PORSF
11.3.31.511 V3

PORT OF PORTLAND

March 1, 2002

Ms. Christie Fellas
National Marine Fisheries Service
Attn: OSB2001-0230-FEC
Habitat Conservation Division
525 NE Oregon St., Ste. 500
Portland, OR 97232

Ms. Judy Linton
CENWP-OP-G
US Army Corps of Engineers
PO Box 2946
Portland, OR 97208

RE: Terminal 2 and Terminal 5 Maintenance Dredging

Dear Ms. Fellas and Ms. Linton:

Please find attached the monitoring report for Corps Permits 2001-00688 and 2001-00689 issued on December 13, 2001 authorizing maintenance dredging activities at the Port of Portland's Terminal 2 and Terminal 5. This report serves to meet the requirements of the terms and conditions of the Biological Opinion and Incidental Take Statement issued by the National Marine Fisheries Service on November 6, 2001 with additional terms and conditions issued on December 11, 2001.

Please contact me at (503) 240-2033 if you have any questions or comments regarding this report or project. Thank you.

Sincerely,

Bill Hall
Natural Resources Project Manager
Marine Operations
Port of Portland

USEPA SF
1286377

US Army Corps of Engineers
Permitted Project Monitoring Report

Applicant: Port of Portland
Corps Permit Numbers: 2001-00688 and 2001-00689
Project Name: Terminal 2/Terminal 5 Maintenance Dredging
Corps POC: Judy Linton
Category of Activity: Maintenance Dredging

Location: Willamette River (approximately RM 2 and RM 10)
Hydrologic Unit Code: 17090012
Latitude: 45° 36' N Longitude: 122° 46' W

Work Starting Date: December 14, 2001 *Work Ending Date:* January 31, 2002

Construction Supervisor:
Frank Schmidt
Port of Portland
PO Box 3529
Portland, OR 97208

Describe your assessment of your project on the natural stream function.

Please see attached report.

NARRATIVE ASSESSMENTOF THE TERMINAL 2 AND TERMINAL 5 MAINTENANCE DREDGING PROJECT

This narrative assessment is a component of the Monitoring Report that serves to meet the requirements of the Biological Opinion issued by the National Marine Fisheries Service as part of the Department of the Army (Corps) Permits 2001-00688 and 2001-00689. The Biological Opinion was issued on November 6, 2001 with additional terms and conditions issued on December 11, 2001 as part of a reinitiation of consultation. The Corps permits were authorized on December 13, 2001.

This project involved maintenance dredging of berths at Terminal 2 and Terminal 5 of the Port of Portland (Port). Dredging activities started on December 14, 2001 at Terminal 5. Dredging activities at Terminal 5 continued until December 27, 2001. After conducting a post-dredging depth survey, the Port asked its contractor to return to Terminal 5 on January 21 and 22, 2002 to remove material that was still above the authorized depths. Dredging at Terminal 5 occurred on a total of 10 working days. Dredging activities at Terminal 2 occurred between January 2, 2002 and January 28, 2002 on a total of 14 workdays. Release of water from the Rehandle Facility on the Columbia River occurred on five days between December 27, 2001 and January 31, 2002.

Project Identification
Further Project Identification required as part of this Monitoring Report is shown on the attached Monitoring Report Form.

Construction Impacts
Construction impacts were limited to the minimum area necessary to complete the project.

Turbidity Monitoring
Turbidity monitoring was conducted at the terminals during active dredging and at the rehandle facility when water was being released. The Port followed its "Water Quality Management Plan for Maintenance Dredging" and used the turbidity thresholds defined in the December 11, 2001 approval letter from NMFS.

Turbidity levels at the active dredge sites never exceeded the "stop-work level" of 120 NTU. Minimum Best Management Practices (BMP) implementation levels of 44 NTU were exceeded on a few occasions, but at no time did monitoring show that minimum BMP levels were exceeded for more than 24 hours and that the difference between upstream and downstream values were greater than 10 percent (had this standard been exceeded and dredging was determined to be the cause of the exceedance(s), dredging would have been stopped).

During monitoring at Terminal 5, minimum BMP implementation levels were reached once, on December 16, 2001. The differences between upstream and downstream

turbidity on this day was less than 1 NTU (approximately 1.5 percent). The elevated turbidity levels were attributed to conditions not related to dredging activities.

Turbidity monitoring during dredging at Terminal 2 showed that the minimum BMP levels were exceeded a total of six times. On two of these occasions the upstream turbidity value was below the BMP level and the downstream turbidity value was above BMP levels. The other four occasions of minimum BMP exceedances resulted from both upstream and downstream values being above minimum BMP levels.

Of the six occurrences at Terminal 2 of turbidity values above 44 NTU, the difference between the upstream and downstream values was less than 10 percent on two occasions. The other four occurrences of minimum BMP level exceedance showed downstream turbidity levels between 13 and 30 percent higher than upstream levels.

On all occasions of BMP level exceedance, dredging activities were modified to decrease turbidity either through implementation of BMPs or cessation of dredging for the workday. Cessation of dredging seemed to quickly decrease turbidity levels downstream of the dredging area. For example, the highest downstream average turbidity level measured was 76.5 NTU, 27 percent higher that the upstream reference value 60.1 NTU. Dredging was stopped for the day within 40 minutes of collecting the sample. Within 30 minutes of dredging cessation, downstream average turbidity decreased to 63.9 NTU, approximately 6.9 percent higher than the upstream reference value 59.8 NTU.

Turbidity monitoring at the Suttle Road Rehandle Facility showed turbidity values remained below 7 NTU both upstream and downstream of the facility during release of water.

Turbidity monitoring reports prepared during dredging activities are attached in Appendix A.

Sediment Analysis
The Port conducted sediment analysis at Terminal 2 and Terminal 5 in June 2001. The results of these analyses were submitted to NMFS with a Biological Assessment in September 2001.

In-Water Work Period
In-water work associated with this project occurred between December 14, 2001 and January 28, 2002 on the Willamette River. Release of water from the Rehandle Facility on the Columbia River occurred on five days between December 27, 2001 and January 31, 2002. These dates are within the approved in-water work period as defined in the Biological Opinion.

Rehandle Facility Use
Dredged material from Terminal 2 and Terminal 5 was placed solely in the Suttle Road Rehandle Facility. No solid material has been removed or released from the facility at this time.

Narrative Assessment of the Maintenance Dredging Projects on Natural Stream Function

This project removed sediments in active berths at the Port's Terminal 2 and Terminal 5 to a depth of 40 feet with an allowed two-foot overdredge. The project created temporary increases in turbidity at the active dredging sites and potentially removed benthic invertebrates within the dredge prism. No riparian vegetation was impacted by the dredging activities. Changes in bottom topography due to dredging were negligible relative to the area encompassing the federal navigation channel of the lower Willamette River.

Photographic Documentation of Environmental Conditions at the Project Site

Photographic documentation of the project site before, during, and after is included as a component of the Monitoring Report (see Appendix B).

APPENDIX A: TERMINAL 2 AND TERMINAL 5 TURBIDITY MONITORING RESULTS AND DATA SHEETS

APPENDIX A: Table 1. Turbidity measurement results for maintenance dredging activities at Terminal 2, Terminal 5, and the Suttle Road Rehandle Facility.

