Exxon Valdez Oil Spill
Restoration Project Final Report

Restoration Project Data Report
Volume IV: Ground Surveys LA015E thru TB004A

1993 Shoreline Oiling Assessment of the *Exxon Valdez* Oil Spill
Restoration Project 93038

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and

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Alaska Department of Environmental Conservation
Office of Restoration and Damage Assessment
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Juneau, Alaska 99801-1795

September 1998

1993 SHORELINE ASSESSMENT DATA REPORT: VOLUME 4
(Ground Surveys LA015E through TB004A)

Prepared by the

Alaska Department of Environmental Conservation (ADEC)
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410 Willoughby Avenue
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for the

Exxon Valdez Oil Spill Trustee Council
645 "G" Street
Anchorage, Alaska 99501

Project #930380

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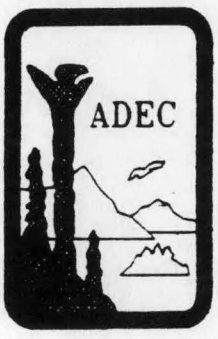
Compilation and Analysis by James C. Gibeaut, Ph.D., Consulting Geologist

January, 1994



SEGMENT: LA 015 E

LOCATION: Chenega Area Group, northeastern shore of Latouche Island

OTHER STUDIES

PHYSICAL SETTING

Coastal Morphology and Sedimentology

Irregular headland, wave-cut platform, and gravel beach shoreline Rounded pebble and large cobble beach in the northern part of the site is protected by prominent seaward outcrops. Subsurface matrix sediment is sandy granules. Large angular boulders occur near outcrops and in the high intertidal of the southern part of the site.

Environmental Sensitivity Index (ESI)

Type 1; rocky coast.
Type 2; exposed wave-cut platform.
Type 7; gravel beach.

Fetches and Directions (kilometers)

NE= 110

Energy Level

High with some moderate locations behind seaward outcrops.

GENERAL BIOLOGICAL SETTING

Oiled mussel bed.
Eagle nest.
Fish harvest area.

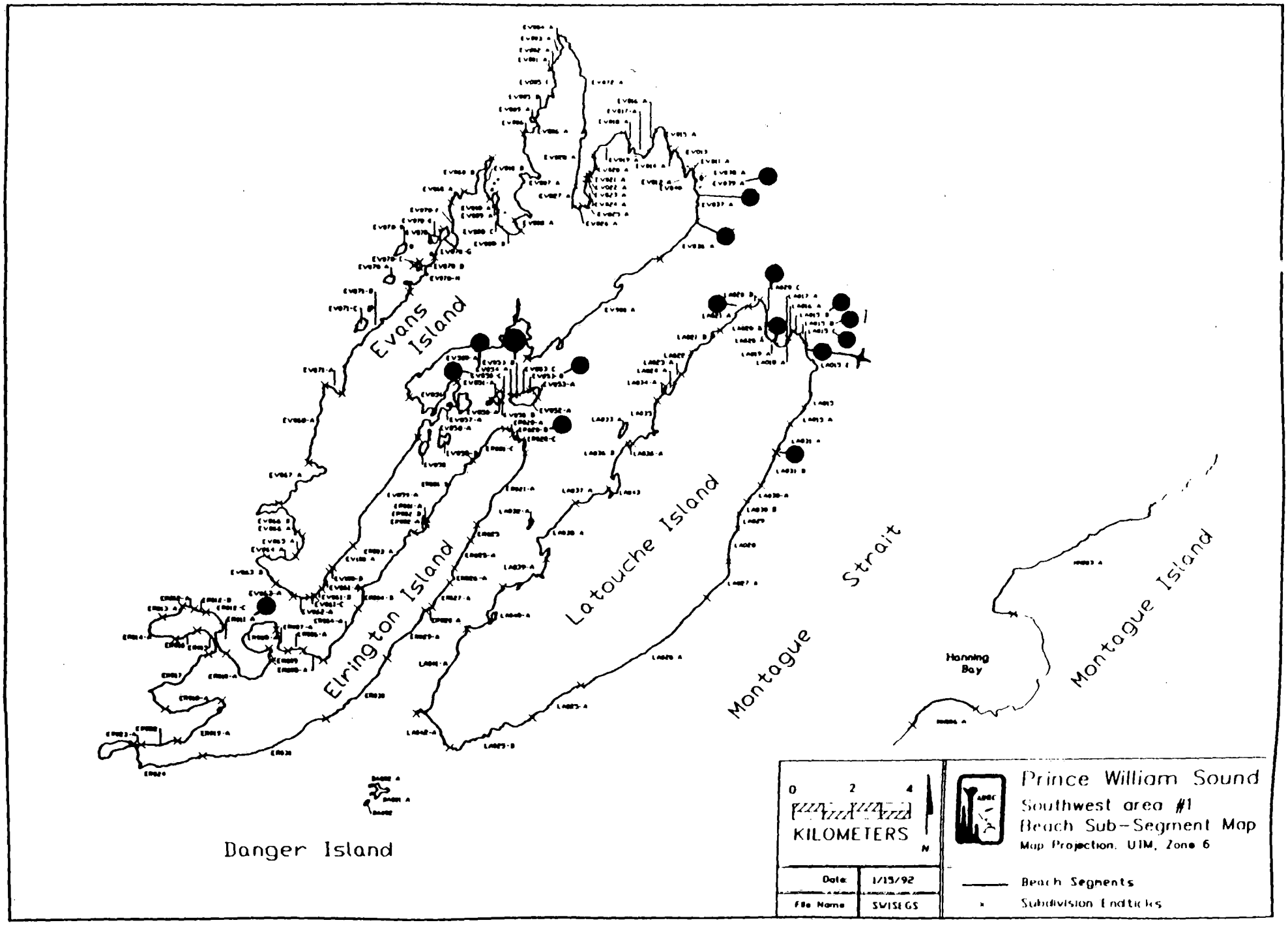
OILING SUMMARY

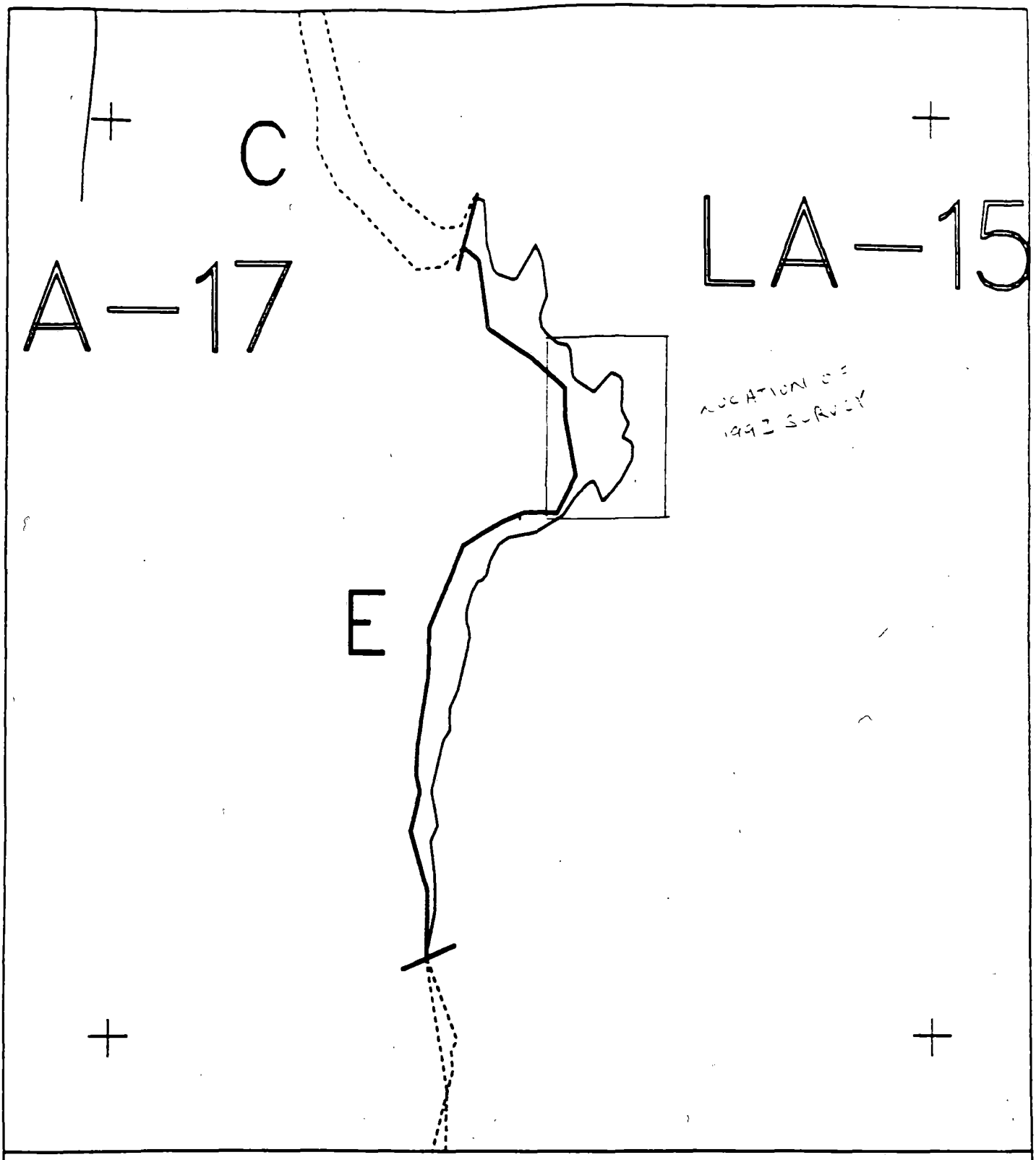
Several large and concentrated areas of AP and SOR persist at this site. All the sites are in areas where large boulders or outcrops provide protection from waves. The worst is location 'G', which is a 29 by 11 m area amongst large boulders. MS was oozing out from beneath the boulders during the survey, and there has been no discernible improvement since 1991.

Subsurface location ZB, which includes pits #6 through 10 and 12 through 19, has a large amount of MOR, HOR, and OP. ZB is located in the pebble and large cobble beach behind a prominent seaward outcrop. Even though this site still retains considerable oil, it has improved greatly since 1991, when it was mechanically tilled, and since 1992, when manual removal occurred. The amount and level of oiled sediment reduced by about 75% from 1991 to 1993.

Locations ZD and ZE had no or little subsurface oil in 1993, but had large amounts in 1991. ZD is down slope of surface area 'G', and ZE extends to the south of location 'H'. Workers manually removed oiled-sediment in 1991 at both sites, but the large amounts indicate that natural removal was also important.

Overall, there has been a large reduction in subsurface oil at this site since 1991.


Evans Island
Elrington Island
Latouche Island
Montague Strait
Montague Island
Hanning Bay
Danger Island
0 2 4
KILOMETERS
N
Prince William Sound
Southwest area #1
Beach Sub-Segment Map
Map Projection: UTM, Zone 6
Date: 1/15/92
File Name: SWISEGS
Beach Segments
Subdivision Endticks



XXXX	Wide
////	Medium
----	Narrow
TTTT	Very Light
0000	No Oil

LA015 E

ADEC Subsegment Length: 1223m

METERS

0 200 400

AK State Plane Zone 4
pla01sa

N

EXXON

Subdivision Field Map

Map Key: PWSLA015E

Name: DM

Date: 8-4-93

Date Entered:

1993 ADEC RESTORATION PROJECT #930380
SHORELINE SURVEY COMMENT SHEET

[illegible] SEGMENT 405 SUBDIVISION E DATE 5/-/93

AFFILIATION
NAME USCG - BOB TEMES SIGNATURE [signature]

MUSSEL BED IN MAIN BEACH HAS SIGNIFICANT AMOUNTS OF MUL/LOR 4"-6" DEEP. UNIT 2 HAS MOR/MOR/OP IN PATCHES IN AND AROUND SOME BOULDERS THERE WAS COAT ON SOME BOULDERS ON THE RIGHT SIDE. I CONCUR W/ THE CONDITIONS INDICATED ON THE MAP & PIT LOG.

AFFILIATION DNR - DIV. OF LAND
NAME KATIE FARLEY SIGNATURE Kathleen M. Farley

The presence of oil in the mussel beds disrupts subsistence use ~~and~~ gathering within the intertidal area for an indefinite time. Eagle nests and commercial fishing are not directly affected by the site's current condition

AFFILIATION
NAME _____ SIGNATURE _____

AFFILIATION
NAME _____ SIGNATURE _____

1993 ADEC RESTORATION PROJECT # 930380
SHORELINE OILING SUMMARY

PAGE ____ OF ____

SEGMENT ____

SUBDIVISION ____

DATE ____ / ____ / 93

TEAM MEMBERS: D. MUNSON C. CROSBY, R. KNICE
E. PIPER (ADEC)
K. FARLEY (ADNR) K. HARICH (USFS)
T. KELLEY, S. TOKER (EXXON)
C. TRAVIS (USCG) DAN E. LANDEF (CVC)

TIME ____ : 45 to ____ : ____ TIDE LEVEL 3.0 ft. to -1.0 ft. ENERGY LEVEL: ■ H ☐ M ☐ L

