

DEPARTMENT OF ECOLOGY

February 1, 1994

TO: Dick Logan, CP
FROM: Art Johnson and Dale Davis, EILS
SUBJECT: An-Ping #6 Oil Spill - Results of Sediment Sampling

At your request, we collected 24 bottom sediment samples in and around the Fisher Island Slough area of the Columbia River on January 14, 1994 (see Figure 1). Objectives of this survey were to: 1) look for visual evidence of oil, 2) analyze the sediments for a hydrocarbon match with oil spilled by the An-Ping #6, and 3) quantify the amount of petroleum present.

Bill Graeber, Washington State Department of Fisheries, assisted in the collection and selected the sampling sites above and below Fisher Island. Sampling within Fisher Island Slough basically followed the transects you had requested.

Sediments were collected with a stainless steel Ponar grab and consisted of the top 2 cm surface layer from a single grab at each station. Samples were put in priority pollutant cleaned 4 oz. glass jars with teflon lid liners, sealed in polyethylene bags, and held on ice for transport to the Manchester Environmental Laboratory on January 18. Stainless steel spoons, precleaned with Liqui-Nox detergent, deionized water and pesticide-grade acetone, were used to remove and homogenize the samples.

Table 1 summarizes our field observations. We saw no evidence of oil in 21 of the 24 samples. Two samples had one to several small oil droplets and one had a trace of sheen. With these exceptions, the sediments appeared to be clean sand and silt.

The samples were analyzed by Manchester on January 20 - 21; results are attached. In the hydrocarbon identification analysis (method WTPH-HCID) three samples - different from those where drops or sheen were seen in the field - showed trace levels of petroleum. None, however, had sufficient hydrocarbon content to match with the An-Ping oil. The remaining samples were considered non-detects.

The method (WTPH-418.1) used to quantify the amount of total petroleum hydrocarbons (TPH) had detection limits in the range of 59 - 106 ppm, dry weight. Only three samples had detectable TPH concentrations and these were not substantially above method detection limits. Two of the samples that had shown trace levels in the identification analysis had TPH concentrations of 124 and 236 ppm, respectively. TPH was not initially detected in a third sample, but had 143 ppm in a duplicate analysis.

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CONCLUSION: Our field observations and Manchester's chemical analysis indicate the An-Ping spill had not caused significant contamination of the bottom sediments in the area surveyed.