Terminal 2

					Upstream				Downstream								
Days	Date	*Dre. Start*	*Dre. Finish*	*Sample time*	Top	Middle	Bottom	**Average**	Top	Middle	Bottom	**Average**	Difference (NTU)	Difference (%)	Comments	Downstream BMP exceeded	Upstream BMP exceeded
1	1/2/02	9:30	14:45	12:30	8.75	8.16	9.34	**8.75**	8.73	14.80	30.00	**17.84**	9.09	103.9%	slightly murky	N	N
2	1/3/02	19:40		23:00	12.00	12.10	26.30	**16.80**	16.80	15.10	15.00	**15.63**	-1.17	-7.5%	slightly murky	N	N
	1/4/02		1:15														
3	1/6/02	19:47		23:45	12.70	12.80	14.80	**13.43**	14.80	13.10	19.20	**15.70**	2.27	16.9%	too dark to tell	N	N
	1/7/02		0:45														
4	1/7/02	20:00		23:45	23.60	21.50	25.20	**23.43**	30.70	37.70	33.40	**33.93**	10.50	44.8%	murky	N	N
	1/8/02		1:20														
5	1/8/02	20:00															
	1/9/02		1:05	0:01	54.20	57.90	61.50	**57.87**	57.80	65.70	79.00	**67.50**	9.63	16.6%	high murky	Y	Y
6	1/9/02	20:00		23:30	59.40	58.20	62.90	**60.17**	70.10	78.50	81.00	**76.53**	16.37	27.2%	real murky	Y	Y
	1/10/02		0:10	0:40(2)	56.80	60.40	62.20	**59.80**	64.00	62.40	65.30	**63.90**	4.10	6.9%		Y	Y
7	1/13/02	19:40	0:00	23:00	17.30	15.30	17.40	**16.67**	19.80	17.00	28.20	**21.67**	5.00	30.0%	murky	N	N
8	1/14/02	22:30															
	1/15/02		3:10	1:30	13.50	14.70	13.80	**14.00**	21.30	24.00	31.50	**25.60**	11.60	82.9%	murky	N	N
9	1/15/02	19:30		23:30	11.80	11.20	12.30	**11.77**	12.80	11.60	13.10	**12.50**	0.73	6.2%	*greenish*	N	N
	1/16/02		2:00														
10	1/17/02	8:20	14:15	12:00	10.20	10.90	10.00	**10.37**	11.00	14.80	20.90	**15.57**	5.20	50.2%	slack tide	N	N
11	1/23/02	7:50	13:18	11:30	38.30	46.40	44.30	**43.00**	42.30	44.20	49.40	**45.30**	2.30	5.3%	muddy	Y	N
12	1/24/02	7:45	13:00	11:45	34.90	38.60	40.70	**38.07**	38.60	45.10	47.40	**43.70**	5.63	14.8%	dirty brown	N	N
13	1/26/02	6:40	12:20	10:40	38.50	34.40	39.20	**37.37**	52.00	45.20	48.80	**48.67**	11.30	30.2%	muddy	Y	N
14	1/28/02	6:45	10:10	9:00	55.00	52.70	52.80	**53.50**	58.60	70.60	52.10	**60.43**	6.93	13.0%	brown	Y	Y
Average:					29.80	30.35	32.85	**31.00**	34.62	37.32	40.95	**37.63**	**6.63**	21.4%			

Table 1(continued). Turbidity measurement results for maintenance dredging activities at Terminal 2, Terminal 5, and the Suttle Road Rehandle Facility.

Terminal 5

Days	Date	*Dre. Start*	*Dre. Finish*	*Sample time*	Upstream Top	Upstream Middle	Upstream Bottom	**Average**	Downstream Top	Downstream Middle	Downstream Bottom	**Average**	Difference (NTU)	Difference (%)	Comments	Downstream BMP exceeded	Upstream BMP exceeded
1	12/14/01	7:45	17:30	11:55	13.50	12.80	13.80	**13.37**	13.90	16.10	15.90	**15.30**	1.93	14.5%		N	N
	12/14/01			15:45(2)	14.90	14.60	15.00	**14.83**	16.50	16.00	15.80	**16.10**	1.27	8.5%	murky	N	N
2	12/16/01	13:35	22:30	15:30	48.40	49.70	55.90	**51.33**	46.90	49.20	56.30	**50.80**	-0.53	-1.0%	murky	Y	Y
	12/16/01			19:30(2)	47.50	55.80	58.00	**53.77**	48.40	49.70	65.70	**54.60**	0.83	1.5%	murky	Y	Y
3	12/17/01	22:10															
	12/18/01		4:10	2:00	39.20	42.90	41.20	**41.10**	38.90	33.20	36.00	**36.03**	-5.07	-14.1%		N	N
4	12/18/01	18:30	0:00	20:30	31.70	31.20	31.10	**31.33**	36.80	35.00	34.30	**35.37**	4.03	12.9%		N	N
5	12/19/01	19:20		23:30	29.20	31.80	34.20	**31.73**	35.60	35.20	32.70	**34.50**	2.77	8.7%	little murky	N	N
	12/20/01		1:30														
6	12/20/01	18:55		22:55	31.10	31.50	31.50	**31.37**	33.00	35.20	33.20	**33.80**	2.43	7.8%		N	N
	12/21/01		1:10														
7	12/26/01	8:45	14:30	12:45	14.40	15.10	15.10	**14.87**	15.80	15.60	19.00	**16.80**	1.93	13.0%		N	N
8	12/27/01	19:30	22:30														
9	1/21/02	8:30	18:23	12:25	8.11	8.42	8.08	**8.20**	9.09	8.88	8.58	**8.85**	0.65	7.9%	greenish	N	N
10	1/22/02	7:00	16:10	10:00	10.6	10.9	11.5	**11.00**	11.4	10.7	10.6	**10.90**	-0.10	-0.9%	little murky	N	N
	1/22/02			3:00(2)	12.4	11.8	12.6	**12.27**	13.6	16	14.1	**14.57**	2.30	18.8%	murky	N	N
Average:					25.08	26.38	27.33	**26.26**	26.66	26.73	28.52	**27.30**	**1.04**	3.9%			

Rehandle Facility

Days	Date	*Release Start*	*Release Finish*	*Sample time*	Upstream Top	Upstream Middle	Upstream Bottom	**Average**	Downstream Top	Downstream Middle	Downstream Bottom	**Average**	Difference (NTU)	Difference (%)	Comments	Downstream BMP exceeded	Upstream BMP exceeded
1	12/27/02			22:30	4.47		6.08	**5.28**	3.67		4.35	**4.01**	-1.27	-31.5%		N	N
2	1/8/02			18:00	5.15		5.43	**5.29**	4.47		4.25	**4.36**	-0.93	-21.3%	pale green	N	N
	1/9/02		6:15													N	N
3	1/14/02			22:45	3.41		3.41	**3.41**	3.03		3.33	**3.18**	-0.23	-7.2%		N	N
	1/15/02		6:30														
4	1/22/02			19:30	3.32		2.90	**3.11**	2.77		2.91	**2.84**	-0.27	-9.5%	slack tide	N	N
5	1/26/02	7:30	12:00	11:30	5.21		4.94	**5.08**	5.15		6.94	**6.05**	0.97	16.0%	green	N	N
6	1/31/02	7:15	12:15	10:00	3.36		3.12	**3.24**	3.18		3.91	**3.55**	0.31	8.6%		N	N
Average:					4.15		4.31	**4.23**	3.71		4.28	**4.00**	**-0.24**	**-5.9%**			

Note: All comments shown are for overall water conditions.

Name CHARLES RABITZKE

Date 12/14/01

Time 1545

Weather Cloudy Cold

VanDorn Sampler X Other

Hach 2100 P turbidity Meter X Other

Calibration Check

Beginning of Day	
Standard	Meter Reading
47.9 - 57.9	
439 - 537	

End of Day	
Standard	Meter Reading
47.9 - 57.9	52.7
439 - 537	494

notes

Sample Information

Visual Observation

Up Stream (200')

no visual difference X visual difference

notes murky

Down-stream (200')

no visual difference X visual difference

notes

Meter Reading

Distance from Dredge (ft) UP	Distance from Dredge (ft) DOWN	Depth (in water column)	Reading (NTU)	Note
200'		Top=1m below	14.9	
200'		middle=middle	14.6	
200'		bottom=1m above	15.0	
	200'	top	16.5	
	200'	middle	16.0	
	200'	bottom	15.8	

notes

Name ~~MIKE~~ JOHN CHILDS

Date 12/14/01

Time 1155

Weather RAIN

VanDorn Sampler X Other

Hach 2100 P turbidity Meter X Other

Calibration Check

Beginning of Day	
Standard	Meter Reading
47.9 - 57.9	54.1
439 - 537	488

End of Day	
Standard	Meter Reading
47.9 - 57.9	
439 - 537	

notes

Sample Information

Visual Observation

Up Stream (200')

no visual difference ____ visual difference ____

notes

Down-stream (200')

no visual difference X visual difference ____

notes

Meter Reading

Distance from Dredge (ft)		Depth	Reading	Note
UPstream	DOWNstream	(in water column)	(NTU)	
200'		Top=1m below	13.5	
200'		middle=middle	12.8	
200'		bottom=1m above	13.8	
	200'	top	13.9	
	200'	middle	16.1	
	200'	bottom	15.9	

notes

Name CHARLES BABITZKE

Date 12/16

Time 3:30 p.m.

Weather WINDY - RAINY - ☹

VanDorn Sampler X Other

Hach 2100 P turbidity Meter X Other

Calibration Check

Beginning of Day	
Standard	Meter Reading
47.9 - 57.9	52.3
439 - 537	490

End of Day	
Standard	Meter Reading
47.9 - 57.9	
439 - 537	

notes

Sample Information

Visual Observation

Up Stream (200')

no visual difference X visual difference

notes MERKY

Down-stream (200')

no visual difference X visual difference

notes MERKY

Meter Reading

Distance from Dredge (ft) UP	Distance from Dredge (ft) DOWN	Depth (in water column)	Reading (NTU)	Note
200'		Top=1m below	48.4	
200'		middle=middle	49.4	
200'		bottom=1m above	55.9	
	200'	top	46.9	
	200'	middle	49.2	
	200'	bottom	56.3	

notes

Name CHARLES BABITZKE

Date 12/16/01

Time 7:30 P.M.