SURVEYED FROM: ■ FOOT ☐ BOAT ☐ HELO WEATHER: ☐ SUN ☐ CLOUDS ☐ FOG ■ RAIN ☐ SNOW

TOTAL LENGTH SHORELINE SURVEYED: _____ m NEAR SHORE SHEEN: ☐ BR ☐ RB ☐ SL ■ NONE

EST. OIL CATEGORY LENGTH: H_____m M_____m L_____m VL_____m N_____m NS_____m

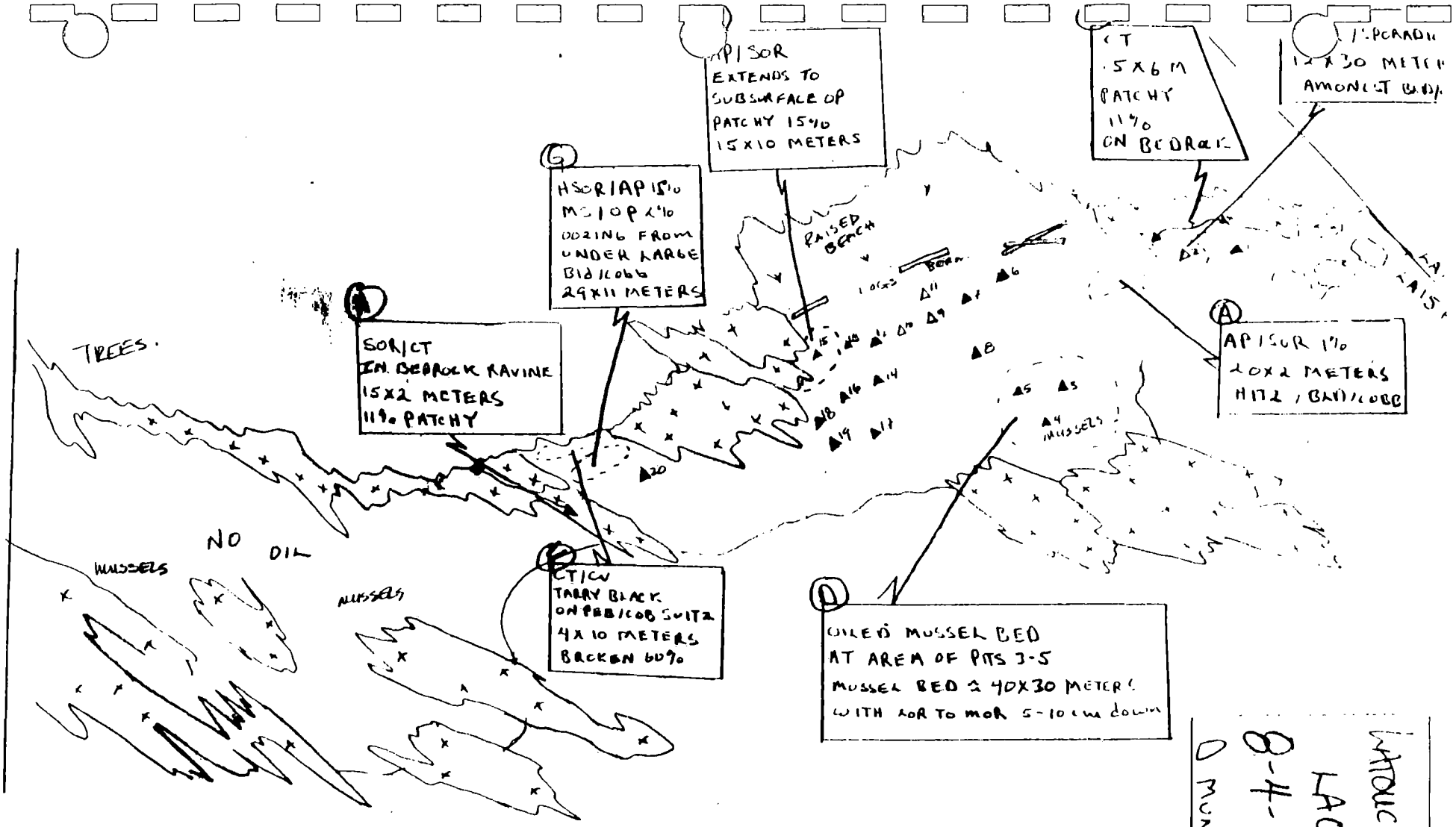
LOC	SURFACE OIL CHARACTER										SURFACE SEDIMENT	SHORE SLOPE	AREA		ZONE				NOTES
	AP	MS	TB	SOR	CV	CT	ST	FL	DB	NO	TYPE	V H M L	WIDTH m	LENGTH m	S	UI	MI	LI	
A	S			S							BC	M	20	2		■			
B				S							BC	M	12	30		■			
C						P					R	V	.5	6		■			
D											BCP	M-L	40	30		■	■		MUSSEL BED W/ SUBSURFACE
E	P			P							BC	H-M	[illegible]	15		■			
F					B	B					CP	M	4	10	■				
G	P			P							RBC	H-M	11	29		■			OIL OOZING FROM [illegible] BIOS
H				P		P					RBC	H-M	45	2		■			

DISTRIBUTION: C = 81–100%; B = 51–80%; P = 11–50%; S = 1–10%; T = <1%

SLOPE: V = VERTICAL; H = HIGH ANGLE; M = MEDIUM ANGLE; L = LOW ANGLE PHOTO ROLL # _____-_____ FRAMES _____

PIT NO.	PIT DEPTH (cm)	SUBSURFACE OIL CHARACTER							OILED ZONE cm-cm	CLEAN BELOW Y/N	H2O LEVEL (cm)	SHEEN COLOR	PIT ZONE				SURFACE-SUBSURFACE SEDIMENTS	NOTES
		OP	HOR	MOR	LOR	OF	TR	NO				B R S N	S	UI	MI	LI		
1	11				■				4 - U	U	6-11	B			■		BCP / PG	
2	15							■	-					■			BCP / PG	
3	9			■					18 - 19	N	13-M	B			■		MBCP/GS	MUSSELS ON SURFACE
4	15			■					8 - 10	Y	12-15	B			■		MBCP/GS	MUSSELS ON SURFACE
5	21				■				U - U	U	13-21	S			■		MBCP/GS	MUSSELS ON SURFACE
6	15						■		U - U	U	13-15	S		■			BCP/PG	
7	20					■			12 - 20	N	—	—		■			BCP/PG	
8	45				■	■			16 - 45	N	29-45	S			■		BCP/PG	
9	24				■			■	-					■			BCP/PG	
10	32				■			■	-					■			BCP/PG	
11	26				■			■	-					■			BCP/PG	
12	33				■	■		■	26 - 33	N	30-33	S		■			BCP/PG	
13	20	■				■			4 - 14	Y				■			BCP/PG	
14	19					■			U - V	U	13-19	B			■		BCP/PG	
15	23	■							8 - 16	U	19-23	B		■			BCP/PG	
16	15		■						8 - 14	U	14-15	B		■			BCP/PG	
17	23			■					11 - 17	U	19-23	B			■		BCP/PG	
18	14			■					1 - 10	Y	12-14	B		■			BCP/PG	
19	18		■						11 - 16	Y	17-18	B			■		BCP/PG	
20	14			■					5 - U	U	6-14	B		■			BCP/PG	
									-									
									-									
									-									

SHEEN COLOR: B = BROWN; R = RAINBOW; S = SILVER; N = NONE



WITOUCHE ISLAND - LA015 - E

8-4-93 1-645-5400

D MUNSON

1993 Surface Oil Summary
Segment LA115 Subdivision E

Location	Area of Oiling Type in Square Meters AP	MS	SOR	CV	CT
A	2.4	0.	2.4	0.	0.
B	0.	0.	21.6	0.	0.
C	0.	0.	0.	0.	0.9
D	0.	0.	0.	0.	0.
E	45.	0.	45.	0.	0.
F	0.	0.	0.	28.	28.
G	95.7	0.	95.7	0.	0.
H	0.	0.	9.	0.	9.
TOTALS=	143.1	0.	173.7	28.	37.9

AP= asphalt; MS= mousse; SOR= surface oil residue; CV= cover; CT= coat
Areas are computed by multiplying the affected area by the percent coverage of each oil type. Field categories of percent oil coverage are converted to the median percent value as follows:
continuous= 95%; broken= 70%; patchy= 30%; sporadic= 6%; trace= 0.5%

SUBSURFACE OIL SUMMARY FOR SEGMENT LA015E

						TREATMENT		1993 OILED SED. VOL. (m3)					1992 OILED SED. VOL. (m3)					1991 OILED SED. VOL. (m3)					WT.'ed OIL VOL			% CHANGE WT.'ed VOL.		
Loc.	1993 PIT #	Gr. Sz.	Zn.	En.	Note	1992	1991	OP	HOR	MOR	LOR	OF/TR	OP	HOR	MOR	LOR	OF/TR	OP	HOR	MOR	LOR	OF/TR	1993	1992	1991			
ZA	3-5	MBCP-GS	M	M	MUSSELS	NO	NO	0.0	0.0	8.0	51.5	0.0	0.0	0.0	12.0	0.0	0.0	?	?	?	?	?	127.1	11.0				
ZB	6-10,12-19	BCP-PG	UM	M		Rs,Rb	Rs,ET,Rb	27.0	18.0	21.0	0.0	86.9	0.0	100.0	0.0	0.0	187.5	150.0	31.3	62.5	0.0	125.0	270.4	400.6	100.0			
ZC	1	BCP-PG	M	H		NO	NO	0.0	0.0	0.0	0.1	0.0	?	?	?	?	?	?	?	?	?	?	0.2	?	?			
ZD	20	CPB-PCR	UM	H		NO	Rs,Rb	0.1	0.0	0.1	0.0	0.0	0.0	19.8	30.6	0.0	0.0	30.0	23.8	17.0	0.0	10.2	2.5	171.0	570.2	98.0	42.6	99.6
ZE		BCP-BCP	SU	H		NO	Rs,Rb	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	112.5	112.5	0.0	0.0	0.0	0.0	0.0	101.5	0.0	100.0	100.0
							TOTALS=	27.1	18.0	29.1	51.6	86.9	0.0	119.8	42.6	0.0	187.5	298.5	167.6	79.5	0.0	135.2	400.1	607.0	671.7	34.1	34.7	84.1

Loc.= location name of specific oiling area (subsite).
1993 PIT #= the number designations, as indicated on the 1993 survey forms, of the pits in the subsite.
Gr. Sz.= grain size, a dash separates surface from subsurface sediments, B= boulders, C= cobbles, P= pebbles, G= granules, S= sand, M= mud, Pt= peat.
Zn.= inter tidal zone, S= supra tidal, H= high inter tidal, M= mid inter tidal, L= low inter tidal.
En.= wave-energy level, H= high, M= moderate, L= low, VL= very low.
TREATMENT= cleanup treatment occurring at the subsite for the given year, ET= equipment tilling (heavy equipment), MT= manual tilling, BR= berm relocation, SR= sediment relocation, Rb= oiled-sediment removal from subsurface, Rs= oiled-sediment removal from the surface, MB= manual breakup, MR= manual raking, ?= unknown, NO = no treatment.
OILED SED. VOL.= oiled-sediment volume in cubic meters by year and oil type, OP= oil pore, pore spaces are completely filled with oil resulting in oil oozing out of sediments - water cannot penetrate OP zone, HOR= heavy oil residue, pore spaces partially filled with oil residue but not generally flowing out of sediments, MOR= medium oil residue, heavily coated sediments; pore spaces are not filled with oil - pore spaces may be filled with water, LOR= light oil residue, sediments lightly coated with oil, OF= oil film, continuous layer of sheen or film on sediments - water may bead on sediments, TR= trace, discontinuous film; spots of oil on sediments; an odor or tackiness with no visible evidence of oil, ?= area of subsite not visited or adequately surveyed.
WT.'ed OIL VOL.= weighted oiled-sediment volume = (OP VOL)*5 + (HOR VOL.)*4 + (MOR VOL.)*3 + (LOR VOL.)*2
% CHANGE WT.'ed VOL.= % change in weighted oiled-sediment volume between the given years = ((year 2 - year1)/(year 1))*100, positive values indicate increases in the amount of oil, negative values indicate decreases, "Inf" (infinite percent increase) indicates newly discovered oil.

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/04/93 TIME: 07:30

SEGMENT#: LA015 STATION#: -0-
LOCATION: NE SHORE OF LATOUCHE ISLAND
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO:OVERVIEW PAN PHOTO FROM SOUTH TO NORTH OF THE NORTH END OF THE SEGMENT. GOESWITH 93RTK005 #01-04. THE MUSSEL BED IS IN 01-03.

TAKEN BY: RUSSELL KUNIBE INITIALS: R+b
ROLL #: 93RTK005 FRAME #: 2 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/04/93 TIME: 07:30

SEGMENT#: LA015 STATION#: -0-
LOCATION: NE SHORE OF LATOUCHE ISLAND
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO:OVERVIEW PAN PHOTO FROM SOUTH TO NORTH OF THE NORTH END OF THE SEGMENT. GOESWITH 93RTK005 #01-04. THE MUSSEL BED IS IN 01-03.

TAKEN BY: RUSSELL KUNIBE INITIALS: KTK
ROLL #: 93RTK005 FRAME #: 1 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/04/93 TIME: 07:30

SEGMENT#: LA015 STATION#: -0-
LOCATION: NE SHORE OF LATOUCHE ISLAND
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO:OVERVIEW PAN PHOTO FROM SOUTH TO NORTH OF THE NORTH END OF THE SEGMENT. GOESWITH 93RTK005 #01-04. THE MUSSEL BED IS IN 01-03.

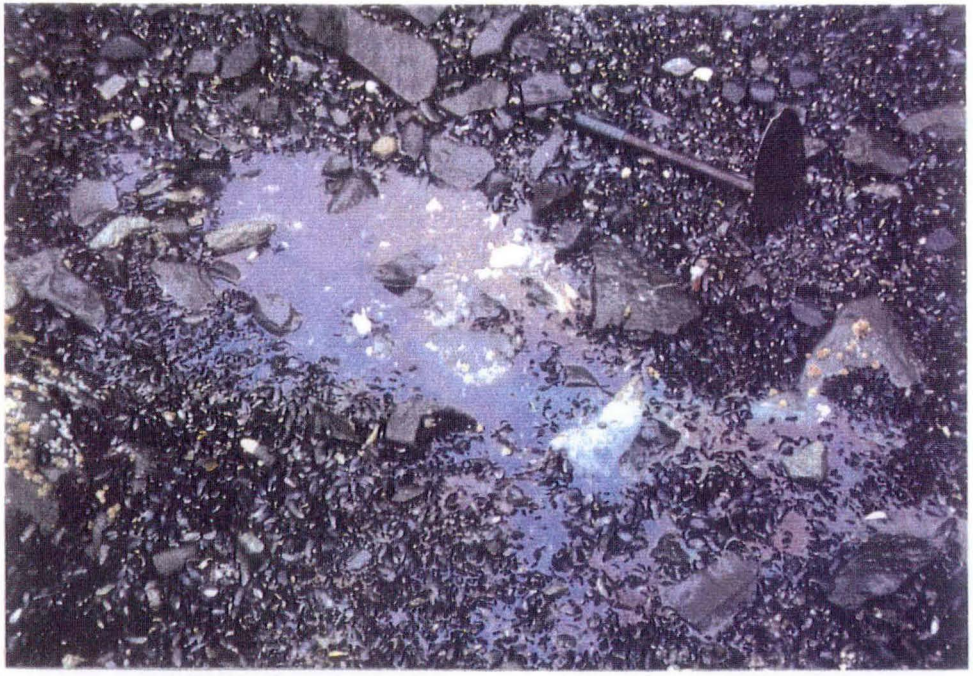
TAKEN BY: RUSSELL KUNIBE INITIALS: KTK
ROLL #: 93RTK005 FRAME #: 4 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/04/93 TIME: 07:30

SEGMENT#: LA015 STATION#: -0-
LOCATION: NE SHORE OF LATOUCHE ISLAND
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO:OVERVIEW PAN PHOTO FROM SOUTH TO NORTH OF THE NORTH END OF THE SEGMENT. GOESWITH 93RTK005 #01-04. THE MUSSEL BED IS IN 01-03.

TAKEN BY: RUSSELL KUNIBE INITIALS: KTK
ROLL #: 93RTK005 FRAME #: 3 EVIDENCE ID#:



OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/04/93 TIME: 07:30

SEGMENT#: LA015 STATION#: -0-
LOCATION: NE SHORE OF LATOUCHE ISLAND
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO:OVERVEIW PHOTO OF TOM KELLEY, EXXON AND C.CROSBY WITH THE TAPE MERASURING THE SURFACE AP AREA. D.MUNSON HAS CLIP BOARD. NOTE THE GRASS LINE.

TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK005 FRAME #: 6 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/04/93 TIME: 07:30

SEGMENT#: LA015 STATION#: -0-
LOCATION: NE SHORE OF LATOUCHE ISLAND
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO:CLOSE UP PHOTO OF AP ON DEAD GRASS IN HITZ. THE PHOTO #07 IS AN OVERVIEW OF THIS AREA WHERE THE AP APPEARS.

TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK005 FRAME #: 5 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/04/93 TIME: 08:00

SEGMENT#: LA015 STATION#: -0-
LOCATION: NE SHORE OF LATOUCHE ISLAND
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO:PHOTO OF A RAINBOW SHEEN ON THE WATER IN THE MUSSEL BED. (SHOWN IN PHOTO 1-4)

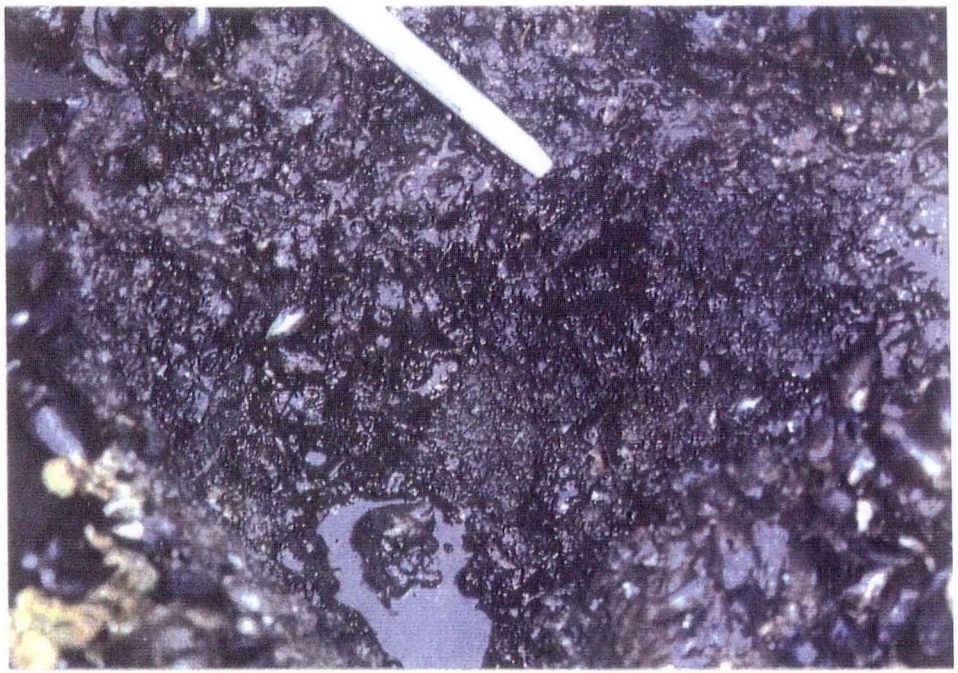
TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK005 FRAME #: 8 EVIDENCE ID#:

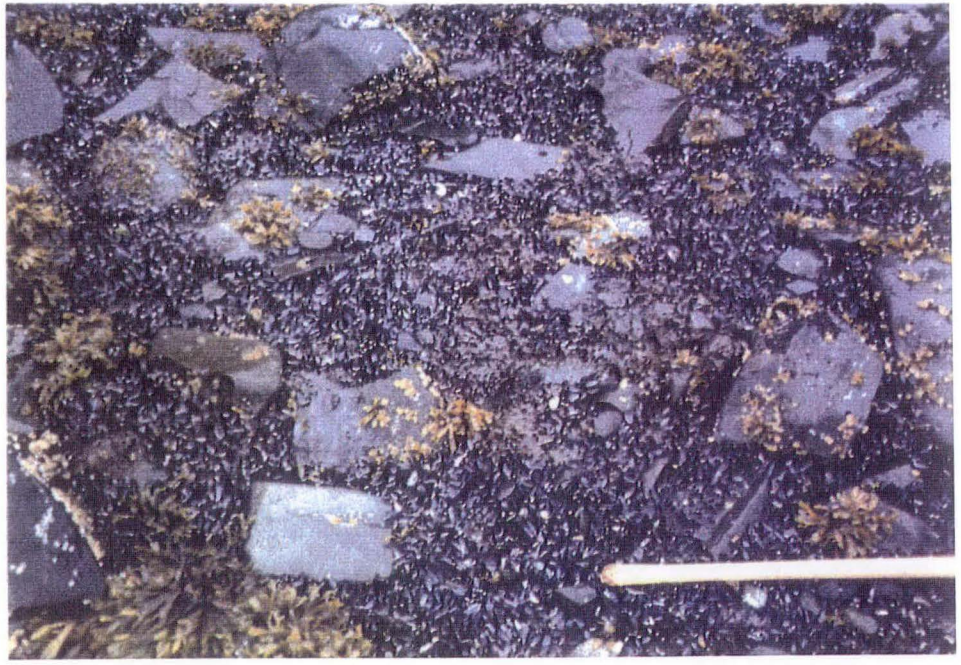
OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/04/93 TIME: 07:45

SEGMENT#: LA015 STATION#: -0-
LOCATION: NE SHORE OF LATOUCHE ISLAND
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO:CLOSE UP OF STAIN AND COAT WITH SPRUCE NEEDLES ON A BEDROCK SURFACE IN THE HITZ.

TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK005 FRAME #: 7 EVIDENCE ID#:





OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/04/93 TIME: 08:00

SEGMENT#: LA015 STATION#: -0-
LOCATION: NE SHORE OF LATOUCHE ISLAND
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO:CLOSE UP OF A PIT IN THE MUSSEL BED MOR TO HOR OILING WHICH IS BELOW THE SURFACE. PHOTO #12 HAS AN OVERVIEW OF THE PIT IN PHOTO #10 AND #11.

TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK005 FRAME #: 10 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/04/93 TIME: 08:00

SEGMENT#: LA015 STATION#: -0-
LOCATION: NE SHORE OF LATOUCHE ISLAND
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO:CLOSE UP OF A PIT IN THE MUSSEL BED MOR OILING WHICH IS BELOW THE SURFACE BY APROX 14 CM.

TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK005 FRAME #: 9 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/04/93 TIME: 08:00

SEGMENT#: LA015 STATION#: -0-
LOCATION: NE SHORE OF LATOUCHE ISLAND
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO:OVERVIEW PHOTO OF THE MUSSEL BED AND OF THE PITS IN PHOT #10 AND #11. NOTICE THE HEAVY CONCENTRATION OF MUSSELS IN THIS AREA.

TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK005 FRAME #: 12 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/04/93 TIME: 08:00

SEGMENT#: LA015 STATION#: -0-
LOCATION: NE SHORE OF LATOUCHE ISLAND
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO:CLOSE UP OF A PIT IN THE MUSSEL BED MOR TO HOR OILING WHICH IS BELOW THE SURFACE. PHOTO #12 HAS AN OVERVIEW OF THE PIT IN PHOTO #10 AND #11.

TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK005 FRAME #: 11 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/04/93 TIME: 08:30

SEGMENT#: LA015 STATION#: -0-
LOCATION: NE SHORE OF LATOUCHE ISLAND
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO:OVERVIEW PHOTO OF THE BEACH FROM N. TO S. LOOKING BACK AT THE BEACH FROM THE LARGE ROCKS IN FRONT OF THE MUSSEL BED. GOES WITH 93RTK005 #14-#18

TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK005 FRAME #: 14 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/04/93 TIME: 08:00

SEGMENT#: LA015 STATION#: -0-
LOCATION: NE SHORE OF LATOUCHE ISLAND
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO:CLOSE UP PHOTO OF YET ANOTHER PIT IN THE MUSSEL BED SHOWING THE DISTICT HOR SUBSURFACE OIL LENS.

TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK005 FRAME #: 13 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/04/93 TIME: 08:30

SEGMENT#: LA015 STATION#: -0-
LOCATION: NE SHORE OF LATOUCHE ISLAND
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO:OVERVIEW PHOTO OF THE BEACH FROM N. TO S. LOOKING BACK AT THE BEACH FROM THE LARGE ROCKS IN FRONT OF THE MUSSEL BED. GOES WITH 93RTK005 #14-#18

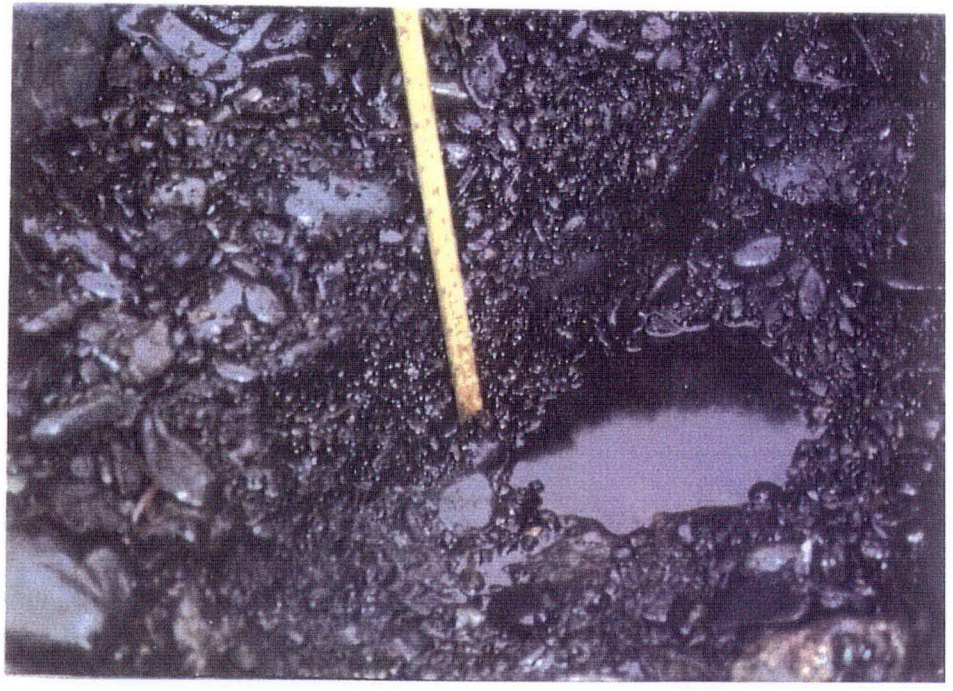
TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK005 FRAME #: 16 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/04/93 TIME: 08:30

SEGMENT#: LA015 STATION#: -0-
LOCATION: NE SHORE OF LATOUCHE ISLAND
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO:OVERVIEW PHOTO OF THE BEACH FROM N. TO S. LOOKING BACK AT THE BEACH FROM THE LARGE ROCKS IN FRONT OF THE MUSSEL BED. GOES WITH 93RTK005 #14-#18

TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK005 FRAME #: 15 EVIDENCE ID#:



OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/04/93 TIME: 08:30

SEGMENT#: LA015 STATION#: -0-
LOCATION: NE SHORE OF LATOUCHE ISLAND
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO:OVERVIEW PHOTO OF THE BEACH FROM N. TO S. LOOKING BACK AT THE BEACH FROM THE LARGE ROCKS IN FRONT OF THE MUSSEL BED. GOES WITH 93RTK005 #14-#18

TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK005 FRAME #: 18 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/04/93 TIME: 08:30

SEGMENT#: LA015 STATION#: -0-
LOCATION: NE SHORE OF LATOUCHE ISLAND
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO:OVERVIEW PHOTO OF THE BEACH FROM N. TO S. LOOKING BACK AT THE BEACH FROM THE LARGE ROCKS IN FRONT OF THE MUSSEL BED. GOES WITH 93RTK005 #14-#18

TAKEN BY: RUSSELL KUNIBE
ROLL #: 93RTK005 FRAME #: 17 INITIALS: RTK
EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/04/93 TIME: 08:45

SEGMENT#: LA015 STATION#: -0-
LOCATION: NE SHORE OF LATOUCHE ISLAND
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO:CLOSE UP OF PIT #15 WITH AN OP LENS FROM 8 TO 16 CM. BELOW THE SURFACE. NOTICE THE BROWN SHEEN ON THE WATER IN THE PIT.

TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK005 FRAME #: 20 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/04/93 TIME: 08:45

SEGMENT#: LA015 STATION#: -0-
LOCATION: NE SHORE OF LATOUCHE ISLAND
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO:CLOSE UP OF PIT #12 WITH OIL FILM FROM 26 TO 33 CM. BELOW THE SURFACE.

TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK005 FRAME #: 19 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/04/93 TIME: 09:00

SEGMENT#: LA015 STATION#: -0-
LOCATION: NE SHORE OF LATOUCHE ISLAND
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO:OVERVIEW PHOTO OF AN OILED AREA IN THE SUPERTIDAL AREA OF THE BEACH. THE OILING HAS STARTED TO TURN TO AP.

TAKEN BY: RUSSELL KUNIBE INITIALS: RK
ROLL #: 93RTK005 FRAME #: 22 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/04/93 TIME: 08:45

SEGMENT#: LA015 STATION#: -0-
LOCATION: NE SHORE OF LATOUCHE ISLAND
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO:CLOSE UP OF PIT #17 WITH MOR FORM 11 TO 17 CM. BELOW THE SURFACE. THERE ARE BROWN DROPLETS OF OIL ON THE WATER IN THE BOTTOM OF THE PIT.

TAKEN BY: RUSSELL KUNIBE INITIALS: RK
ROLL #: 93RTK005 FRAME #: 21 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/04/93 TIME: 09:00

SEGMENT#: LA015 STATION#: -0-
LOCATION: NE SHORE OF LATOUCHE ISLAND
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO:PHOTO CLOSE UP LOOKING AT AN EXAMPLE OF THE SURFACE AP IN BETWEEN THE BOULDERS IN PHOTO #23.

TAKEN BY: RUSSELL KUNIBE INITIALS: RK
ROLL #: 93RTK005 FRAME #: 24 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/04/93 TIME: 09:00

SEGMENT#: LA015 STATION#: -0-
LOCATION: NE SHORE OF LATOUCHE ISLAND
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO:PHOTO TO THE NORTH ACCROSS THE BOULDER COBBLE BEACH TO THE SOUTH OF THE OIL MUSSEL AREA AND THE N. OF THE NO OIL MUSSEL AREA.

TAKEN BY: RUSSELL KUNIBE INITIALS: RK
ROLL #: 93RTK005 FRAME #: 23 EVIDENCE ID#:

SEGMENT: LA 019 A

LOCATION: Chenega Area Group, Sleepy Bay, north shore of Latouche Island

OTHER STUDIES

Tesoro 1993 PES-51 test site.

ADEC transect station # 43 (actually in LA 018 A)

PHYSICAL SETTING

Coastal Morphology and Sedimentology

Boulder beach with complicated sediment and bedrock distribution. Sediments are subangular boulders and subrounded cobbles overlying pebbles and boulders and cobbles with a sandy, granular matrix. Low bedrock outcrops are important along the beach, and a large outcrop and large boulder area oriented normal to shore separates about 1/4/ of the eastern end of the site from the rest of the beach. A storm berm is present.

Environmental Sensitivity Index (ESI)

Type 1; exposed rocky.

Type 7; gravel beach.

Fetches and Directions (kilometers)

N= 14; NE= 110

Energy Level

High with some moderate areas.