AJ:krc
Attachment

cc: Jim Oberlander
Bill Graeber
Thom Hooper
Larry Goldstein
Lynn Singleton

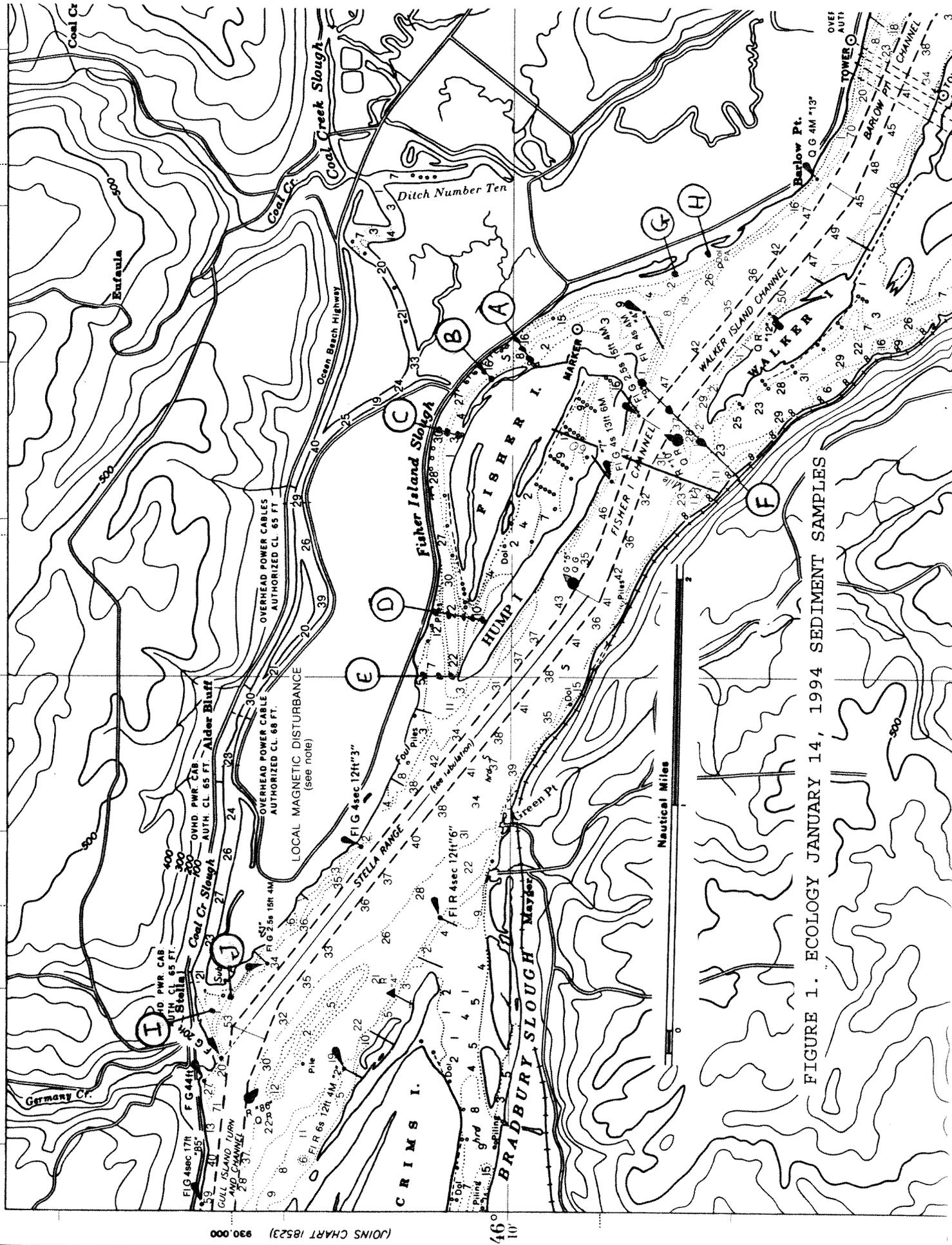


FIGURE 1. ECOLOGY JANUARY 14, 1994 SEDIMENT SAMPLES

Table 1. Ecology Sediment Samples Collected in and around Fisher Is. Slough for An-Ping Oil Spill, Jan. 14, 1994

Field I.D.	Time	Depth (ft.)	Lat. (46 N)	Long. (123 W)	Petroleum Present?	Texture	Sample No. (02-)
A-1	1130	6	9.94	2.91	none visible	sandy silt	8400
A-2	1145	18	9.92	2.93	none visible	sand	8401
A-3	1150	22	9.98	2.78	none visible	silt	8402
B-1	1200	20	10.15	3.08	trace sheen	sandy silt	8403
B-2	1210	31	10.18	3.02	none visible	sandy silt	8404
B-3	1215	16	10.22	2.95	several small droplets	silt	8405
C-1	1350	10	10.36	3.77	none visible	silt	8406
C-2	1400	40	10.34	3.54	none visible	sand	8407
C-3	1405	33	10.38	3.59	none visible	silty sand	8408
D-1	1420	6	10.15	4.58	none visible	silty sand	8409
D-2	1430	14	10.24	4.54	none visible	silt	8410
D-3	1435	14	10.23	4.50	one oil droplet	silt	8411
D-4	1445	27	10.23	4.44	none visible	sand	8412
D-5	1450	25	10.34	4.37	none visible	coarse sand	8413
E-1	1500	26	10.26	4.78	none visible	silt	8414
E-2	1505	17	10.36	4.87	none visible	sand	8415
E-3	1510	13	10.45	4.91	none visible	sand	8416
F-1	1555	32	9.27	3.26	none visible	sand	8417
F-2	1545	60	9.34	3.04	none visible	sand	8418
F-3	1535	13	9.43	2.90	none visible	silty sand	8419
G	1605	8	9.19	2.28	none visible	silty sand	8420
H	1620	6	9.07	2.17	none visible	silty sand	8421
I	1640	9	11.33	7.04	none visible	silty sand	8422
J	1650	72	11.25	7.05	none visible	silty sand	8423