Weather LOUSY - WINDY - RAINING

VanDorn Sampler X Other

Hach 2100 P turbidity Meter X Other

Calibration Check

Beginning of Day	
Standard	Meter Reading
47.9 - 57.9	
439 - 537	

End of Day	
Standard	Meter Reading
47.9 - 57.9	51.8
439 - 537	489

notes

Sample Information

Visual Observation

Up Stream (200')

no visual difference X visual difference

notes MERKY

Down-stream (200')

no visual difference X visual difference

notes MERKY

Meter Reading

Distance from Dredge (ft) UP	Distance from Dredge (ft) DOWN	Depth (in water column)	Reading (NTU)	Note
200'		Top=1m below	47.5	
200'		middle=middle	55.8	
200'		bottom=1m above	58.0	
	200'	top	48.4	
	200'	middle	49.7	
	200'	bottom	65.7	

notes

Name Steve Gibson

Date 12-18-01

Time 0200

Weather Clear + Cold

VanDorn Sampler X Other

Hach 2100 P turbidity Meter X Other

Calibration Check

Beginning of Day	
Standard	Meter Reading
47.9 - 57.9	52.9
439 - 537	486

End of Day	
Standard	Meter Reading
47.9 - 57.9	52.8
439 - 537	486

notes

Sample Information

Visual Observation

Up Stream (200')

no visual difference X visual difference

notes

Down-stream (200')

no visual difference X visual difference

notes

Meter Reading

Distance from Dredge (ft) UP	DOWN	Depth (in water column)	Reading (NTU)	Note
200'		Top=1m below	39.2	
200'		middle=middle	42.9	
200'		bottom=1m above	41.2	
	200'	top	38.9	
	200'	middle	33.2	
	200'	bottom	36.0	
At Mouth of Slough			37.0	

notes Downstream sample collected ~~at~~ Mouth of Columbia Slough 200 Ft off of

Name Steve Gibson

Date 12-19-01

Time 23:30

Weather Clear

VanDorn Sampler X Other

Hach 2100 P turbidity Meter X Other

Calibration Check

Beginning of Day	
Standard	Meter Reading
47.9 - 57.9	53.1
439 - 537	487

End of Day	
Standard	Meter Reading
47.9 - 57.9	51.7
439 - 537	486

notes

Sample Information

Visual Observation

Up Stream (200')

no visual difference X visual difference

notes A little Marky

Down-stream (200')

no visual difference X visual difference

notes

Meter Reading

Distance from Dredge (ft) UP	DOWN	Depth (in water column)	Reading (NTU)	Note
200'		Top=1m below	29.2	
200'		middle=middle	31.8	
200'		bottom=1m above	34.2	
	200'	top	35.6	
	200'	middle	35.2	
	200'	bottom	32.7	

notes

Name Steve Gibson

Date 12-18-01

Time 20.30 hrs

Weather Clear

VanDorn Sampler X Other

Hach 2100 P turbidity Meter X Other

Calibration Check

Beginning of Day	
Standard	Meter Reading
47.9 - 57.9	53.3
439 - 537	483

End of Day	
Standard	Meter Reading
47.9 - 57.9	53.2
439 - 537	488

notes

Sample Information

Visual Observation

Up Stream (200')

no visual difference X visual difference

notes

Down-stream (200')

no visual difference X visual difference

notes

Meter Reading

Distance from Dredge (ft) UP	DOWN	Depth (in water column)	Reading (NTU)	Note
200'		Top=1m below	31.7	
200'		middle=middle	31.2	
200'		bottom=1m above	31.1	
	200'	top	36.8	
	200'	middle	35.0	
	200'	bottom	34.3	
At Mouth	of Slough		31.8	

notes Downstream sample Collected 200 Feet off of Columb a slough

Name Steve Gibson

Date 12-20-01

Time 22:55

Weather Clear

VanDorn Sampler X Other

Hach 2100 P turbidity Meter X Other

Calibration Check

Beginning of Day	
Standard	Meter Reading
47.9 - 57.9	51.2
439 - 537	486

End of Day	
Standard	Meter Reading
47.9 - 57.9	52.2
439 - 537	486

notes

Sample Information

Visual Observation

Up Stream (200')

no visual difference X visual difference

notes

Down-stream (200')

no visual difference X visual difference

notes

Meter Reading

Distance from Dredge (ft) UP	Distance from Dredge (ft) DOWN	Depth (in water column)	Reading (NTU)	Note
200'		Top=1m below	31.1	
200'		middle=middle	31.5	
200'		bottom=1m above	31.5	
	200'	top	33.0	
	200'	middle	35.2	
	200'	bottom	33.2	

notes

Name Maurie W. and Michael OH

Date 12-26-01

Time 12:45

Weather Clear

VanDorn Sampler X Other

Hach 2100 P turbidity Meter X Other

Calibration Check

Beginning of Day	
Standard	Meter Reading
47.9 - 57.9	52.2
439 - 537	489

End of Day	
Standard	Meter Reading
47.9 - 57.9	52.2
439 - 537	488

notes

Sample Information

Visual Observation

Up Stream (200')

no visual difference X visual difference

notes

Down-stream (200')

no visual difference X visual difference

notes

Meter Reading

Distance from Dredge (ft) UP	Distance from Dredge (ft) DOWN	Depth (in water column)	Reading (NTU)	Note
200'		Top=1m below	14.4	
200'		middle=middle	15.1	
200'		bottom=1m above	15.1	
	200'	top	15.8	
	200'	middle	15.6	
	200'	bottom	19.0	

notes

Name CHARLES BABITZKE

Date 1/2/02

Time 12:30

Weather CLOUDY - NO WIND

VanDorn Sampler X Other

Hach 2100 P turbidity Meter X Other

Calibration Check

Beginning of Day	
Standard	Meter Reading
47.9 - 57.9	52.2
439 - 537	459

End of Day	
Standard	Meter Reading
47.9 - 57.9	
439 - 537	

notes

Sample Information

Visual Observation

Up Stream (200')

no visual difference X visual difference

notes WATER IS SLIGHTLY MERKY

Down-stream (200')

no visual difference X visual difference

notes WATER IS STILL SLIGHTLY MERKY

Meter Reading

Distance from Dredge (ft) UP	Distance from Dredge (ft) DOWN	Depth (in water column)	Reading (NTU)	Note
200'		Top=1m below	8.75	
200'		middle=middle	8.16	
200'		bottom=1m above	9.34	
	200'	top	8.73	
	200'	middle	14.8	
	200'	bottom	30.0	

notes

Name Maurie Wolfgram

Date 1-3-02

Time 11:00

Weather Clear

VanDorn Sampler X Other

Hach 2100 P turbidity Meter X Other

Calibration Check

Beginning of Day	
Standard	Meter Reading
47.9 - 57.9	53.4
439 - 537	48.7

End of Day	
Standard	Meter Reading
47.9 - 57.9	
439 - 537	

notes

Sample Information

Visual Observation

Up Stream (200')

no visual difference X visual difference

notes Slightly murky

Down-stream (200')

no visual difference X visual difference

notes Slightly murky

Meter Reading

Distance from Dredge (ft) UP	Distance from Dredge (ft) DOWN	Depth (in water column)	Reading (NTU)	Note
200'		Top=1m below	12.0	
200'		middle=middle	12.1	
200'		bottom=1m above	26.3	
	200'	top	16.8	
	200'	middle	15.1	
	200'	bottom	15.0	

notes

Name CHARLES BABITZKE

Date 1/6/02

Time 11:45 p.m.