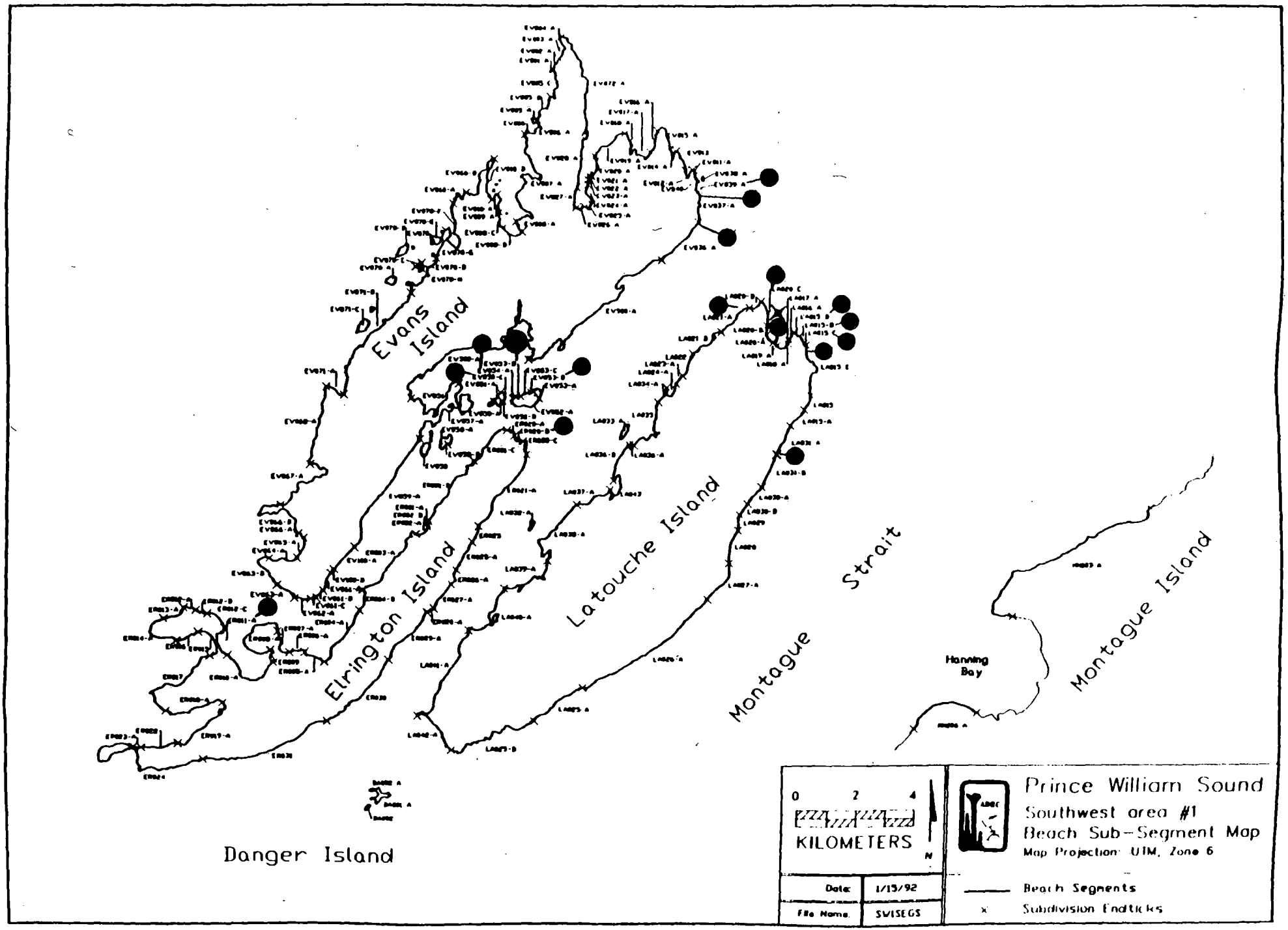
GENERAL BIOLOGICAL SETTING

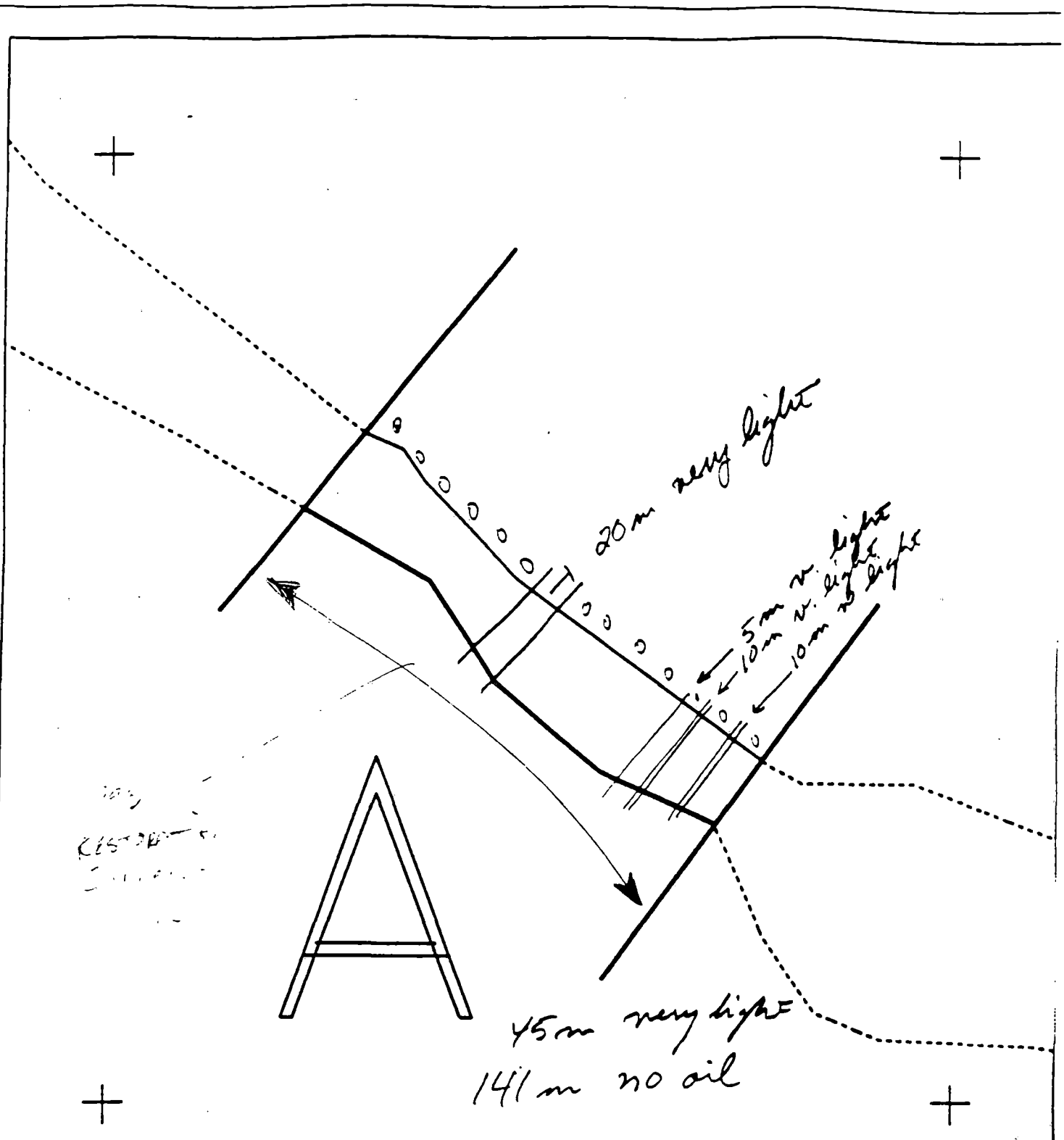
OILING SUMMARY

The eastern 1/4 of the site, which is to the east of a prominent outcrop and large boulder area that separates this area form the rest of the beach, has a large and concentrated area of AP and MS amongst boulders and cobbles. The concentration in this area, which is designated as location 'G', is between 11 and 50% and occurs in the mid and upper intertidal zones. No detectable improvement has occurred here since 1991, and only manual pickup of AP was performed in 1991 with no treatment occurring in 1992.

Several other areas have relatively concentrated amounts of surface oil amongst boulders but cover smaller areas at the west end of the site and the east end, west of the eastern dividing bedrock. The area covered by locations 'C', 'E', and 'F' in 1993 greatly improved since 1991. The storm berm area also greatly improved. Sites in very large boulders near bedrock on the western end (location 'A') and the eastern end (west side of dividing bedrock and large boulders, location 'H') did not noticeably improve.

Most of the oil at this site has been recorded as surface oil and thus has been minor relative to reported surface oil amounts. Because of the complicated distribution of sediments both across the beach and with depth, it is difficult to map the subsurface oil. The recorded subsurface oil amounts and levels of concentration (OP, HOR etc.),however, were about the same in 1991 and 1993. The greatest amount occurred in the upper and mid-intertidal zone across the central part of the boulder beach in 1993 (location ZA, pits 1-3, 5,7,8, and 10-14).


Evans Island
Elrington Island
Latouche Island
Montague Strait
Montague Island
Hanning Bay
Danger Island
0 2 4
KILOMETERS
N
Date: 1/15/92
File Name: SWISEGS
Prince William Sound
Southwest area #1
Beach Sub-Segment Map
Map Projection: UTM, Zone 6
Beach Segments
Subdivision Endticks



XXXX	Wide
////	Medium
----	Narrow
TTTT	Very Light
0000	No Oil

LA019 A

ADEC Subsegment Length: 186m

45/141

METERS

0 50 100

AK State Plane Zone 4 plotted

EXXON

Subdivision Field Map

Map Key: PWSLA019A

Name: HARBOR

Date: 18 MAY '92

Date Entered:

1993 ADEC RESTORATION PROJECT #930380
SHORELINE SURVEY COMMENT SHEET

LOCATION ATOUCHE SEGMENT LA019 SUBDIVISION A DATE 07 / 17 / 93

AFFILIATION
NAME [illegible] Moors / USCG SIGNATURE [illegible]

PES-51 treated area appeared [illegible] cut [illegible] down [illegible] and PES [illegible] PES treated [illegible] did [illegible] [illegible].

AFFILIATION DNR, Div. of Land
NAME Katie Farley SIGNATURE Kathleen M. Farley

If the PES-51 treatment is determined to be conducive for restoration and the application methodology is improved, this would probably be a worthwhile site for further treatment because it was one of the most heaviest hit areas and there are still a lot of patches of [illegible], its proximity to the Village of Cherega, and because of its "notoriety" among the public.

AFFILIATION
NAME SIGNATURE

AFFILIATION
NAME SIGNATURE

1993 ADEC RESTORATION PROJECT # 930380
SHORELINE OILING SUMMARY

PAGE ___ OF 3

SEGMENT A-2A

M MEMBERS: Dr Gibeaut
E Owen, J Munson, J Matthews, W Evans → ADEC
Kirke Farley ADNR, Phil Means USCG
Exxon - Sam Stoker, Ed Owens

(* * * * * POST TREATMENT ASSESSMENT := TESORO PES-51)

SUBDIVISION A

DATE 07 / 17 / 93

IME 17 : 15 to 8 : 35 TIDE LEVEL T 4.6 ft. to T 3.4 ft. ENERGY LEVEL: ☐ H ■ M ☐ L

SURVEYED FROM: ■ FOOT ☐ BOAT ☐ HELO WEATHER: ☐ SUN ■ CLOUDS ☐ FOG ☐ RAIN ☐ SNOW

TOTAL LENGTH SHORELINE SURVEYED: _____ m NEAR SHORE SHEEN: ☐ BR ☐ RB ☐ SL ■ NONE

ST. OIL CATEGORY LENGTH: H_____m M_____m L_____m VL_____m N_____m NS_____m

LOC	SURFACE OIL CHARACTER										SURFACE SEDIMENT TYPE	SHORE SLOPE V H M L	AREA WIDTH m	AREA LENGTH m	ZONE S	ZONE UI	ZONE MI	ZONE LI	NOTES
	AP	MS	TB	SCR	CV	CT	ST	FL	DB	NO									
E		C									B, C, P	M	2	5			■		under Bldrs

DISTRIBUTION: C = 81-100%; B = 51-80%; P = 11-50%; S = 1-10%; T = <1%

SLOPE: V = VERTICAL; H = HIGH ANGLE; M = MEDIUM ANGLE; L = LOW ANGLE PHOTO ROLL # LJE-001 FRAMES 11-13

PIT NO.	PIT DEPTH (cm)	SUBSURFACE OIL CHARACTER OP	HOR	MOR	LOR	OF	TR	NO	OILED ZONE cm-cm	CLEAN BELOW Y/N	H2O LEVEL (cm)	SHEEN COLOR B R S N	PIT ZONE S	UI	MI	LI	SURFACE-SUBSURFACE SEDIMENTS	NOTES
1	24					■			1 - 3	Y	23	S		■			B, C, P, G	surface P & G have tracky OF Coat
2	27		■						12 - 17	Y	24	B			■		B, C, P, G	—
3	28						■		- - -	U	26	S		■			B, C, P, G	—
4A	27					■			1 - 3	-	23	B		■			B, C, P, G	Change in color on oil
B	—		■						3 - 7	—	—	—					"	Lt. Brown oil
C	—		■						7 - 10	Y	—	—					"	Blk oil
5	36						■		- - -	—	-	-		■			C P G	very P&G smell
6	21						■		- - -	—	—	—		■			B, C, P, G	—
7A	31				■	■			1 - 6	-	—			■			B, C, P G	—
B	-				■				6 - 12	Y	—	—		■			"	see OG comments
8A	31				■	■			12 - 17	N	—	—		■			B, C, P G	
B	—				■	■			17 - 31	N	—	—		■			B C P G	
9	23					■			- - -	Y	—	—		■			B C P G	sewer film, very P&G on surface *
10A	28		■						1 - 4	-	—	-			■		B C P G	
B	—						■		- - -	U	24	B			■		"	
11	23							■	- - -	—	—	—		■			B C P G	
12	28					■			4 - 28	N	—	—			■		B C P G, S	
	27			■					1 - 3	N	—	—		■				surface MOR
	—				■				4 - 8	N	—	—						
	—					■			9 - 15	Y	—	—						
									-									
									-									
									-									

SHEEN COLOR: B = BROWN; R = RAINBOW; S = SILVER; N = NONE

RESTORATION SHORELINE OILING SUMMARY (cont.)