Note: Transects begin left bank facing downstream (e.g., A-1) and proceed to right bank



STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

MANCHESTER ENVIRONMENTAL LABORATORY

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January 24, 1994

TO: Art Johnson
EILS

FROM: Bob Carrell *BC*

SUBJECT: Longview Oil Spill - Hydrocarbon Identification
and Matching to Anping Fuel Oil

These samples, 94028400 - 94028423, were extracted via the WTPH-418.1 procedure for TPH and a portion of these extracts were concentrated to one-tenth their original volumes prior to the analyses by GC/FID. None of the samples had sufficient hydrocarbon content to be identified by this technique as having originated from the Anping. Three of the samples, 94028402, 94028404 and 94028423, had a trace of hydrocarbons, however as stated above this material could not be positively identified.

All of the other samples are listed as "ND" (non-detect) due to the lack of observable hydrocarbons. Further analyses of these samples or of samples of similar concentrations could be performed by GC/AED, in the carbon and sulfur modes, which might provide the additional sensitivity and selectivity to distinguish the small quantity of hydrocarbons present as fuel oil and possibly as that from the Anping.

GC/FID analyses are most sensitive to the lighter material in a hydrocarbon mixture and as the mixture "weathers", these portions are lost first thus making a fingerprint match to fresh product difficult at best. Thus, the more time that elapses between when the spill occurs and when samples are taken and analysed, the less likely it is that a good match can be made between the source and the environmental samples.

BC

cc: BK



Transaction #: 01251059 Seq #: 01 (40) Organics - General
Project: (DOE-964Y) LONGVIEW OIL SPILL (WE) Ecology, Manchester Lab
Param: (99960 S) H-Carbon ID D4322 AFJ

QA Code: () Normal Data
Instrument: (GCHPFIDD) Hewlett Packard GC; FID Detector (DO
Method: (WTPH-HCID) Washington Total Petroleum Hydrocarbon/H-CarbonID
Chemist: (BLC) Carrell, Bob DOE Hours Worked:
Lab Prep: () Unspecified
Matrix: (40) Sediment Date Preprd:
Units: (00) Date Anlyzd: 940121

Line	Sample #	Result	Sample Location/Description	#Days to Anl
1	94 028400	ND	A-1	940114 (7)
2	94 028401	ND	A-2	940114 (7)
3	94 028402	TRACE	A-3	940114 (7)
4	94 028403	ND	B-1	940114 (7)
5	94 028404	TRACE	B-2	940114 (7)
6	94 028405	ND	B-3	940114 (7)
7	94 028406	ND	C-1	940114 (7)
8	94 028407	ND	C-2	940114 (7)
9	94 028408	ND	C-3	940114 (7)
10	94 028409	ND	D-1	940114 (7)
11	94 028410	ND	D-2	940114 (7)
12	94 028411	ND	D-3	940114 (7)
13	94 028412	ND	D-4	940114 (7)
14	94 028413	ND	D-5	940114 (7)
15	94 028414	ND	E-1	940114 (7)
16	94 028415	ND	E-2	940114 (7)
17	94 028416	ND	E-3	940114 (7)
18	94 028417	ND	F-1	940114 (7)
19	94 028418	ND	F-2	940114 (7)
20	94 028419	ND	F-3	940114 (7)
21	94 028420	ND	G	940114 (7)
22	94 028421	ND	H	940114 (7)
23	94 028422	ND	I	940114 (7)
24	94 028423	TRACE	J	940114 (7)