Weather RAINY - WINDY

VanDorn Sampler X Other

Hach 2100 P turbidity Meter X Other

Calibration Check

Beginning of Day	
Standard	Meter Reading
47.9 - 57.9	
439 - 537	

End of Day	
Standard	Meter Reading
47.9 - 57.9	52.4
439 - 537	483

notes

Sample Information

Visual Observation

Up Stream (200')

no visual difference ____ visual difference ____

notes TOO DARK TO TELL (

Down-stream (200')

no visual difference ____ visual difference ____

notes TOO DARK TO TELL

Meter Reading

Distance from Dredge (ft) UP	Distance from Dredge (ft) DOWN	Depth (in water column)	Reading (NTU)	Note
200'		Top=1m below	12.7	
200'		middle=middle	12.8	
200'		bottom=1m above	14.8	
	200'	top	14.8	
	200'	middle	13.1	
	200'	bottom	19.2	

notes

Name CHARLES BABITZKE

Date 1/7/02

Time 11:45

Weather CALM w/EBB TIDE

VanDorn Sampler X Other

Hach 2100 P turbidity Meter X Other

Calibration Check

Beginning of Day	
Standard	Meter Reading
47.9 - 57.9	
439 - 537	

End of Day	
Standard	Meter Reading
47.9 - 57.9	52.5
439 - 537	488

notes

Sample Information

Visual Observation

Up Stream (200')

no visual difference X visual difference

notes MERKY

Down-stream (200')

no visual difference X visual difference

notes MERKY

Meter Reading

Distance from Dredge (ft) UP	Distance from Dredge (ft) DOWN	Depth (in water column)	Reading (NTU)	Note
200'		Top=1m below	23.6	
200'		middle=middle	21.5	
200'		bottom=1m above	25.2	
	200'	top	30.7	
	200'	middle	37.7	
	200'	bottom	33.4	

notes

Name CHARLES BABITZKE

Date 1/8/02

Time 18:00 HRS.

Weather CLEAR - CALM

VanDorn Sampler X Other

Hach 2100 P turbidity Meter X Other

Calibration Check

Beginning of Day	
Standard	Meter Reading
47.9 - 57.9	52.7
439 - 537	494

End of Day	
Standard	Meter Reading
47.9 - 57.9	
439 - 537	

notes

Sample Information

Visual Observation

Up Stream (200')

no visual difference X visual difference

notes WATER WAS PALE GREEN

Down-stream (200')

no visual difference X visual difference

notes WATER WAS PALE GREEN

Meter Reading

Distance from Dredge (ft) UP	DOWN	Depth (in water column)	Reading (NTU)	Note
200'		Top=1m below	5.15	
200'		middle=middle		
200'		bottom=1m above	5.43	
	200'	top	4.47	
	200'	middle	4.25	
	200'	bottom		

notes

Name CHARLES BABITZKE

Date 1/8/02

Time 00.01

Weather CLEAR & CALM

VanDorn Sampler X Other

Hach 2100 P turbidity Meter X Other

Calibration Check

Beginning of Day	
Standard	Meter Reading
47.9 - 57.9	52.7
439 - 537	494

End of Day	
Standard	Meter Reading
47.9 - 57.9	52.6
439 - 537	489

notes

Sample Information

Visual Observation

Up Stream (200')

no visual difference ____ visual difference ____

notes MERKY WATER (HIGHER THAN PREVIOUS DAYS)

Down-stream (200')

no visual difference ____ visual difference ____

notes MERKY WATER (HIGHER WATER)

Meter Reading

HOULD BE BASE

Distance from Dredge (ft) UP	Distance from Dredge (ft) DOWN	Depth (in water column)	Reading (NTU)	Note
200'		Top=1m below	54.2	
200'		middle=middle	57.9	
200'		bottom=1m above	61.5	
	200'	top	57.8	
	200'	middle	65.7	
	200'	bottom	79.0	

notes EBBING

Name C. BABITZKE

Date 1/9/02

Time 11:30

Weather CLEAR & CALM

VanDorn Sampler X Other

Hach 2100 P turbidity Meter X Other

Calibration Check

Beginning of Day	
Standard	Meter Reading
47.9 - 57.9	52.1
439 - 537	489

End of Day	
Standard	Meter Reading
47.9 - 57.9	52.7
439 - 537	490

notes

Sample Information

Visual Observation

Up Stream (200')

no visual difference X visual difference

notes REAL MERKY-

Down-stream (200')

no visual difference X visual difference

notes REAL MERKY

Meter Reading

Distance from Dredge (ft) UP	DOWN	Depth (in water column)	Reading (NTU)	Note
200'		Top=1m below	59.4	
200'		middle=middle	58.2	
200'		bottom=1m above	62.9	
	200'	top	70.1	
	200'	middle	78.5	
	200'	bottom	81.0	

notes

Name C. BABITZKE

Date 1/9/02

Time 12:40

Weather CLEAR & CALM

VanDorn Sampler V Other

Hach 2100 P turbidity Meter X Other

Calibration Check

Beginning of Day	
Standard	Meter Reading
47.9 - 57.9	
439 - 537	

End of Day	
Standard	Meter Reading
47.9 - 57.9	48.0
439 - 537	52.7

notes

Sample Information

Visual Observation

Up Stream (200')

no visual difference X visual difference

notes 2ND SAMPLING

Down-stream (200')

no visual difference X visual difference

notes

Meter Reading

Distance from Dredge (ft) UP	Distance from Dredge (ft) DOWN	Depth (in water column)	Reading (NTU)	Note
200'		Top=1m below	56.8	
200'		middle=middle	60.4	
200'		bottom=1m above	65.2	
	200'	top	64.0	
	200'	middle	62.4	
	200'	bottom	65.3	

notes

Name John Hult

Date 1-13-01

Time 23:00

Weather Clear

VanDorn Sampler X Other

Hach 2100 P turbidity Meter X Other

Calibration Check

Beginning of Day	
Standard	Meter Reading
47.9 - 57.9	53.2
439 - 537	491

End of Day	
Standard	Meter Reading
47.9 - 57.9	53.2
439 - 537	491

notes

Sample Information

Visual Observation

Up Stream (200')

no visual difference X visual difference

notes murky

Down-stream (200')

no visual difference X visual difference

notes murky

Meter Reading

Distance from Dredge (ft) UP	Distance from Dredge (ft) DOWN	Depth (in water column)	Reading (NTU)	Note
200'		Top=1m below	17.3	
200'		middle=middle	15.3	
200'		bottom=1m above	17.4	
	200'	top	19.8	
	200'	middle	17.0	
	200'	bottom	28.2	

notes

Name John Holt

Date 1-14-02

Time 11:30

Weather Clear Cold

VanDorn Sampler X Other

Hach 2100 P turbidity Meter X Other

Calibration Check

Beginning of Day	
Standard	Meter Reading
47.9 - 57.9	52.1
439 - 537	491

End of Day	
Standard	Meter Reading
47.9 - 57.9	52.9
439 - 537	487

notes

Sample Information

Visual Observation

Up Stream (200')

no visual difference ✓ visual difference

notes merky

Down-stream (200')

no visual difference ✓ visual difference

notes merky

Meter Reading

Distance from Dredge (ft) UP	Distance from Dredge (ft) DOWN	Depth (in water column)	Reading (NTU)	Note
200'		Top=1m below	13.5	
200'		middle=middle	14.7	
200'		bottom=1m above	13.8	
	200'	top	21.3	
	200'	middle	24.0	
	200'	bottom	31.5	

notes

Name John Holt

Date 1-15-02

Time 23:30

Weather Clear Cold

VanDorn Sampler X Other

Hach 2100 P turbidity Meter X Other

Calibration Check

Beginning of Day	
Standard	Meter Reading
47.9 - 57.9	51.8
439 - 537	488

End of Day	
Standard	Meter Reading
47.9 - 57.9	52.2
439 - 537	486

notes

Sample Information

Visual Observation

Up Stream (200')

no visual difference X visual difference

notes greenish

Down-stream (200')

no visual difference X visual difference

notes

Meter Reading

Distance from Dredge (ft) UP	Distance from Dredge (ft) DOWN	Depth (in water column)	Reading (NTU)	Note
200'		Top=1m below	11.8	
200'		middle=middle	11.2	
200'		bottom=1m above	12.3	
	200'	top	12.8	
	200'	middle	11.6	
	200'	bottom	13.1	

notes

Name CHARLES BABITZKE

Date 1/17/02

Time 12:00 NOON AT T-2

Weather CLOUDY - COLD -

VanDorn Sampler X Other

Hach 2100 P turbidity Meter X Other

Calibration Check

Beginning of Day	
Standard	Meter Reading
47.9 - 57.9	53.1
439 - 537	490

End of Day	
Standard	Meter Reading
47.9 - 57.9	
439 - 537	

notes

Sample Information

Visual Observation

Up Stream (200')

no visual difference X visual difference

notes SLACK TIDE

Down-stream (200')

no visual difference X visual difference

notes SLACK TIDE

Meter Reading

Distance from Dredge (ft) UP	DOWN	Depth (in water column)	Reading (NTU)	Note
200'		Top=1m below	10.2	
200'		middle=middle	10.9	
200'		bottom=1m above	10.0	
	200'	top	11.0	
	200'	middle	14.8	
	200'	bottom	20.9	