PAGE 2 OF 3

TEAM NO. ______

SMENT 1A019

SUBDIVISION A

DATE 07 / 17 / 1993

PIT NO.	PIT DEPTH (cm)	SUBSURFACE OIL CHARACTER							OILED ZONE	CLEAN BELOW	H2O LEVEL	SHEEN COLOR	PIT ZONE				SURFACE-SUBSURFACE SEDIMENTS	NOTES
		OP	HOR	MOR	LOR	OF	TR	NO	cm-cm	Y/N	(cm)	B R S N	S	UI	MI	LI		
									-									
									-									
									-									
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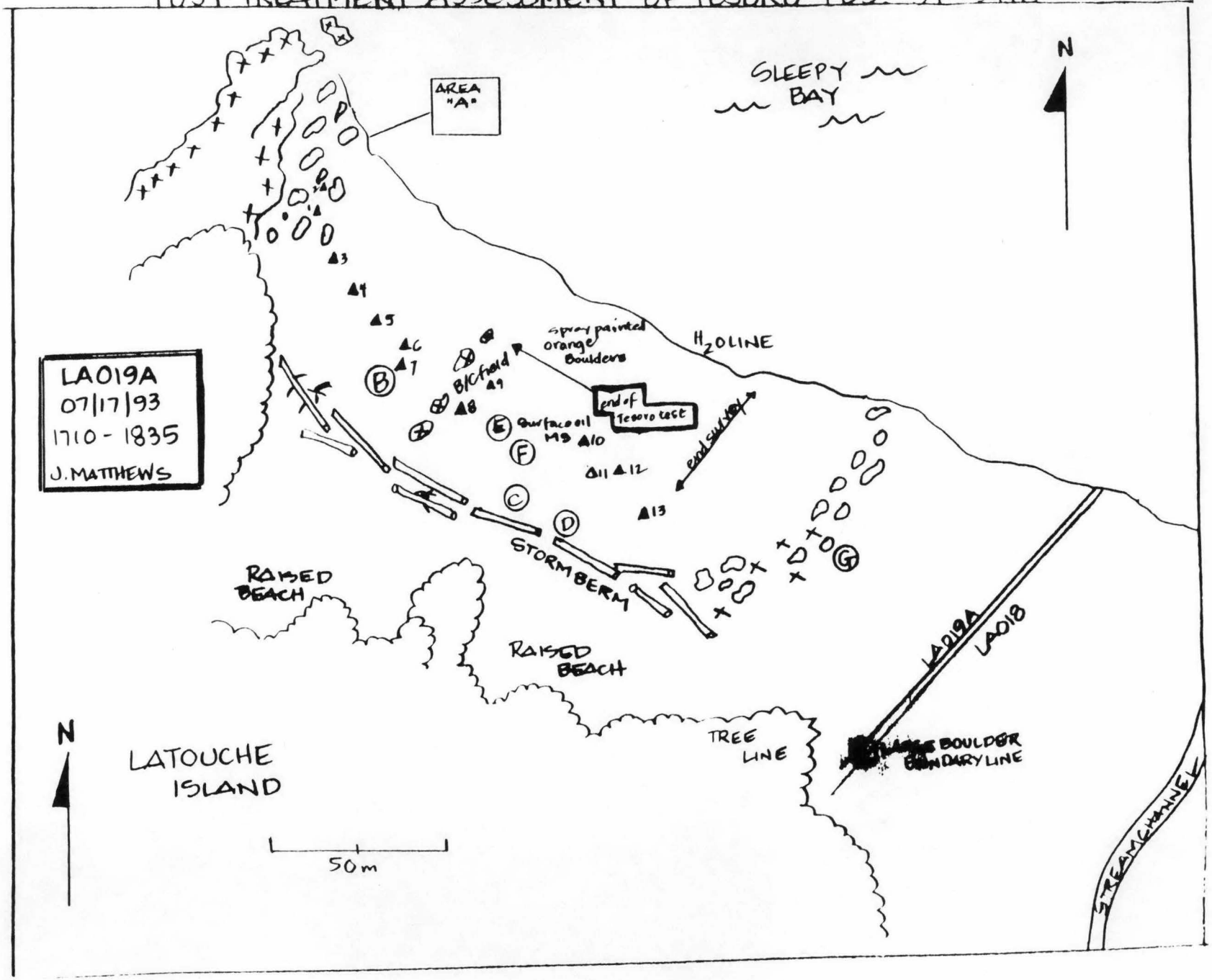
SHEEN COLOR: B = BROWN; R = RAINBOW; S = SILVER; N = NONE

OG COMMENTS:

- * PITS 1 - 7 FELL BTWN TESORO TEST MARKERS 4T + 5T in UITZ
- * PIT 10 - HSOR interstitially among B/C
- * TESORO test of PES-51 performed on July 1-6th - DEC Rep Leslie Pearson (video footage) present
- * Strong odor of [illegible]-51 in pits - orange SOL odor.
- * Pits were on border of UITZ/MITZ along beach

POST-TREATMENT ASSESSMENT OF TESORO PES-51 SITE



SHORELINE OILING SUMMARY

PAGE ____ OF ____

TEAM MEMBERS: ERNIE PIPER, DIANNE MUNSON, MARIANNE PROFITA

(*PRE-TREATMENT ASSESSMENT)

SEGMENT LA 219

SUBDIVISION A

DATE 6 / 3 / 93

TIME 07:00 to 11:00 TIDE LEVEL 1.0 ft. to -1.0 ft. ENERGY LEVEL: ■ H ☐ M ☐ L

SURVEYED FROM: ■ FOOT ☐ BOAT ☐ HELO WEATHER: ■ SUN ☐ CLOUDS ☐ FOG ☐ RAIN ☐ SNOW

TOTAL LENGTH SHORELINE SURVEYED: _____ m NEAR SHORE SHEEN: ☐ BR ☐ RB ☐ SL ■ NONE

EST. OIL CATEGORY LENGTH: H _____ m M _____ m L _____ m VL _____ m N _____ m NS _____ m

LOC	SURFACE OIL CHARACTER										SURFACE SEDIMENT	SHORE SLOPE	AREA		ZONE				NOTES
	AP	MS	TB	SOR	CV	CT	ST	FL	DB	NO	TYPE	V H M L	WIDTH m	LENGTH m	S	UI	MI	LI	
A		P									B	H	5	10			■		
B				C							B, C	H	1	1			■		
C		C		C							B, C	M	1	1		■			
D				C							B, C	M	1	1		■			
E	C	C									B, C	M	2	5			■		
F		C				S	S				C	M	1	2			■		
G	P	P									B, C	H	16	33			■		
H				P			P				B		10	5		X			

DISTRIBUTION: C = 81–100%; B = 51–80%; P = 11–50%; S = 1–10%; T = <1%

PIT NO.	PIT DEPTH (cm)	SUBSURFACE OIL CHARACTER							OILED ZONE cm-cm	CLEAN BELOW Y/N	H2O LEVEL (cm)	SHEEN COLOR B R S N	PIT ZONE				SURFACE-SUBSURFACE SEDIMENTS	NOTES
		OP	HOR	MOR	LOR	OF	TR	NO					S	UI	MI	LI		
1	26	■							10-26	N	7-26	B			■		C, B / P, G	
2	22				■				5-22	U	9-22	B			■		C, B / P, G	
3	22							■	-	-	-	-			■		C / P, G	
4	27							■	-	-	-			■			C, P, G / C, P, G	
5	33				■				5-23	U	22-33	R			■		C, P / P, G	
6	42							■	-	-	-	-		■			C / P, G	
7	28				■				5-11	U	11-28	B			■		C, B, P, G	
8	34		■						5-34	N	14-34	B			■		C / P, G	
9	32			■					10-16	Y	-	-			■		C, P / G, P	
10	22		■	■					7-22	U	18-22	B			■		B, C, P, R, G	
11	27			■		■			11-11	U	20-27	S			■		C, B, P, S	
12	29	■		■					11-29	U	22-29	R			■		B, C / G	
13	18							■	-	-	-	-			■		B, C, P / P, G	
14	42		■					■	9-42	N	38-42	-		■			C, P / P, G	
15	20	■							10-20	N	-	-		■			C / P, G, S	
16	42				■				15-42	N	-	-			■		C / P, G, S	
17	20	■							15-20	N	-	-			■		B, C, P, G, S	
18	26							■	-	-	-	-			■		C, B / G, P	
19	31			■					19-31	N	-	-			■		B, C / P, S	
20	22	■							11-22	N	-	-			■		C / P, S	
21	21	■							1-15	Y	-	-			■		C / P, S	
									-									
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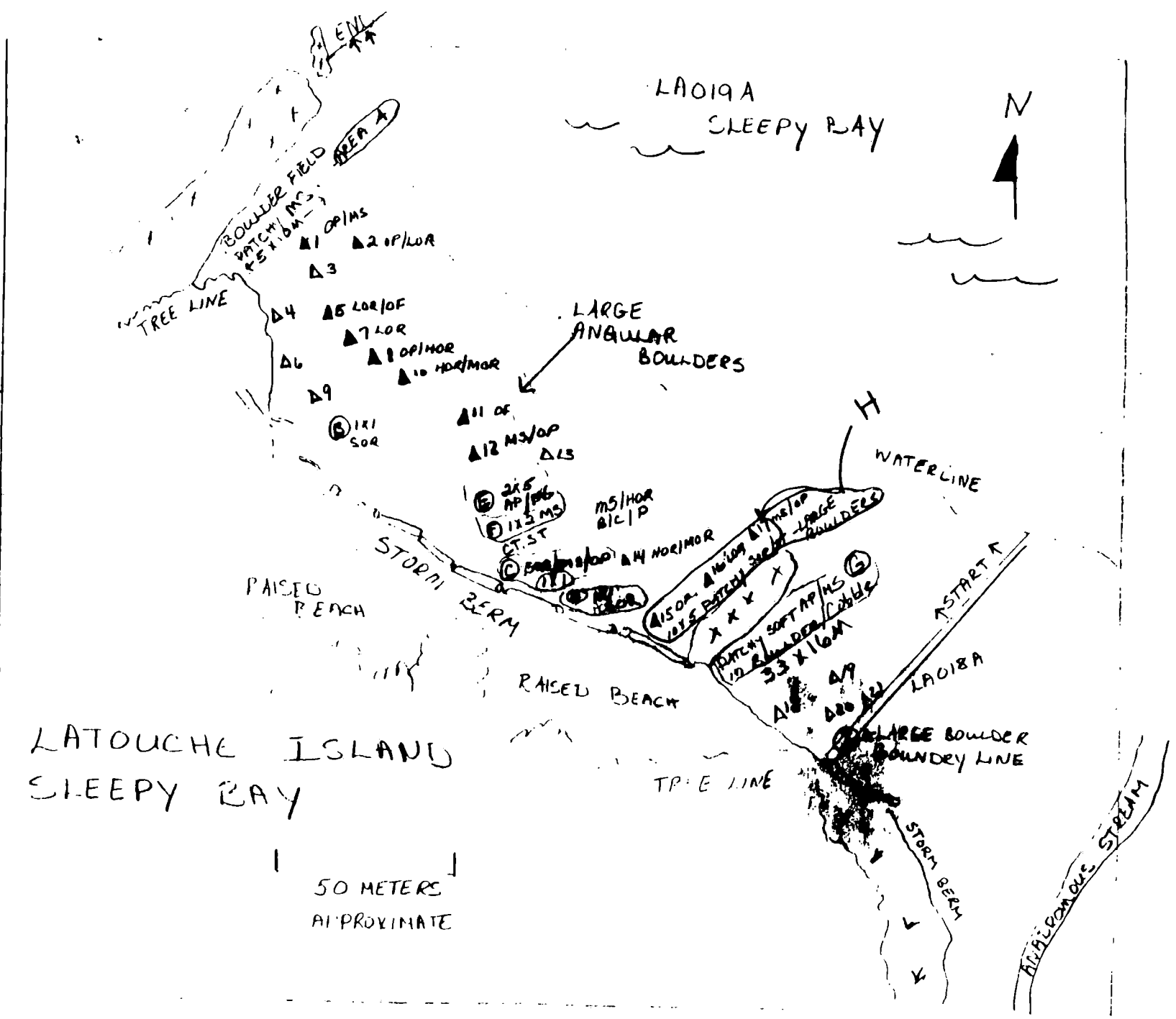
LA019A
June 3. 1993
0700 – 1100
M. PROFITA



1993 Surface Oil Summary
Segment LA019 Subdivision A

Location	Area of Oiling Type in Square Meters AP	MS	SOR	CV	CT
A	0.	15.	0.	0.	0.
B	0.	0.	0.95	0.	0.
C	0.	0.95	0.95	0.	0.
D	0.	0.	0.95	0.	0.
E	9.5	9.5	0.	0.	0.
F	0.	1.9	0.	0.	0.12
G	158.4	158.4	0.	0.	0.
H	0.	0.	15.	0.	0.
TOTALS=	167.9	185.75	17.85	0.	0.12

AP= asphalt; MS= mousse; SOR= surface oil residue; CV= cover; CT= coat
Areas are computed by multiplying the affected area by the percent coverage of each oil type. Field categories of percent oil coverage are converted to the median percent value as follows:
continuous= 95%; broken= 70%; patchy= 30%; sporadic= 6%; trace= 0.5%

SUBSURFACE OIL SUMMARY FOR SEGMENT LA019A

Loc.	1993 PIT #	Gr. Sz.	Zn.	En.	Note	TREATMENT 1992	TREATMENT 1991	1993 OILED SED. VOL. (m3) OP	HOR	MOR	LOR	OF/TR	1992 OILED SED. VOL. (m3) OP	HOR	MOR	LOR	OF/TR	1991 OILED SED. VOL. (m3) OF	HOR	MOR	LOR	OF/TR	WT.'ed OIL VOL. 1993	1992	1991	% CHANGE WT.'ed VOL. 93	92	91
ZA	1-3,5,7,8,10-14	CB PG	UM	H		NO	NO	9.4	28.1	2.2	15.1	7.2	?	?	?	?	?	5.0	0.0	39.9	0.7	0.0	195.8	?	141.1	?		14.0
ZB	15-17	CBP-PGS	UM	M		NO	NO	0.6	0.0	0.0	1.1	0.0	0.0	0.6	0.0	0.0	0.0	0.4	0.4	0.0	0.0	0.6	5.0	2.4	1.0	108.4	141.4	47.1
ZC	19-21	CB PS	M	H		NO	NO	1.0	0.0	0.4	0.0	0.0	?	?	?	?	?	?	?	?	?	?	0.1	?	?			
							TOTALS=	10.9	28.1	2.6	16.2	7.2	0.0	0.6	0.0	0.0	0.0	5.4	0.4	39.9	0.7	0.6	200.9	2.4	141.1	8520.5	98.4	80.2

Loc.= location name of specific oiling area (subsite).
1993 PIT #= the number designations, as indicated on the 1993 survey forms, of the pits in the subsite.
Gr. Sz.= grain size, a dash separates surface from subsurface sediments, B= boulders, C= cobbles, P= pebbles, G= granules, S= sand, M= mud, Pt= peat
Zn.= inter tidal zone, S= supra tidal, H= high inter tidal, M= mid inter tidal, L= low inter tidal.
En.= wave-energy level, H= high, M= moderate, L= low, VL= very low.
TREATMENT= cleanup treatment occurring at the subsite for the given year, ET= equipment tilling (heavy equipment), MT= manual tilling, BR= berm relocation, SR= sediment relocation, Rb= oiled-sediment removal from subsurface, Rs= oiled-sediment removal from the surface, MB= manual breakup, MR= manual raking, ?= unknown, NO= no treatment.
OILED SED. VOL.= oiled-sediment volume in cubic meters by year and oil type, OP= oil pore, pore spaces are completely filled with oil resulting in oil oozing out of sediments - water cannot penetrate OP zone, HOR= heavy oil residue, pore spaces partially filled with oil residue but not generally flowing out of sediments, MOR = medium oil residue, heavily coated sediments; pore spaces are not filled with oil - pore spaces may be filled with water, LOR= light oil residue, sediments lightly coated with oil, OF= oil film, continuous layer of sheen or film on sediments - water may bead on sediments, TR= trace, discontinuous film, spots of oil on sediments; an odor or tackiness with no visible evidence of oil, ?= area of subsite not visited or adequately surveyed.
WT.'ed OIL VOL.= weighted oiled-sediment volume = (OP VOL.)*5 + (HOR VOL.)*4 + (MOR VOL.)*3 + (LOR VOL.)*2
% CHANGE WT.'ed VOL.= % change in weighted oiled-sediment volume between the given years = ((year 2 - year1)/(year 1))*100, positive values indicate increases in the amount of oil, negative values indicate decreases, "Inf" (infinite percent increase) indicates newly discovered oil

OFFICIAL PHOTOGRAPH **ADEC**

Date: 7/17/93 **Time:** 17:30 (5:30 pm)

Location (segment #): LA 19A

Latouche Island, Sleepy Bay

Reason for taking photo: Mousse & OP underneath large overturned boulder, just outside (to the East) of PES treatment area

Taken by: L.J. Evans LJE

Roll #: LJE 001 **Frame #:** 12

OFFICIAL PHOTOGRAPH **ADEC**

Date: 7/17/93 **Time:** 17:26 (5:26 pm)

Location (segment #): LA 19A

Latouche Island, Sleepy Bay

Reason for taking photo: Pit #2

Taken by: L.J. Evans LJE

Roll #: LJE 001 **Frame #:** 11

OFFICIAL PHOTOGRAPH **ADEC**

Date: 7/17/93 **Time:** 17:35 (5:35 pm)

Location (segment #): LA 19A

Latouche Island, Sleepy Bay

Reason for taking photo: Pit #4

Taken by: L.J. Evans LJE

Roll #: LJE 001 **Frame #:** 13

SEGMENT: LA 020 C

LOCATION: Chenega Island Area Group, north end of Latouche Island, west shoreline of Sleepy Bay.