Transaction #: 01251059 Seq #: 02 (40) Organics - General
Project: (DOE-964Y) LONGVIEW OIL SPILL (WE) Ecology, Manchester Lab
Param: (99960 S) H-Carbon ID D4322 AFJ

QA Code: (LBK1) Lab Blank Sample #1 Blank ID: BS4019TPH
Instrument: (GCHPFIDD) Hewlett Packard GC; FID Detector (DO
Method: (WTPH-HCID) Washington Total Petroleum Hydrocarbon/H-CarbonID
Chemist: (BLC) Carrell, Bob DOE Hours Worked:
Lab Prep: () Unspecified
Matrix: (40) Sediment Date Preprd:
Units: (00) Date Anlyzd: 940121

Line	Sample #	Result	Sample Location/Description	#Days to Anl
1	94 028400	ND	A-1	940114 (7)

Record Type: TRNIN2 Date Verified: Jan 25, 1994 By: Carrell
Transaction Status: Edited Transaction. First Printing...Unverified.
Processed: 25-JAN-94 11:12:54 Status: E Batch: (In CUR DB)

Transaction #: 01251101 Seq #: 01 (40) Organics - General
 (WE) Ecology, Manchester Lab
 Project: (DOE-964Y) LONGVIEW OIL SPILL D4322 AFJ
 Param: (99996 S) WTPH-418 .1

QA Code: () Normal Data
 Instrument: (FTIR-1) FTIR, Laser Precision RFX-40 (DOE)
 Method: (WTPH-418.1) Washington Total Petroleum Hydrocarbon-418.1
 Chemist: (JRF) Ratmeyer Folkerts, J. DO Hours Worked:
 Lab Prep: () Unspecified
 Matrix: (40) Sediment Date Preprd:
 Units: (25) mg/kg-dr Date Anlyzd: 940120

Line	Sample #	Result	Sample Location/Description	#Days to Anl
1	94 028400	82U	A-1	940114 (6)
2	94 028401	60U	A-2	940114 (6)
3	94 028402	124	A-3	940114 (6)
4	94 028403	67U	B-1	940114 (6)
5	94 028404	236	B-2	940114 (6)
6	94 028405	106U	B-3	940114 (6)
7	94 028406	76U	C-1	940114 (6)
8	94 028407	69U	C-2	940114 (6)
9	94 028408	70U	C-3	940114 (6)
10	94 028409	83U	D-1	940114 (6)
11	94 028410	99U	D-2	940114 (6)
12	94 028411	73U	D-3	940114 (6)
13	94 028412	62U	D-4	940114 (6)
14	94 028413	63U	D-5	940114 (6)
15	94 028414	68U	E-1	940114 (6)
16	94 028415	63U	E-2	940114 (6)
17	94 028416	65U	E-3	940114 (6)
18	94 028417	61U	F-1	940114 (6)
19	94 028418	62U	F-2	940114 (6)
20	94 028419	59U	F-3	940114 (6)
21	94 028420	70U	G	940114 (6)
22	94 028421	60U	H	940114 (6)
23	94 028422	68U	I	940114 (6)
24	94 028423	97U	J	940114 (6)

Record Type: TRNIN2 Date Verified: Jan 25, 1994 By: Carroll
 Transaction Status: New Transaction...First Printing...Unverified.
 Processed: 25-JAN-94 11:05:27 Status: N Batch: (In CUR DB)

Transaction #: 01251101 Seq #: 02 (40) Organics - General
Project: (DOE-964Y) LONGVIEW OIL SPILL (WE) Ecology, Manchester Lab
Param: (99996 S) WTPH-418 .1 D4322 AFJ

QA Code: (LDP1) Lab Duplicate Sample #1
Instrument: (FTIR-1) FTIR, Laser Precision RFX-40 (DOE)
Method: (WTPH-418.1) Washington Total Petroleum Hydrocarbon-418.1
Chemist: (JRF) Ratmeyer Folkerts, J. DO Hours Worked:
Lab Prep: () Unspecified
Matrix: (40) Sediment Date Preprd:
Units: (25) mg/kg-dr Date Anlyzd: 940120