notes

Name John Holt

Date 1-21-02

Time 12:25

Weather Light Rain - Cool

VanDorn Sampler X Other

Hach 2100 P turbidity Meter X Other

Calibration Check

Beginning of Day	
Standard	Meter Reading
47.9 - 57.9	54.0
439 - 537	492

End of Day	
Standard	Meter Reading
47.9 - 57.9	54.2
439 - 537	489

notes

Sample Information

Visual Observation

Up Stream (200')

no visual difference ✓ visual difference

notes Greenish

Down-stream (200')

no visual difference ✓ visual difference

notes Greenish

Meter Reading

Distance from Dredge (ft) UP	Distance from Dredge (ft) DOWN	Depth (in water column)	Reading (NTU)	Note
200'		Top=1m below	8.11	
200'		middle=middle	8.42	
200'		bottom=1m above	8.08	
	200'	top	9.09	
	200'	middle	8.88	
	200'	bottom	8.58	

notes

Name John Holt

Date 1-22-02

Time 10:00

Weather Clear Cool

VanDorn Sampler X Other

Hach 2100 P turbidity Meter X Other

Calibration Check

Beginning of Day	
Standard	Meter Reading
47.9 - 57.9	54.2
439 - 537	491

End of Day	
Standard	Meter Reading
47.9 - 57.9	52.2
439 - 537	489

notes

Sample Information

Visual Observation

Up Stream (200')

no visual difference — visual difference

notes Little murky

Down-stream (200')

no visual difference — visual difference

notes Little murky

Meter Reading

Distance from Dredge (ft) UP	Distance from Dredge (ft) DOWN	Depth (in water column)	Reading (NTU)	Note
200'		Top=1m below	10.6	
200'		middle=middle	10.9	
200'		bottom=1m above	11.5	
	200'	top	11.4	
	200'	middle	10.7	
	200'	bottom	10.6	

notes

Name John Nolt

Date 1-22-02

Time 3:00

Weather Cool -

VanDorn Sampler X Other

Hach 2100 P turbidity Meter X Other

Calibration Check

Beginning of Day	
Standard	Meter Reading
47.9 - 57.9	52.7
439 - 537	489

End of Day	
Standard	Meter Reading
47.9 - 57.9	52.7
439 - 537	485

notes

Sample Information

Visual Observation

Up Stream (200')

no visual difference X visual difference

notes merky

Down-stream (200')

no visual difference X visual difference

notes merky

Meter Reading

Distance from Dredge (ft) UP	Distance from Dredge (ft) DOWN	Depth (in water column)	Reading (NTU)	Note
200'		Top=1m below	12.4	
200'		middle=middle	11.8	
200'		bottom=1m above	12.6	
	200'	top	13.6	
	200'	middle	16.0	
	200'	bottom	14.1	

notes

Name RICK SIEMSSEN

Date 1/22/02

Time 7:30 p.m.

Weather COLD - CLOUDY

VanDorn Sampler X Other

Hach 2100 P turbidity Meter X Other

Calibration Check

Beginning of Day	
Standard	Meter Reading
47.9 - 57.9	52.5
439 - 537	492

End of Day	
Standard	Meter Reading
47.9 - 57.9	52.8
439 - 537	492

notes WATER SAMPLES FOR POND #2 DRAINAGE

Sample Information

Visual Observation

Up Stream (200')

no visual difference X visual difference

notes (SLACK TIDE)

Down-stream (200')

no visual difference X visual difference

notes (SLACK TIDE)

Meter Reading

Distance from Dredge (ft) UP	Distance from Dredge (ft) DOWN	Depth (in water column)	Reading (NTU)	Note
200'		Top=1m below	3.32	
200'		~~middle=middle~~		
200'		bottom=1m above	2.90	
	200'	top	2.77	
	200'	~~middle~~		
	200'	bottom	2.91	

notes

Name John Holt

Date 1-23-02

Time 11:30

Weather Cold - ~~F~~

VanDorn Sampler X

Hach 2100 P turbidity Meter X

Other

Other

Calibration Check

Beginning of Day	
Standard	Meter Reading
47.9 - 57.9	~~[illegible]~~ 52.6
439 - 537	480

End of Day	
Standard	Meter Reading
47.9 - 57.9	~~[illegible]~~ 52.8
439 - 537	490

notes

Sample Information

Visual Observation

Up Stream (200')

no visual difference X visual difference

notes mudy

Down-stream (200')

no visual difference X visual difference

notes mudy

Meter Reading

Distance from Dredge (ft) UP	Distance from Dredge (ft) DOWN	Depth (in water column)	Reading (NTU)	Note
200'		Top=1m below	38.3	
200'		middle=middle	46.21	
200'		bottom=1m above	44.3	
	200'	top	42.3	
	200'	middle	44.2	
	200'	bottom	49.4	

notes

Name John Holt

Date 1-24-02

Time 11:45

Weather Clear Cool

VanDorn Sampler X Other

Hach 2100 P turbidity Meter X Other

Calibration Check

Beginning of Day	
Standard	Meter Reading
47.9 - 57.9	53.0
439 - 537	492

End of Day	
Standard	Meter Reading
47.9 - 57.9	52.5
439 - 537	489

notes

Sample Information

Visual Observation

Up Stream (200')

no visual difference X visual difference

notes dirty Brown

Down-stream (200')

no visual difference X visual difference

notes dirty Brown

Meter Reading

Distance from Dredge (ft) UP	DOWN	Depth (in water column)	Reading (NTU)	Note
200'		Top=1m below	34.9	
200'		middle=middle	38.6	
200'		bottom=1m above	40.7	
	200'	top	38.6	
	200'	middle	45.1	
	200'	bottom	47.4	

notes

Name John Holt

Date 1-26-02

Time 10:40

Weather Cool snow

VanDorn Sampler X Other

Hach 2100 P turbidity Meter X Other

Calibration Check

Beginning of Day	
Standard	Meter Reading
47.9 - 57.9	51.7
439 - 537	493

End of Day	
Standard	Meter Reading
47.9 - 57.9	52.4
439 - 537	486

notes

Sample Information

Visual Observation

Up Stream (200')

no visual difference X visual difference

notes mody

Down-stream (200')

no visual difference X visual difference

notes mody

Meter Reading

Distance from Dredge (ft) UP	Distance from Dredge (ft) DOWN	Depth (in water column)	Reading (NTU)	Note
200'		Top=1m below	38.5	
200'		middle=middle	34.4	
200'		bottom=1m above	39.2	
	200'	top	52.0	
	200'	middle	45.2	
	200'	bottom	48.8	

notes

Rehandle

Name John Holt

Date 1-26-02

Time 11:30

Weather Cool snow

VanDorn Sampler X

Hach 2100 P turbidity Meter X

Other

Other

Calibration Check

Beginning of Day	
Standard	Meter Reading
47.9 - 57.9	51.7
439 - 537	493

End of Day	
Standard	Meter Reading
47.9 - 57.9	52.4
439 - 537	486

notes

Sample Information

Visual Observation

Up Stream (200')

no visual difference X visual difference

notes Greenish

Down-stream (200')

no visual difference X visual difference

notes Greenish

Meter Reading

Distance from Dredge (ft) UP	Distance from Dredge (ft) DOWN	Depth (in water column)	Reading (NTU)	Note
200'		Top=1m below	5.21	
200'		~~middle=middle~~		
200'		bottom=1m above	4.94	
	200'	top	5.15	
	200'	~~middle~~		
	200'	bottom	6.94	
start dumping water		7:30 at ~~[illegible]~~	31½"	
stop dumping water		12:00 at 7"		

notes

Name John Hoik

Date 1-28-02

Time 0900

Weather Cool Cloudy

VanDorn Sampler N Other

Hach 2100 P turbidity Meter N Other

Calibration Check

Beginning of Day	
Standard	Meter Reading
47.9 - 57.9	53.2
439 - 537	492

End of Day	
Standard	Meter Reading
47.9 - 57.9	52.8
439 - 537	489

notes

Sample Information

Visual Observation

Up Stream (200')

no visual difference X visual difference

notes Brown

Down-stream (200')

no visual difference X visual difference

notes Brown

Meter Reading

Distance from Dredge (ft) UP	DOWN	Depth (in water column)	Reading (NTU)	Note
200'		Top=1m below	55.0	
200'		middle=middle	52.7	
200'		bottom=1m above	52.8	
	200'	top	58.6	
	200'	middle	70.6	
	200'	bottom	52.1	

notes

5803 2902

Renandle site

Name John Holt

Date 1-31-02

Time 10

Weather Cool wet

VanDorn Sampler X

Hach 2100 P turbidity Meter X

Other

Other

Calibration Check

Beginning of Day	
Standard	Meter Reading
47.9 - 57.9	52.4
439 - 537	488

End of Day	
Standard	Meter Reading
47.9 - 57.9	53.8
439 - 537	2187

notes

Sample Information

Visual Observation

Up Stream (200')

no visual difference X visual difference

notes

Down-stream (200')

no visual difference X visual difference

notes

Meter Reading

Distance from Dredge (ft) UP	DOWN	Depth (in water column)	Reading (NTU)	Note
200'		Top=1m below	3.36	
200'		~~middle=middle~~	~~3.12~~	
200'		bottom=1m above	3.12	
	200'	top	3.18	
	200'	~~middle~~		
	200'	bottom	3.91	
start to let water out at		7:15 -	31"	
stop at letting water out at		12:15	8"	

notes

APPENDIX B: PHOTOGRAPHIC DOCUMENTATION OF MAINTENANCE DREDGING ACTIVITIES AT TERMINAL 2 AND TERMINAL 5 – DECEMBER 2001 THROUGH JANUARY 2002

Figure 1: Pre-dredging hydrosurvey at Terminal 5. Photo by Frank Schmidt, December 12, 2001, 11:15 a.m.