OTHER STUDIES

PHYSICAL SETTING

Coastal Morphology and Sedimentology

Linear boulder and cobble beach about 900 m long. The beach is gently sloping with bedrock near the surface and exposed in places. The entire beach contains boulders but in some areas very large boulders are present. A cobble and drift log storm berm is present along the shoreline. Sediments are subangular to subrounded and at depth a granular matrix occurs. In some areas a clayey sediment is present at depth (pits #17-22). A low rocky promontory projects from the beach at one location behind which bedrock outcrop occurs.

Environmental Sensitivity Index (ESI)

Type 2; exposed wave-cut rock platform.
Type 7; gravel beach.

Fetches and Directions (kilometers)

N= 14; NE= 110

Energy Level

High with some moderate areas.

GENERAL BIOLOGICAL SETTING

Eagle nest.
Deer harvesting.

OILING SUMMARY

Four large areas of significant surface oiling occur at this site. Location 'C' contains a relatively high concentration of AP behind the promontory described above. At the north end of the site, location 'D' also contains a high concentration of AP and SOR. Locations 'C' and 'D' are both in the upper intertidal zone.

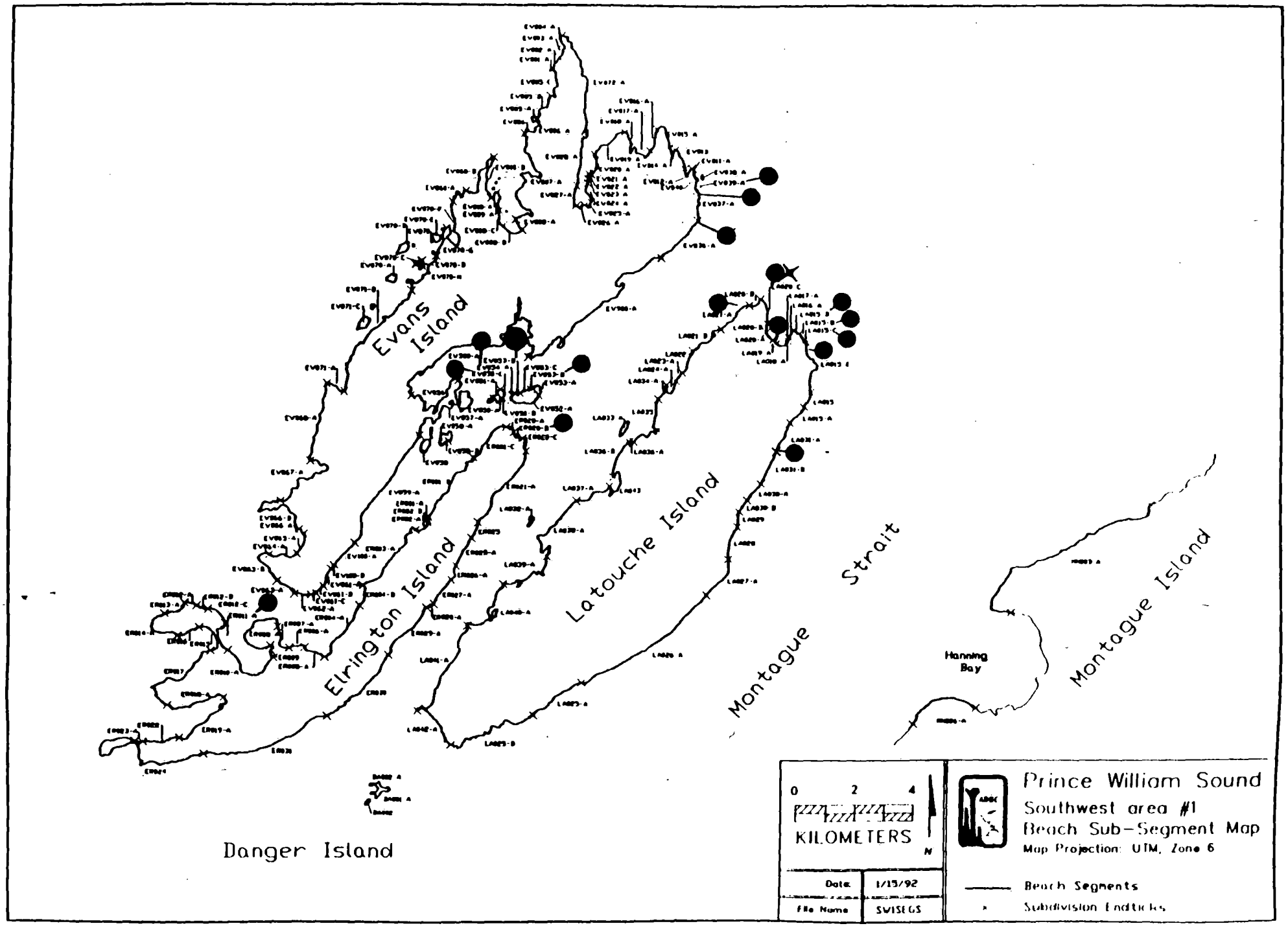
Locations 'A' and 'B' are two very large areas with moderate concentrations of AP and SOR in the mid and upper intertidal zones.

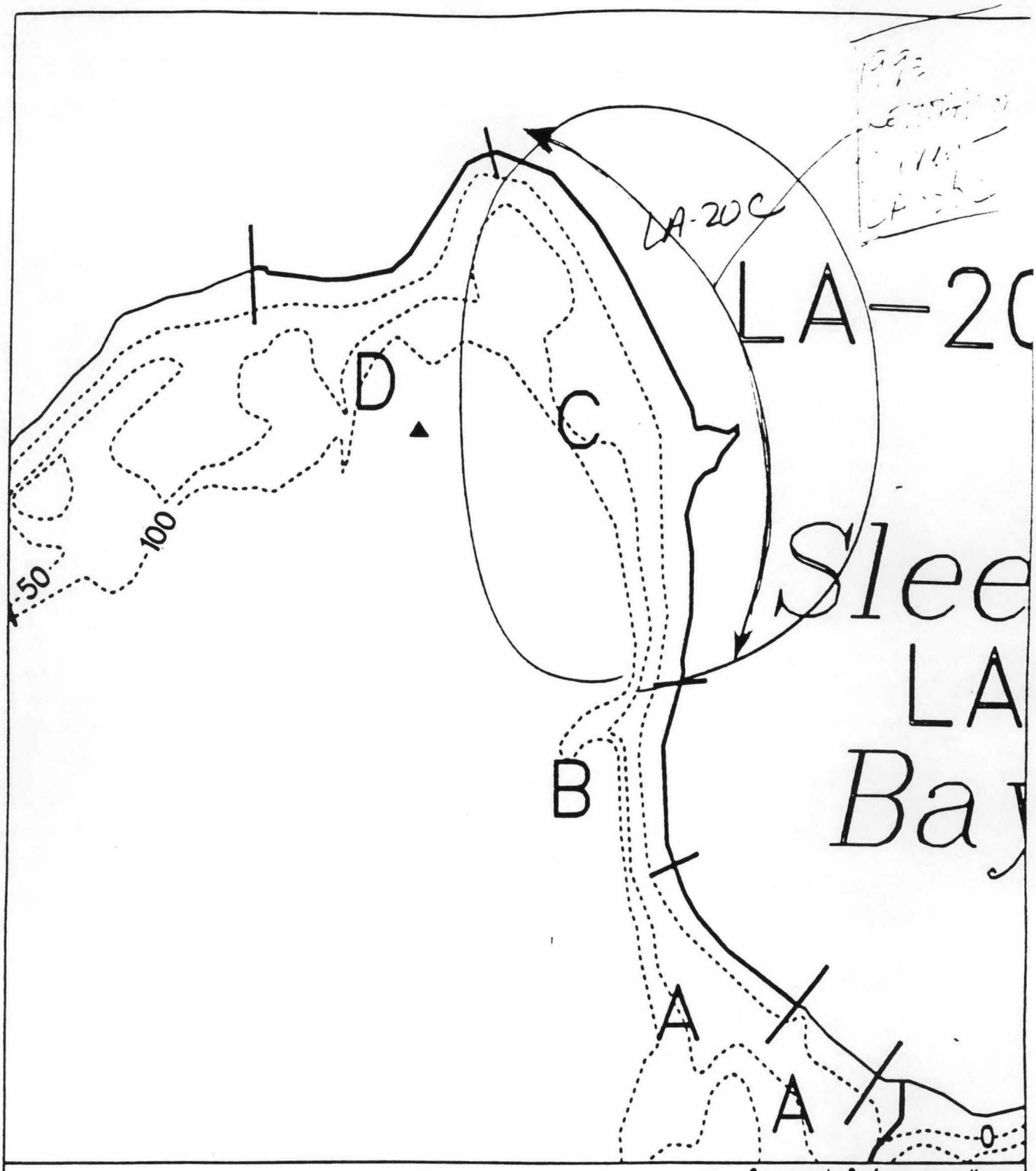
Based strictly on office interpretations of the data collected by the oiling geomorphologists in 1991 and 1993, it appears that significant improvement has occurred at locations 'A' and 'C', and 'D'. These areas had coverage of more than 11% in 1991, but generally less than 11% in 1993. The storm berm also appears to have improved since 1991 all along this beach. The area between location 'C' to the south and location 'D' to the north also appears to have significantly improved since 1991. Much manual removal occurred at these locations in 1991 and 1992.

Three significant areas of LOR to OP oil remains at this site The largest location is ZB, which is coincident with surface location 'B'. Location ZA is amongst the very large boulders of surface location 'A'. Both these locations are in the mid-intertidal zone and ZA extends to the lower intertidal zone while ZB extends to the upper intertidal zone

Location ZC is a continuous lens of HOR and OP in pebble, cobble gravel at the base of the storm berm of surface location 'B'.

The 1991 and 1992 surveys did not provide adequate information for comparisons through time of subsurface oil.


Evans Island
Elrington Island
Latouche Island
Montague Strait
Montague Island
Hanning Bay
Danger Island
0 2 4
KILOMETERS
N
Date 1/15/92
File Name SWSEGS
Prince William Sound
Southwest area #1
Beach Sub-Segment Map
Map Projection: UTM, Zone 6
Beach Segments
Subdivision Endticks


LA-20C
LA-20
Slee
LA
Bay
D
C
B
A
A
50
100
0
LA020
Segment Reference Map
Exxon Coastline
Map Key: PWSLA020
METERS
200
EAGLE NEST
STREAMS
AK State Plane Zone 4
pla020
EXXON

1993 ADEC RESTORATION PROJECT #930380
SHORELINE SURVEY COMMENT SHEET

ON Latouche Is SEGMENT LA 020 SUBDIVISION C DATE 8/3/93

AFFILIATION ADNR - DIV. OF LAND
NAME KATIE FARLEY SIGNATURE Kathleen M. Farley

Ernie Piper (ADEC); Katie Harrich (USFS); and I completed this survey on 8/3/93. I concur with the observations as recorded. Some discussion should be made as to the benefits of leaving the pits uncovered versus covered for aesthetic reasons especially in non-recreation areas.

AFFILIATION
NAME _____ SIGNATURE _____

AFFILIATION
NAME _____ SIGNATURE _____

AFFILIATION
NAME _____ SIGNATURE _____

SHORELINE OILING SUMMARY

PAGE ___ OF ___

SEGMENT A-22

TEAM MEMBERS: ERNIE PIPER
DIANNE MUNSON
MARIANNE PROFITA

SUBDIVISION C

DATE 5/4/93
5/3/93

TIME 22:00 to 2:00 TIDE LEVEL -3.0 ft. to +6.0 ft. ENERGY LEVEL: ■ H ☐ M ☐ L

SURVEYED FROM: ■ FOOT ☐ BOAT ☐ HELO WEATHER: ■ SUN ■ CLOUDS ☐ FOG ☐ RAIN ☐ SNOW

TOTAL LENGTH SHORELINE SURVEYED: _____ m NEAR SHORE SHEEN: ☐ BR ☐ RB ☐ SL ■ NONE

EST. OIL CATEGORY LENGTH: H _____ m M _____ m L _____ m VL _____ m N _____ m NS _____ m

LOC	SURFACE OIL CHARACTER										SURFACE SEDIMENT TYPE	SHORE SLOPE VHML	AREA WIDTH m	AREA LENGTH m	ZONE S	ZONE UI	ZONE MI	ZONE LI	NOTES
	AP	MS	TB	BOR	CV	CT	ST	FL	DB	NO									
A	S			S		T	T				B C	H	15	20		■	■		
B	S			S		T	T				B C	H	20	200		■	■		
C	D					D	D				B C	M	1-3	130		■			
D	P			P							B C	M	1	21		■			

DISTRIBUTION: C = 81-100%; B = 51-80%; P = 11-50%; S = 1-10%; T = <1%

PIT NO.	PIT DEPTH (cm)	SUBSURFACE OIL CHARACTER OP	HOR	MOR	LOR	OF	TR	NO	OILED ZONE cm-cm	CLEAN BELOW Y/N	H2O LEVEL (cm)	SHEEN COLOR B R S N	PIT ZONE S	UI	MI	LI	SURFACE-SUBSURFACE SEDIMENTS	NOTES
1	12		■						1-5	Y					■		B C / C P G	AP on surface to 5 cm
2	22	■							1-10	N					■		B C P / C P G	AP on SURFACE
2	22					■			10-22	N					■		B C P / C P G	" "
3	14	■							1-10	N					■		B C P / C P G	
3	14				■				10-14	N					■		B C P / C P G	
4	22	■							1-17	N				■			B / P G	Interstitial Anoxic
4	22			■					17-22	N				■			B / P G	" "
5	18							■	-						■		B C / P G M	
6	16							■	-		14				■		B C / P G	
7	25		■	■					1-8	Y					■		B C / P G	
7	25			■	■				8-25	N					■		B C / P G	
8	24			■					2-7	Y					■		C P / P G	
9	32			■	■				0-10	N					■		C P / P G	
9	32			■	■				10-14	N					■		C P / P G	
9	32			■	■				14-32	U	30-32				■		C P / P G	
10	24						■		1-24	U					■		B C P / P G	Seems like 0-1
11	24							■	19-24	Y					■		C P G / P G	
12	37							■	0-9	N				■			B C / P G	
12	37	■							9-37	N				■			B C / P G	
13	42		■						10-17	Y					■		B C / P G	This is continuous of lens above
									-									
14	30			■					10-16	Y					■		B C / P G	
15	25			■	■				10-14	Y				■			B C / P G	
16	20			■	■				6-10	Y				■			B C / P G	
17	18			■	■				12-16	Y					■		B C / P G CL	Clay @ 12 cm
18	18				■				6-9	Y					■		B C / P G	Clay @ 4 cm
									6-8	Y					■		B C / P G CL	Clay @ 6 cm

RESTORATION SHORELINE OILING SUMMARY (cont.)