Line	Sample #	Result	Sample Location/Description	#Days to Anl
1	94 028403	64U	B-1	940114 (6)

Transaction #: 01251101 Seq #: 04 (40) Organics - General
 (WE) Ecology, Manchester Lab
 Project: (DOE-964Y) LONGVIEW OIL SPILL D4322 AFJ
 Param: (99996 S) WTPH-418 .1

QA Code: (LDP1) Lab Duplicate Sample #1
 Instrument: (FTIR-1) FTIR, Laser Precision RFX-40 (DOE)
 Method: (WTPH-418.1) Washington Total Petroleum Hydrocarbon-418.1
 Chemist: (JRF) Ratmeyer Folkerts, J. DO Hours Worked:
 Lab Prep: () Unspecified
 Matrix: (40) Sediment Date Preprd:
 Units: (25) mg/kg-dr Date Anlyzd: 940120

Line	Sample #	Result	Sample Location/Description	#Days to Anl
1	94 028411	73U	D-3	940114 (6)

Record Type: TRNIN2 Date Verified: Jan 25, 1994 By: Barwell
 Transaction Status: New Transaction...First Printing...Unverified.
 Processed: 25-JAN-94 11:05:27 Status: N Batch: (In CUR DB)

Transaction #: 01251101 Seq #: 05 (40) Organics - General
 Project: (DOE-964Y) LONGVIEW OIL SPILL (WE) Ecology, Manchester Lab
 Param: (99996 S) WTPH-418 .1 D4322 AFJ

QA Code: (LBK1) Lab Blank Sample #1 Blank ID: BS4019
 Instrument: (FTIR-1) FTIR, Laser Precision RFX-40 (DOE)
 Method: (WTPH-418.1) Washington Total Petroleum Hydrocarbon-418.1
 Chemist: (JRF) Ratmeyer Folkerts, J. DO Hours Worked:
 Lab Prep: () Unspecified
 Matrix: (40) Sediment Date Preprd:
 Units: (25) mg/kg-dr Date Anlyzd: 940120

Line	Sample #	Result	Sample Location/Description	#Days to Anl
1	94 028401	72U	A-2	940114 (6)

Transaction #: 01251101 Seq #: 06 (40) Organics - General
Project: (DOE-964Y) LONGVIEW OIL SPILL (WE) Ecology, Manchester Lab
Param: (99996 S) WTPH-418 .1 D4322 AFJ

QA Code: (LBK2) Lab Blank Sample #2 Blank ID: BS4019D
Instrument: (FTIR-1) FTIR, Laser Precision RFX-40 (DOE)
Method: (WTPH-418.1) Washington Total Petroleum Hydrocarbon-418.1
Chemist: (JRF) Ratmeyer Folkerts, J. DO Hours Worked:
Lab Prep: () Unspecified
Matrix: (40) Sediment Date Preprd:
Units: (25) mg/kg-dr Date Anlyzd: 940120

Line	Sample #	Result	Sample Location/Description	#Days to Anl
1	94 028400	72U	A-1	940114 (6)

Transaction #: 01251101 Seq #: 07 (40) Organics - General
Project: (DOE-964Y) LONGVIEW OIL SPILL (WE) Ecology, Manchester Lab
Param: (99996 S) WTPH-418 .1 D4322 AFJ

QA Code: (LBK3) Lab Blank Sample #3 Blank ID: BS4019D2
Instrument: (FTIR-1) FTIR, Laser Precision RFX-40 (DOE)
Method: (WTPH-418.1) Washington Total Petroleum Hydrocarbon-418.1
Chemist: (JRF) Ratmeyer Folkerts, J. DO Hours Worked:
Lab Prep: () Unspecified
Matrix: (40) Sediment Date Preprd:
Units: (25) mg/kg-dr Date Anlyzd: 940120

Line	Sample #	Result	Sample Location/Description	#Days to Anl
1	94 028400	72U	A-1	940114 (6)