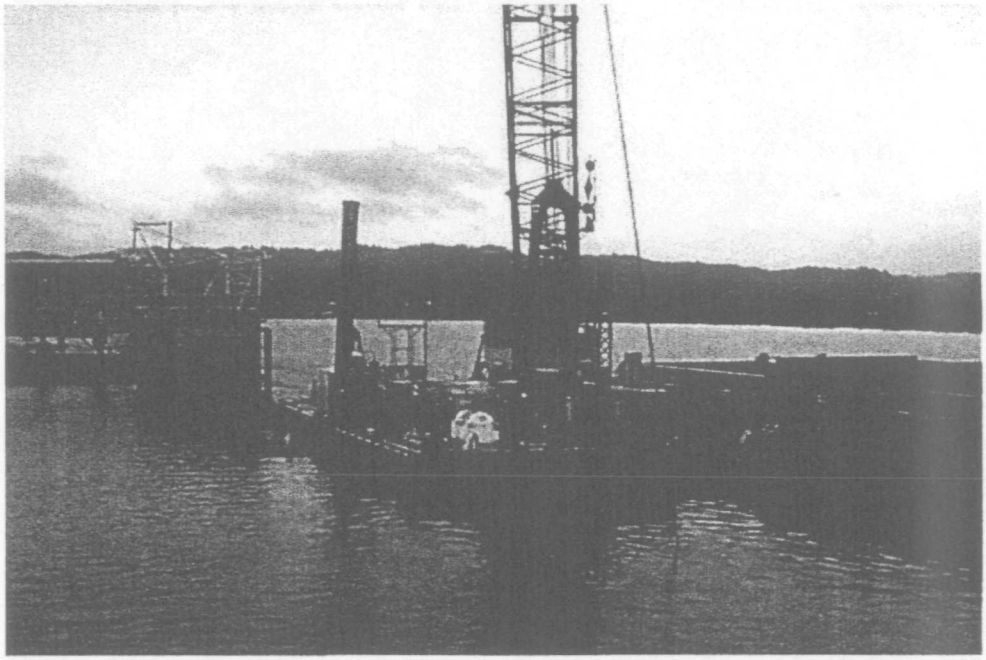

Figure 2: Dredging unit at Terminal 5. Photo by Frank Schmidt, December 19, 2001, 4:15 p.m.

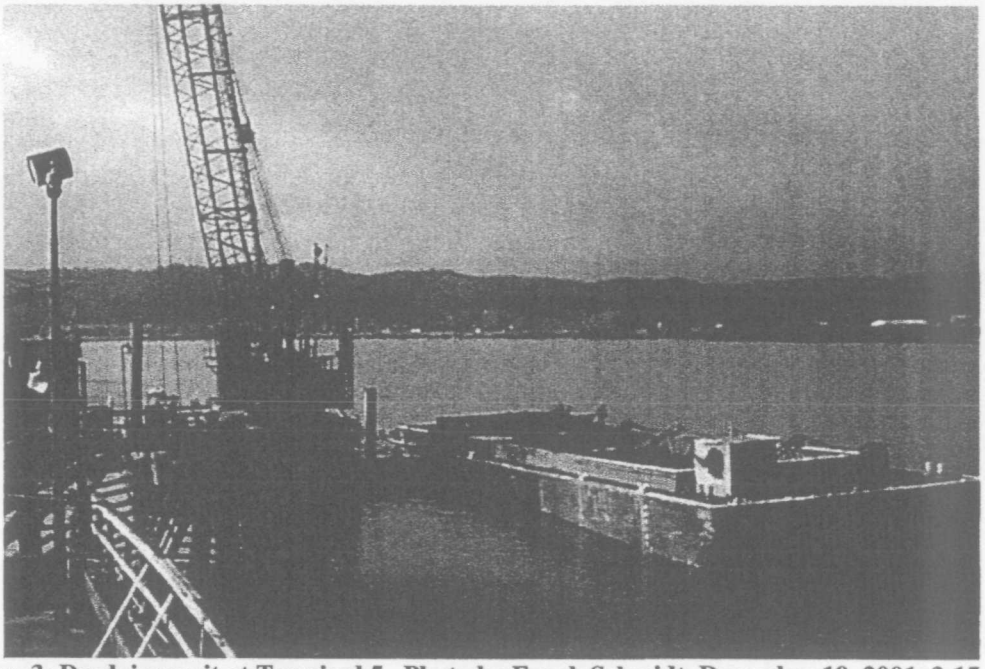

Figure 3: Dredging unit at Terminal 5. Photo by Frank Schmidt, December 19, 2001, 3:15 p.m.

Figure 4: Dredging unit at Terminal 5, Berth 501. Photo by Frank Schmidt, December 26, 2001, 8:45 a.m.

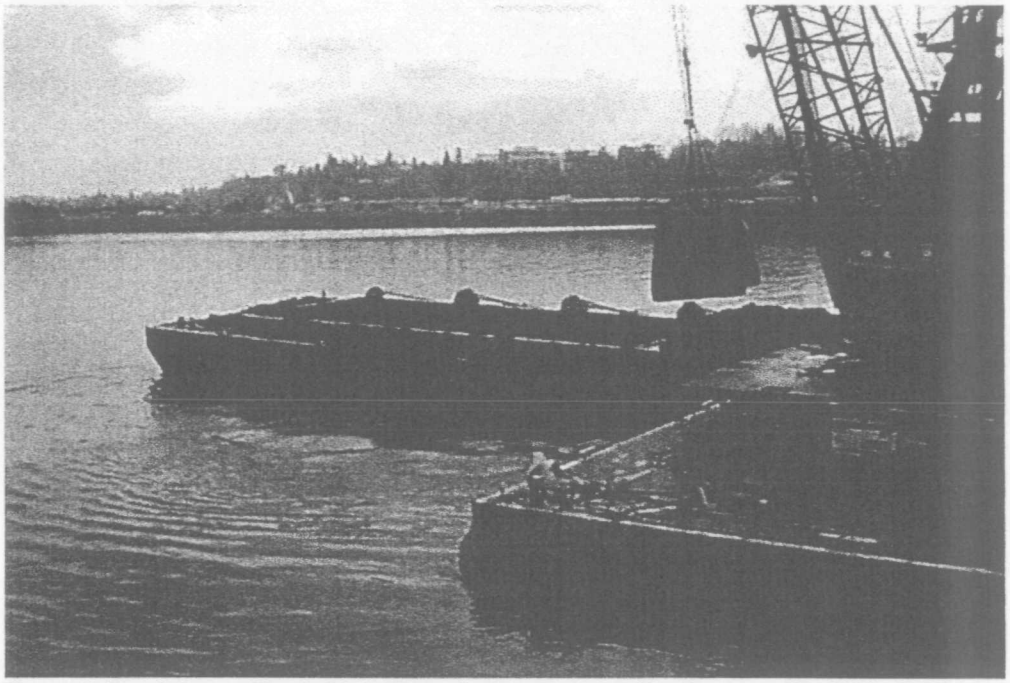

Figure 5: Dredging at Berth 206. Photo by Frank Schmidt, January 17, 2002, 11:20 p.m.