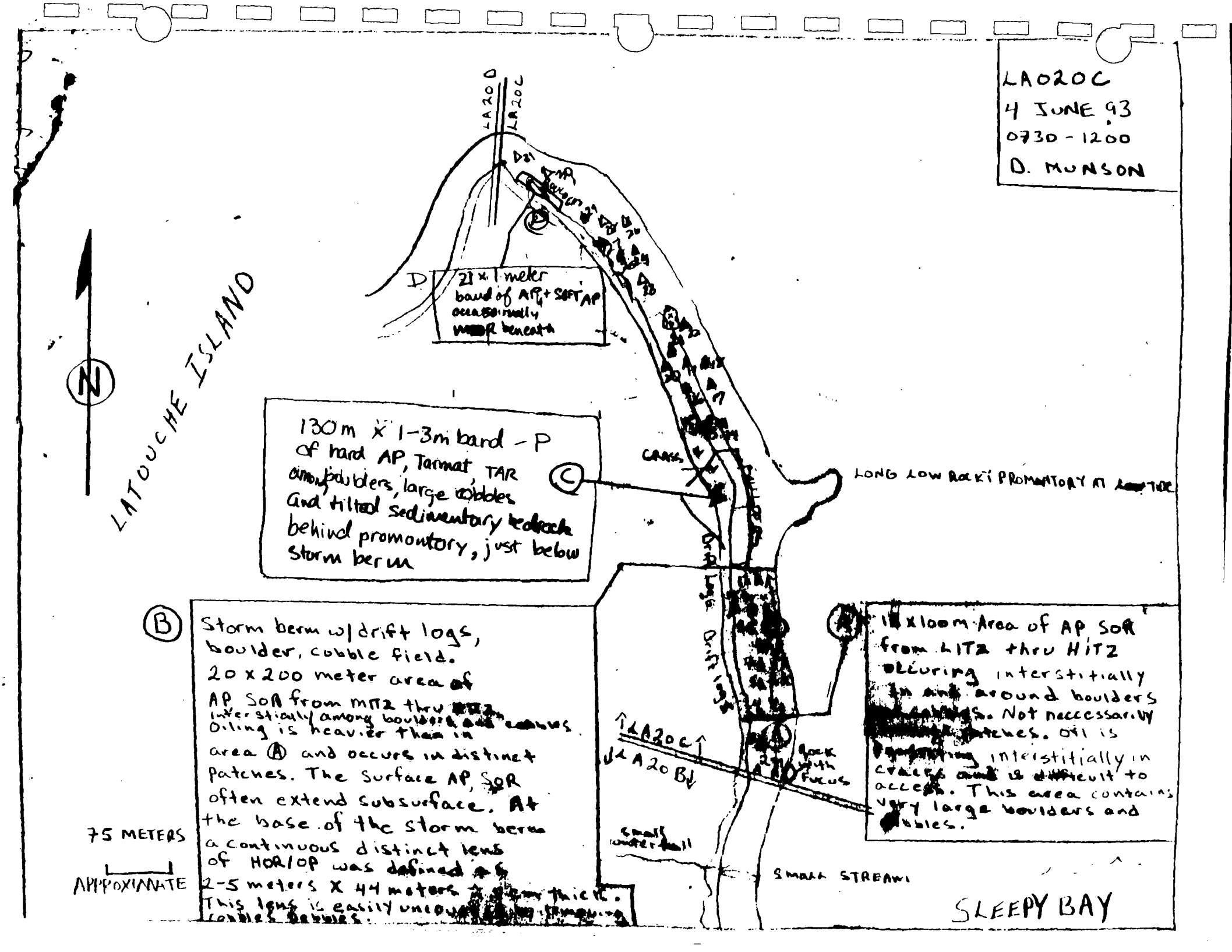
TEAM NO. ____

SEGMENT A020 SUBDIVISION C DATE 6/4/93 5/13/93

PIT NO.	PIT DEPTH (cm)	SUBSURFACE OIL CHARACTER							OILED ZONE cm-cm	CLEAN BELOW Y/N	H2O LEVEL (cm)	SHEEN COLOR	PIT ZONE				SURFACE-SUBSURFACE SEDIMENTS	NOTES
		OP	HOR	MOR	LOR	OF	TR	NO				B R S N	S	UI	MI	LI		
20	30			■					4-10	Y				■			BC/PCobl	clay@4
21	15		■						4-8	Y					■		BC/PG	
22	15			■					5-7	Y					■		"	clay@4
23	24							■	-		4				■		"	
24	19		■						7-15	Y	12	B			■		"	
25	38			■					1-3	Y				■			"	
26	18							■	-						■		"	
27	11				■				1-4	Y				■			"	
28	16							■	-						■		"	
29	22			■					2-6	Y				■			"	
30	21							■	-						■		"	
31	14							■	-					■			"	

SHEEN COLOR: B = BROWN; R = RAINBOW; S = SILVER; N = NONE

OG COMMENTS:


LA020C
4 JUNE 93
0730 - 1200
D. MUNSON
LATOUCHE ISLAND
N
LA20D
LA20C
D
21 x 1 meter band of AP + SOR AP occasionally under beneath
130m x 1-3m band - P of hard AP, Tarmat, TAR and boulders, large cobbles and tilted sedimentary bedrock behind promontory, just below storm berm
C
LONG LOW ROCKY PROMONTORY
B
Storm berm w/drift logs, boulder, cobble field. 20 x 200 meter area of AP SOR from MIT2 thru HIT2 interstitially among boulders and cobbles. Oiling is heavier than in area A and occurs in distinct patches. The surface AP SOR often extend subsurface. At the base of the storm berm a continuous distinct lens of HOR/OP was defined as 2-5 meters x 44 meters x 20cm thick. This lens is easily uncovered from cobbles & boulders.
A
1m x 100m Area of AP SOR from LIT2 thru HIT2 occuring interstitially in and around boulders and cobbles. Not necessarily in distinct patches. Oil is interstitially in crevices and is difficult to access. This area contains very large boulders and cobbles.
Drift log
LA20C
LA20B
Rock with Fucus
small waterfall
SMALL STREAM
SLEEPY BAY
75 METERS
APPROXIMATE

1993 Surface Oil Summary
Segment LA:01 Subdivision 3

Location	Area of Oiling Type in Square Meters AP	MS	SOR	CV	OT
A	90.	0.	90.	0.	7.5
B	240.	0.	240.	0.	21.
C	78.	0.	0.	0.	78.
D	6.3	0.	6.3	0.	1.
TOTALS=	414.3	0.	336.3	0.	105.5

AP= asphalt; MS= mousse; SOR= surface oil residue; CV= cover; OT= coat
Areas are computed by multiplying the affected area by the percent coverage of each oil type. Field categories of percent oil coverage are converted to the median percent value as follows:
continuous= 95%; broken= 70%; patchy= 30%; sporadic= 6%; trace= 0.5%

SUBSURFACE OIL SUMMARY FOR SEGMENT LA020C

Loc.	1993 PIT #	Gr. Sz.	Zn.	En.	Note	TREATMENT 1992	TREATMENT 1991	1991 OILED SED. VOL. (m3) OP	HOR	MOR	LOR	OF/TR	1992 OILED SED. VOL. (m3) OP	HOR	MOR	LOR	OF/TR	1991 OILED SED. VOL. (m3) OP	HOR	MOR	LOR	OF/TR	WT.'ed OIL VOL. 1993	1992	1991	% CHANGE WT.'ed VOL. 92 to 93	91 to 92	91 to 93
ZA	1-3	BCP-CPG	ML	H	V. LARGE BOULDERS	NO	NO	14.5	5.0	0.0	1.0	9.0	?	?	?	?	?	?	?	?	?	?	85.5					
ZB	4-13	BCP PG	UM	H		Rb, Rs	Rs, Rb	35.2	14.0	20.0	60.0	27.0	?	?	?	?	?	?	?	?	?	?	412.0					
ZC		PC PC	U	H	BASE OF STORM BERM	NO	Rs, Rb	1.9	1.9	0.0	0.0	0.0	?	?	?	?	?	?	?	?	?	?	14.7					
ZD	14-29	BC-PGM	SUM	H		Rb, Rs	Rs, Rb	0.0	15.1	31.9	19.5	0.0	?	?	?	?	?	151.2	152.8	21.0	0.0	84.0	795.2					
							TOTALS=	52.6	36.0	51.9	82.5	36.0	0.0	0.0	0.0	0.0	0.0	151.2	152.8	21.0	0.0	84.0	727.2					

Loc.= location name of specific oiling area (subsite).
1993 PIT #= the number designations, as indicated on the 1993 survey forms, of the pits in the subsite.
Gr. Sz.= grain size, a dash separates surface from subsurface sediments, B= boulders, C= cobbles, P= pebbles, G= granules, S= sand, M= mud, Pt= peat.
Zn.= inter tidal zone, S= supra tidal, H= high inter tidal, M= mid inter tidal, L= low inter tidal.
En.= wave-energy level, H= high, M= moderate, L= low, VL= very low.
TREATMENT= cleanup treatment occurring at the subsite for the given year, ET= equipment tilling (heavy equipment), MT= manual tilling, BR= berm relocation, SR= sediment relocation, Rb= oiled-sediment removal from subsurface, Rs= oiled-sediment removal from the surface, MB= manual breakup, MR= manual raking, ?= unknown NO no treatment.
OILED SED. VOL.= oiled-sediment volume in cubic meters by year and oil type, OP= oil pore, pore spaces are completely filled with oil resulting in oil oozing out of sediments - water cannot penetrate OP zone, HOR= heavy oil residue, pore spaces partially filled with oil residue but not generally flowing out of sediments, MOR= medium oil residue, heavily coated sediments; pore spaces are not filled with oil - pore spaces may be filled with water, LOR= light oil residue, sediments lightly coated with oil, OF= oil film, continuous layer of sheen or film on sediments - water may bead on sediments, TR= trace, discontinuous film, spots of oil on sediments; an odor or tackiness with no visible evidence of oil, ?= area of subsite not visited or adequately surveyed.
WT.'ed OIL VOL.= weighted oiled-sediment volume = (OP VOL.)*5 + (HOR VOL.)*4 + (MOR VOL.)*3 + (LOR VOL.)*2
% CHANGE WT.'ed VOL.= % change in weighted oiled-sediment volume between the given years = ((year 2 - year1)/(year 1))*100 positive values indicate increases in the amount of oil, negative values indicate decreases, "Inf" (infinite percent increase) indicates newly discovered oil.

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 06/04/93 TIME: 0800

SEGMENT#: LA020 STATION#: -0-
LOCATION: LATOUCHE ISLAND
KEYWORDS: -0-
REASON FOR TAKING PHOTO: Field section B - AP/SOR underlying MS/OP in UITZ.

TAKEN BY: Marianne Profita INITIALS:_____
ROLL #: 93MSP001 FRAME #: 2 EVIDENCE ID#:_____

Taken by: M. Profita

Roll #: 93msp001 Frame #: 2

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 06/04/93 TIME: 0800

SEGMENT#: LA020 STATION#: -0-
LOCATION: LATOUCHE ISLAND
KEYWORDS: -0-
REASON FOR TAKING PHOTO: Field section B - AP/SOR underlying MS/OP in UITZ.

TAKEN BY: Marianne Profita INITIALS:_____
ROLL #: 93MSP001 FRAME #: 1 EVIDENCE ID#:_____

Taken by: M Profita

Roll #: 93msp001 Frame #: 1

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 06/04/93 TIME: 0800

SEGMENT#: LA020 STATION#: -0-
LOCATION: LATOUCHE ISLAND
KEYWORDS: -0-
REASON FOR TAKING PHOTO: Run-off water HOR/MOR in cobble/pebble.

TAKEN BY: Marianne Profita INITIALS:_____
ROLL #: 93MSP001 FRAME #: 4 EVIDENCE ID#:_____

Taken by: M. Profita

Roll #: 93msp001 Frame #: 4

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 06/04/93 TIME: 0800

SEGMENT#: LA020 STATION#: -0-
LOCATION: LATOUCHE ISLAND
KEYWORDS: -0-
REASON FOR TAKING PHOTO: Field section B - Boulder wave shadow AP/SOR.

TAKEN BY: Marianne Profita INITIALS:_____
ROLL #: 93MSP001 FRAME #: 3 EVIDENCE ID#:_____

Taken by: M Profita

Roll #: 93msp001 Frame #: 3


25 cm
20 cm

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 06/04/93 TIME: 0800

SEGMENT: LA020 STATION: -0-
LOCATION: LATOUCHE ISLAND
KEYWORD: -0-
REASON FOR TAKING PHOTO:HOR/MOR lense extending north along berm in HIRZ.

TAKEN BY: Marianne Profita INITIALS:_____
ROLL #:93MSP001 FRAME #: 6 EVIDENCE ID#:_____

Taken by: M Profita

Roll #: 93msp001 Frame #: 6

OFFICIAL PHOTOGRAPH ADEC

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 06/04/93 TIME: 0800

SEGMENT#: LA020 STATION#: -0-
LOCATION: LATOUCHE ISLAND
KEYWORDS: -0-
REASON FOR TAKING PHOTO:Supra-tidal -- from grass down 5m below into boulder/cobble/pebble.

