment in 5 gallon home depot buckets for use in bioassay
Sediment from Portland Harbor, OR

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: 1204	Signature: 12:07	Signature	Signature
Date/Time: 7-30-10	Date/Time: 7/30/2010	Date/Time	Date/Time
Printed Name: Jeremy Buck	Printed Name: Rob Chitwood	Printed Name	Printed Name
Firm: USFWS	Firm: OSU	Firm	Firm

RCCC #1 07/09

08/13/2010 08:49 5417373590 OSU FISH AND WILDLIF PAGE 02/04

CHAIN OF CUSTODY

Columbia Analytical Services

1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222x07 • FAX (360) 636-1068

SR#: _____ PAGE 2 OF 3 COC #: _____

PROJECT NAME: Lamprey Mimicry Bioassay Study
PROJECT NUMBER:
PROJECT MANAGER: Jeremy Buck USFWS / Jeff Morris Stantec
COMPANY/ADDRESS: US Fish & Wildlife Service
2600 SE 98th Ave Suite 100
CITY/STATE/ZIP: Portland OR 97266
E-MAIL ADDRESS: Jeremy_buck@fws.gov
PHONE #: 503-231-6179 FAX #: 503-231-6195
SAMPLER'S SIGNATURE:

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☐ 8270LL☐	Volatile Organics 624☐ 8260☐	Hydrocarbons Gas☐ Diesel☐ (*see below) ☐ Fuel Fingerprint (FIQ) ☐ NW-HCID Screen	Oil☐ Oil & Grease/TRPH 1664 HEM☐	1664 SGT☐	PCB's Aroclors☐ Congeners☐	Pesticides/Herbicides 608☐ 8081A☐ 8141A☐ 8151A☐	Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐	PAHs 8310☐ SIM☐	Metals, Total or Dissolved (See list below)	Cyanide☐	Hex-Chrom☐	pH, Cond, Cl, SO_4, PO_4, F, NO_2, NO_3, BOD, TSS, TDS (circle)	NH_3-N, COD, Total-P, TKN, TOC, DOC (circle) NO_2+NO_3	TOX 9020☐ AOX 1650☐ 506☐	Bioassay				REMARKS
ARM-01	7-30-10	0930		SED	1															✓					
ARM-02	7-30-10	0930		SED	1															✓					
AR1-01	7-30-10	0930		SED	1															✓					
AR1-02	7-30-10	0930		SED	1															✓					
AR2-01	7-30-10	0930		SED	1															✓					
AR2-02	7-30-10	0930		SED	1															✓					
GAA-01	7-30-10	0930		SED	1															✓					
GAA-02	7-30-10	0930		SED	1															✓					
GA2-01	7-30-10	0930		SED	1															✓					
GA2-02	7-30-10	0930		SED	1															✓					

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
___ IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. # _____
Bill To: _____

TURNAROUND REQUIREMENTS

____ 24 hr. ____ 48 hr.
____ 5 Day
____ Standard (10-15 working days)
____ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER: _____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:
Sediment in 5 gallon Home Depot buckets for use in Bioassay
Sediment from Portland Harbor, OR

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: 1204	Signature: 12:05	Signature	Signature
Date/Time: 7-30-10	Date/Time: 7/30/2010	Date/Time	Date/Time
Printed Name: Jeremy Buck	Printed Name: Rob Chitwood	Printed Name	Printed Name
Firm: USFWS	Firm: OSU	Firm	Firm

RCOC #1 07/09

CHAIN OF CUSTODY

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1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222x07 • FAX (360) 636-1068

SR#: _____ PAGE 3 OF 3 COC #: _____

PROJECT NAME: Lamprey Ammocoete Bioassay Study
PROJECT NUMBER:
PROJECT MANAGER: Jeremy Buck USFWS / Jeff Morris - Stevens Consulting
COMPANY/ADDRESS: USFish and Wildlife Service
2600 SE 98th Ave Suite 100
CITY/STATE/ZIP: Portland OR 97266
E-MAIL ADDRESS: Jeremy_buck@FWS.gov
PHONE #: 503-231-6179 FAX #: 503-231-6195
SAMPLER'S SIGNATURE:

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	TOX 9020 ☐ AOX 1650 ☐ 506 ☐	REMARKS
RE3-01	7-30-10	0930		SED	1	✓	
RE3-02	7-30-10	0930		SED	1	✓	
SWI-01	7-30-10	0930		SED	1	✓	
SWI-02	7-30-10	0930		SED	1	✓	

Column headers: Semivolatile Organics by GC/MS 625 ☐ 8270 ☐ 8270LL ☐; Volatile Organics 624 ☐ 8260 ☐; Hydrocarbons Gas ☐ Diesel ☐ Oil ☐; BTEX ☐ 8021 ☐ (*see below); Fuel Fingerprint (FIQ) ☐; NW-HCID Screen ☐; Oil & Grease/TRPH 1664 HEM ☐ 1664 SGT ☐; PCB's Aroclors ☐ Congeners ☐; Pesticides/Herbicides 608 ☐ 8081A ☐ 8141A ☐ 8151A ☐; Chlorophenolics - 8151M Tri ☐ Tetra ☐ PCP ☐; PAHS 8310 ☐ SIM ☐; Metals, Total or Dissolved (See list below); Cyanide ☐ Hex-Chrom ☐; pH, Cond., Cl, SO_4, PO_4, F, NO_2, NO_3, BOD, TSS, TDS (circle); NH_3-N, COD, Total-P, TKN, TOC, DOC (circle) NO_2+NO_3; Archive

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
___ IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. # _____
Bill To: _____

TURNAROUND REQUIREMENTS

____ 24 hr. ____ 48 hr.
____ 5 Day
____ Standard (10-15 working days)
____ Provide FAX Results

Requested Report Date: _____

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER: _____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:
Sediment in 5 gallon buckets (Home Depot Buckets) for use in Bioassay
Sediment from Portland Harbor, Oregon

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: 7-30-10 1204	Signature: 12:04	Signature:	Signature:
Date/Time	Date/Time: 7/30/2010	Date/Time	Date/Time
Printed Name: Jeremy Buck	Printed Name: Rola Chitwood	Printed Name	Printed Name
Firm: USFWS	Firm: OSU	Firm	Firm

RCOC #1 07/09

08/13/2010 08:49 5417373590 OSU FISH AND WILDLIF PAGE 04/04