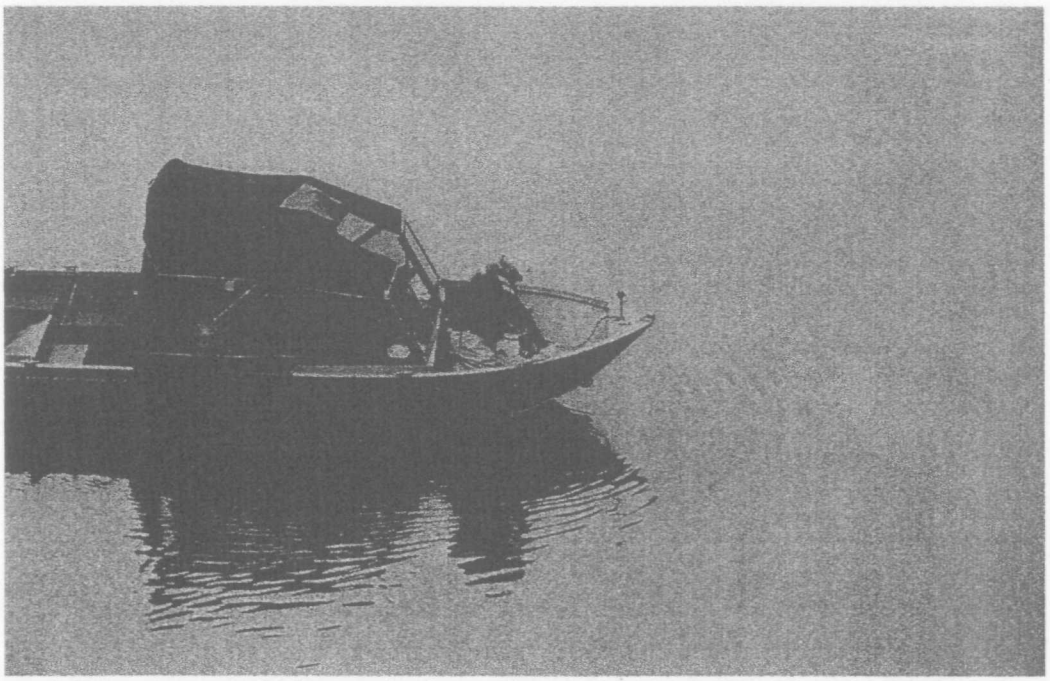

Figure 6: Downstream turbidity monitoring at Terminal 2, Berth 206. Photo by Bill Hall, January 17, 2001, 11:55 a.m.

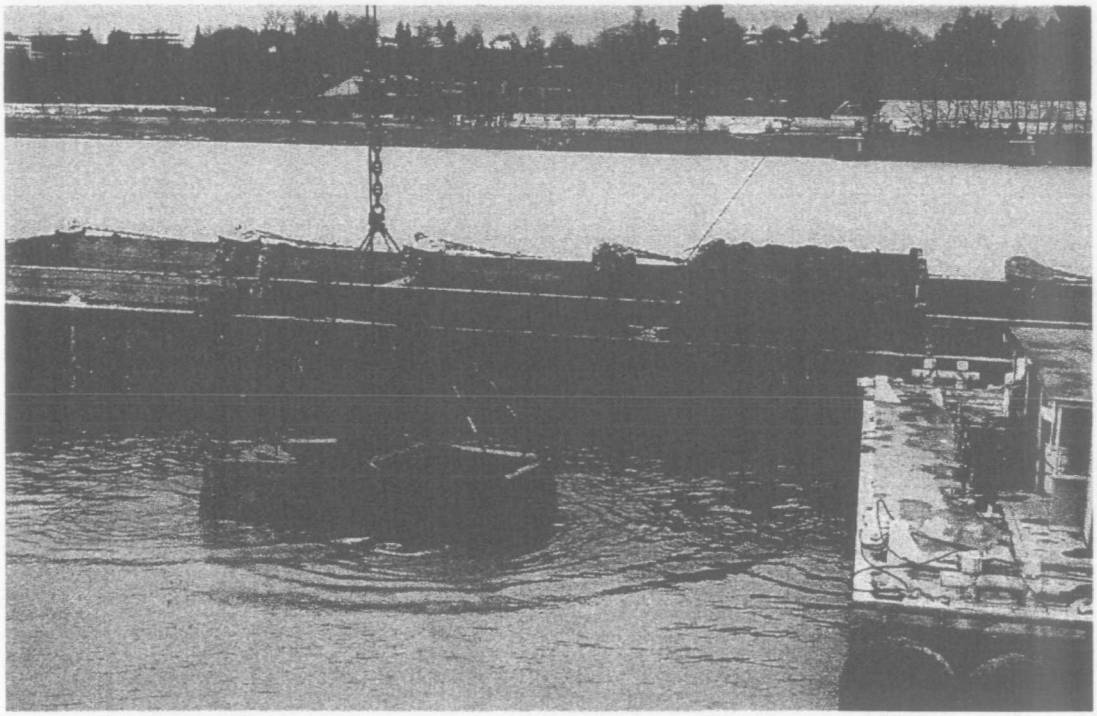

Figure 7: Dredge budket being lowered at Terminal 2, Berth 206. Photo by Bill Hall, January 17, 2001, 10:45 a.m.

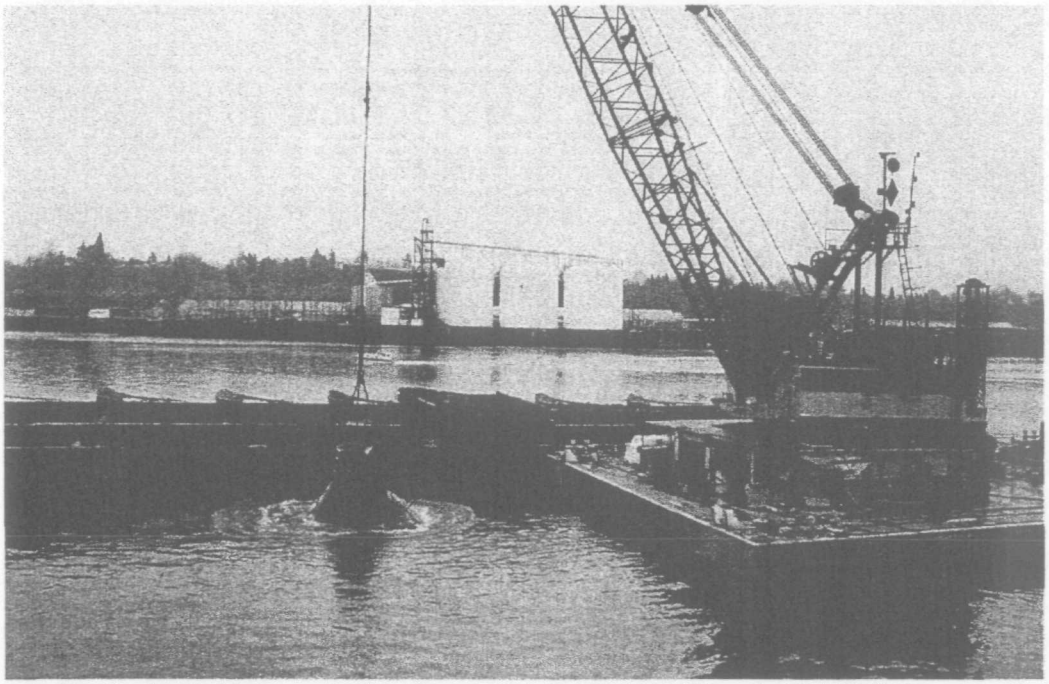

Figure 8: Dredge bucket being raised at Terminal 2, Berth 206. Photo by Bill Hall, January 17, 2001, 10:45 a.m.

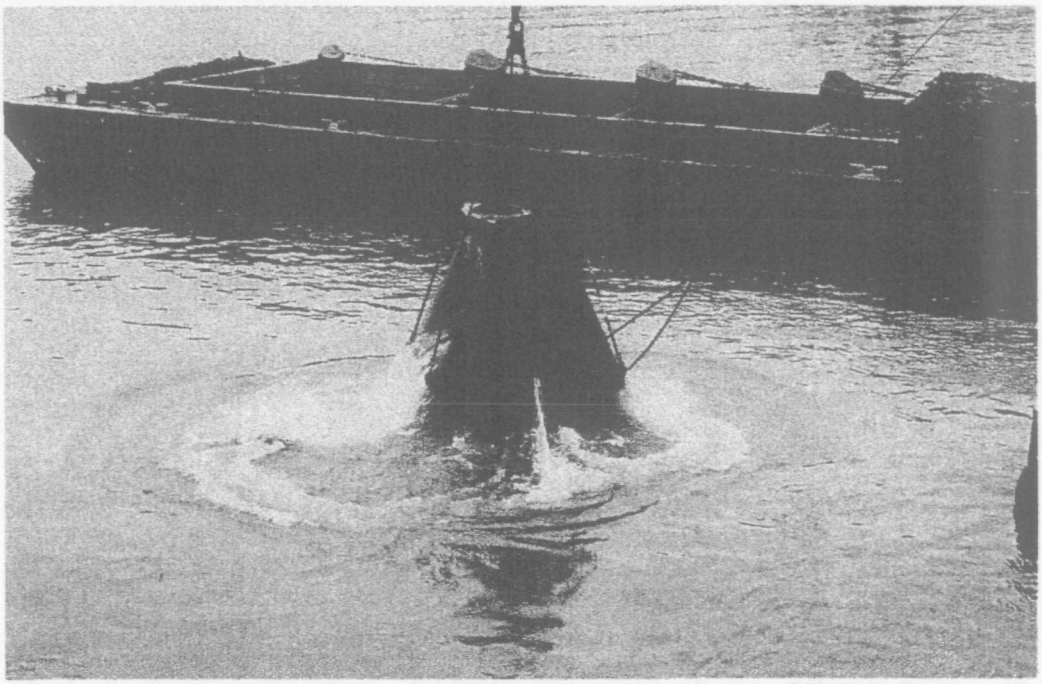

Figure 9: Dredge bucket being raised at Terminal 2, Berth 206. Photo by Bill Hall, January 17, 2001, 11:35 a.m.

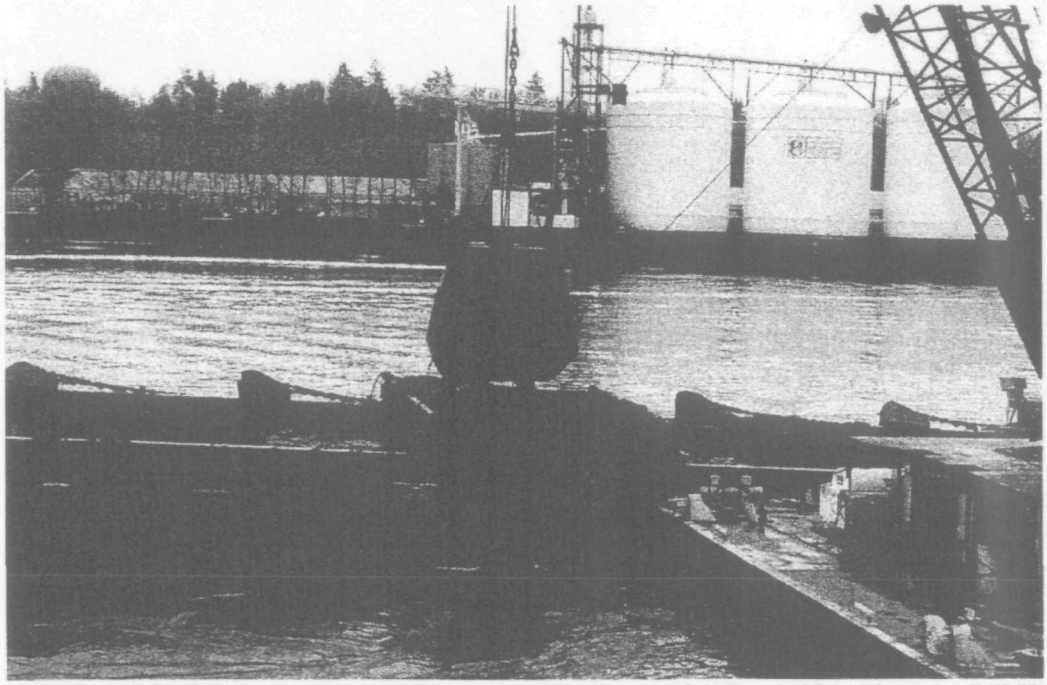

Figure 10: Dredge bucket being moved over barge at Terminal 2, Berth 206. Photo by Bill Hall, January 17, 2001, 11:15 a.m.

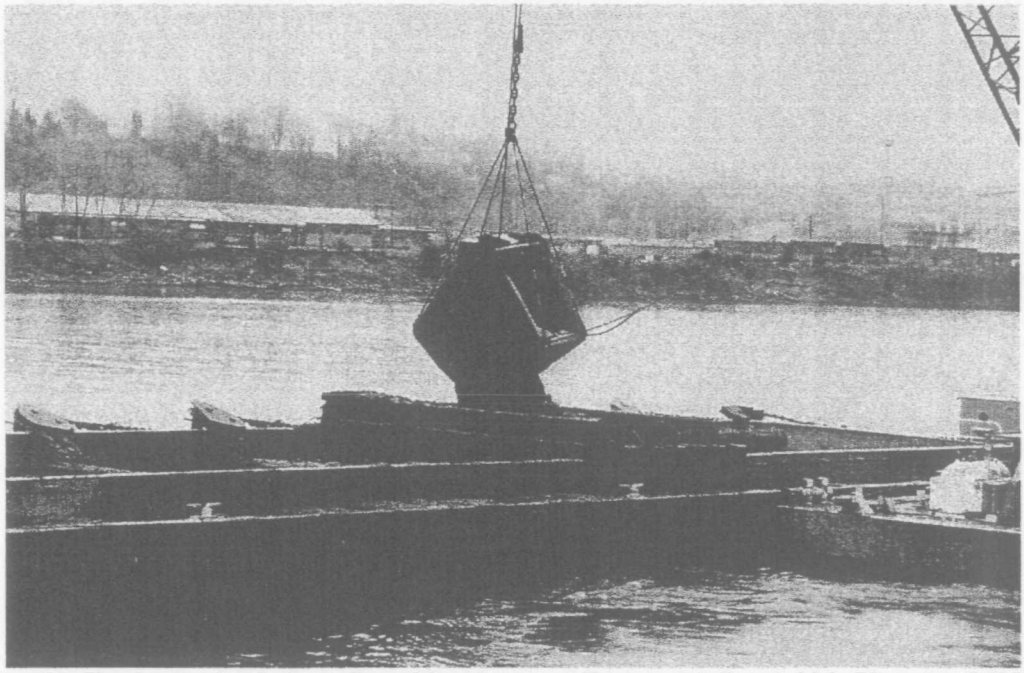

Figure 11: Dredge bucket being released into barge at Terminal 2, Berth 206. Photo by Bill Hall, January 17, 2001, 11:15 a.m.

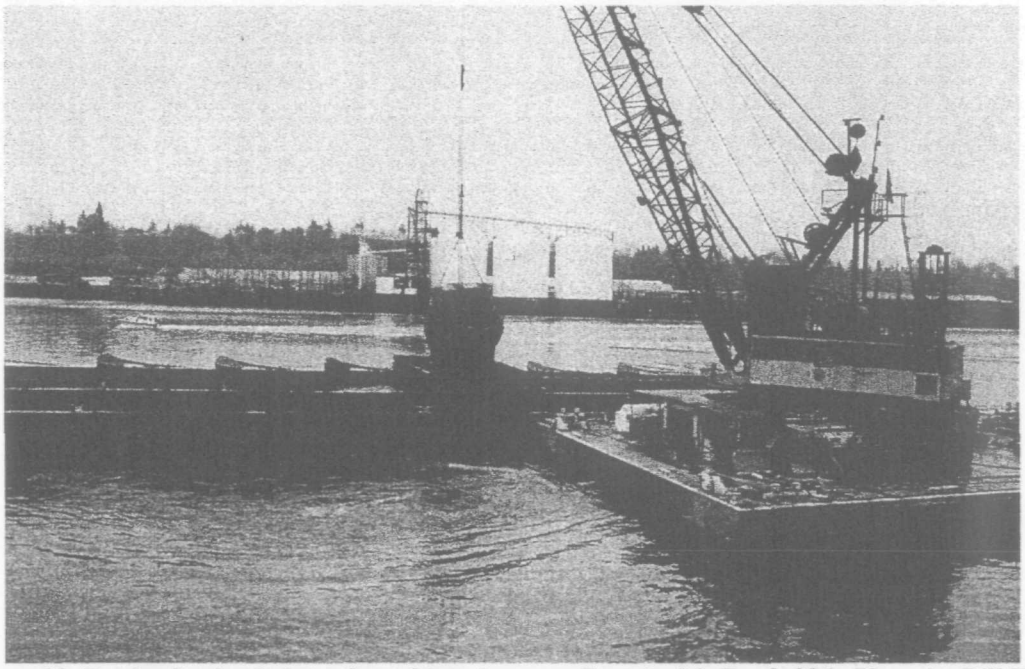

Figure 12: Dredge bucket being released into barge at Terminal 2, Berth 206. Photo by Bill Hall, January 17, 2001, 11:30 a.m.