TAKEN BY: Marianne Profita INITIALS:_____
ROLL #: 93MSP001 FRAME #: 5 EVIDENCE ID#:_____

Roll #: 93msp001 Frame #: 5

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 06/04/93 TIME: 0800

SEGMENT: LA020 STATION: -0-
LOCATION: LATOUCHE ISLAND
KEYWORD: -0-
REASON FOR TAKING PHOTO:HOR/MOR lense extending from SUTZ down 5 meters in boulder, cobble, pebble.

TAKEN BY: Marianne Profita INITIALS:_____
ROLL #:93MSP001 FRAME #: 8 EVIDENCE ID#:_____

Taken by: M Profita

Roll #: 93msp001 Frame #: 8

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 06/04/93 TIME: 0800

SEGMENT: LA020 STATION: -0-
LOCATION: LATOUCHE ISLAND
KEYWORD: -0-
REASON FOR TAKING PHOTO:Continuation of subsurface lense from grass down into B/C/P.

TAKEN BY: Marianne Profita INITIALS:_____
ROLL #:93MSP001 FRAME #: 7 EVIDENCE ID#:_____

Taken by: M Profita

Roll #: 93msp001 Frame #: 7

DNR/DOL/Katie Farley/Rest. Survey
Date: 8 3 93
Site: LA 20C site photo looking East to Montague Is?
Roll# 8 Frame# 3

DNR/DOL/Katie Farley/Rest. Survey
Date: 8 3-93
Site: LA-20C - site photo looking south
Roll# 8 Frame# 2

OFFICIAL PHOTOGRAPH **ADEC**

Date: 8-3-93 Time: 1930

Location (segment #): LA-20C

Reason for taking photo: Deep pit with lens of oil Residue

Taken by: Katie Farley - DNR/Div. of Land

Roll #: 8 Frame #: 5

Restoration

OFFICIAL PHOTOGRAPH **ADEC**

Date: 8-3-93 Time: 1930

Location (segment #): LA-20C

Reason for taking photo: Site Photo looking North

Taken by: Katie Farley/DNR/Div. of Land

Roll #: 8 Frame #: 4

LA 021 A

SEGMENT: LA 021 A

LOCATION: Chenega Island Area Group, northwestern shore of Latouche Island

OTHER STUDIES

PHYSICAL SETTING

Coastal Morphology and Sedimentology

This is a 200 m long gently sloping boulder cobble beach overlying a shallow bedrock platform. A few prominent outcrops occur. Sediments are subangular to subrounded boulders and large cobbles on the surface with pebbles in the interstices and a granular matrix in the subsurface. A gravel and drift log storm berm is present.

Environmental Sensitivity Index (ESI)

Type 2; exposed wave-cut rock platform.
Type 7; gravel beach.

Fetches and Directions (kilometers)

N= 16; NW= 23; W= 4

Energy Level

Moderate.

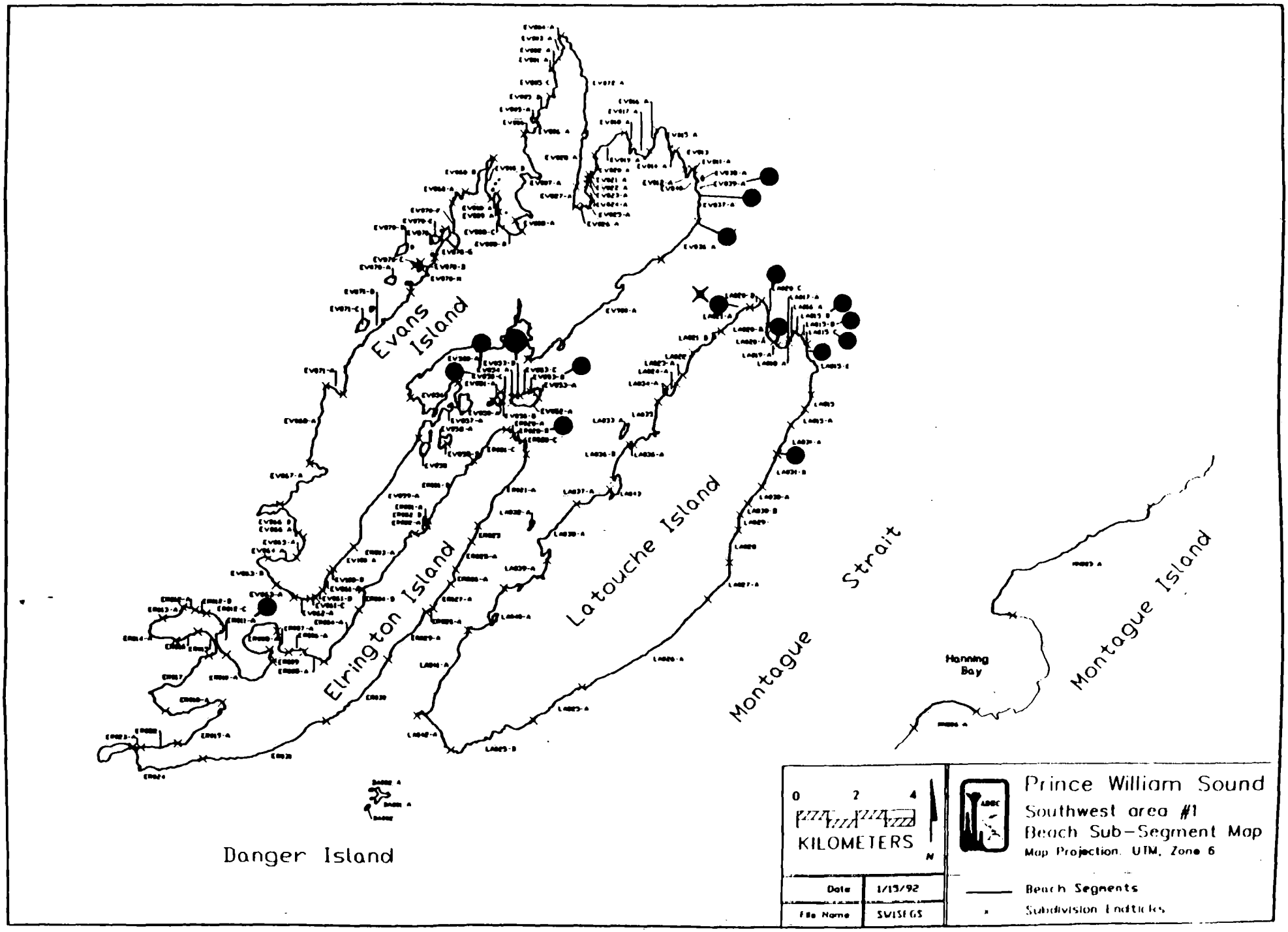
GENERAL BIOLOGICAL SETTING

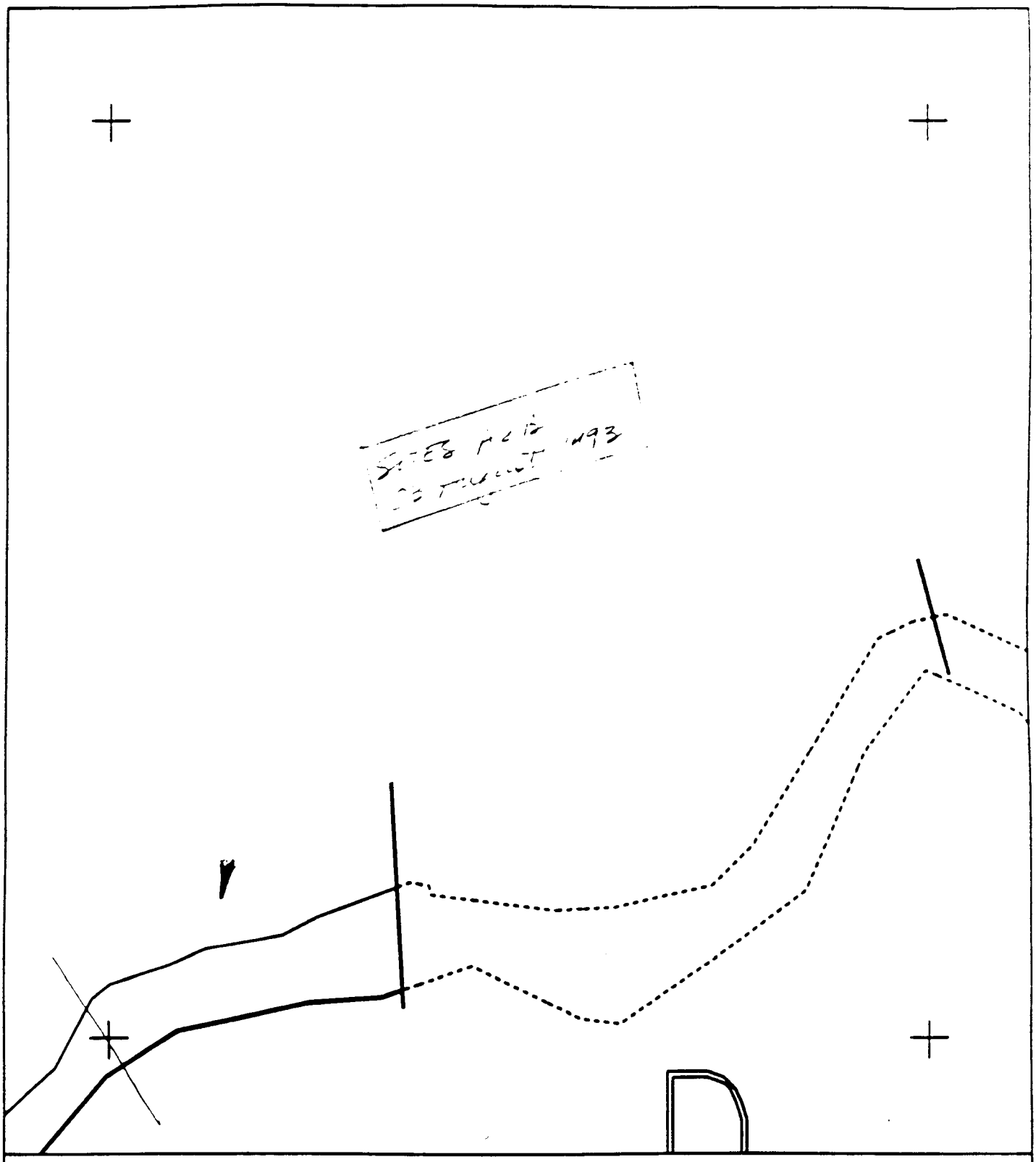
Eagle nest.
Deer harvesting.

OILING SUMMARY

Location 'B' is a large area 5 by 200 m long extending along the entire site and occurring in the mid to upper intertidal zones. AP and SOR occur at a coverage of about 10%. Location 'A' is a smaller area (50 by 10 m) on the southwest end of the site with only about a 1% coverage of AP and SOR. No measurable improvement has occurred at these sites, but it is emphasized that the survey methods can only detect rather large changes and reductions have probably occurred. Manual removal occurred in site 'B' in 1991 and manual breakup in 1992.

Twenty pits defined a subsurface oil area that is coincident with surface location 'B' and contains minor amounts of LOR to HOR oil. The subsurface oil is discontinuous and often resides on bedrock. It is estimated that only about 5% of the area covered by pits 1-20 (subsurface location ZA) contains subsurface oil. This site has improved since 1991 when OP oil was present. In 1991, workers manually removed oiled subsurface sediment.


Evans Island
Elrington Island
Latouche Island
Montague Strait
Montague Island
Hanning Bay
Danger Island
0 2 4
KILOMETERS
N
Date 1/15/92
File Name SWSEGS
Prince William Sound
Southwest area #1
Beach Sub-Segment Map
Map Projection: UTM, Zone 6
Beach Segments
Subdivision Endticks



XXXX Wide
//// Medium
---- Narrow
TTTT Very Light
0000 No Oil

LA021 A

ADEC Subsegment Length: 1350m

METERS

0 100 200

AK State Plane Zone 4
pla021ad

EXXON

Subdivision Field Map
Map Key: PWSLA021Ad
Name: CSC
Date: 03 August 1992
Date Entered:

1993 ADEC RESTORATION PROJECT #930380
SHORELINE SURVEY COMMENT SHEET

TION _____ SEGMENT _____ SUBDIVISION _____ DATE 8 / 2 / 93

AFFILIATION
NAME Katie Hanson USDA Forest Service SIGNATURE Katie Hanson

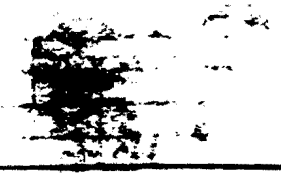
Maintenance crew called to survey LA 21 + LA 20 Half of crew went to LA 20 and the remaining half surveyed LA 21 I was not aware of the survey efforts on LA 21 therefore I have no comments. (K)

AFFILIATION
NAME USCG - BOB TRAVIS SIGNATURE Robert S. Travis

OIL IN MID TO UPPER ITZ; LARGE AREAS OF BEDROCK ON OR NEAR SURFACE. AP w/ HOR/MOR FROM SURFACE OF SEDIMENTS UNDER COBBLE DOWN TO THE BEDROCK. COAT ON SOME BOULDERS. MOR IN CREVICES OF SHALE ENDS. OIL IN UITZ (PEA GRAVEL) IS INTERMITTENT. SOME PITS SHOW M/L/HOR 4"-6" DOWN. GENERALLY CONCUR W/CONDITIONS INDICATED ON MAP(S).

AFFILIATION
NAME KATIE FARLEY DNR DIV OF LAND SIGNATURE Kathleen M. Farley

I also attended the survey of LA-20C and was unable to observe the survey on LA-21A.



AFFILIATION
NAME _____ SIGNATURE _____

1993 ADEC RESTORATION PROJECT # 930380
SHORELINE OILING SUMMARY

SEGMENT ___

SUBDIVISION A

DATE 5 / 3 / 93

A MEMBERS: [illegible] R. KUNIBE - XPEC - GELENCOFF CUC [illegible] TRAVIS, ISCG - [illegible] - E.E. EXXON -

TIME 8 : 45 to [illegible] : 5

TIDE LEVEL 4 ft. to 1 ft.

ENERGY LEVEL: ☐ H ☐ M ■ L

SURVEYED FROM: ■ FOOT ☐ BOAT ☐ HELO

WEATHER: ☐ SUN ■ CLOUDS ☐ FOG ☐ RAIN ☐ SNOW

TOTAL LENGTH SHORELINE SURVEYED: 250 m

NEAR SHORE SHEEN: ☐ BR ☐ RB ☐ SL ■ NONE

ST. OIL CATEGORY LENGTH: H____m M____m L____m VL____m N____m NS____m

LOC	SURFACE OIL CHARACTER										SURFACE SEDIMENT	SHORE SLOPE	AREA		ZONE				NOTES
	AP	MS	TB	SOR	CV	CT	ST	FL	DB	NO	TYPE	V H M L	WIDTH m	LENGTH m	S	UI	MI	LI	
A	S			S		T	T				BRCP	M	10	50		■	■		Southend of Segment
B	S			S		T	T				BRCP	M	5	200		■	■		

DISTRIBUTION: C = 81–100%; B = 51–80%; P = 11–50%; S = 1–10%; T = <1%

SLOPE: V = VERTICAL; H = HIGH ANGLE; M = MEDIUM ANGLE; L = LOW ANGLE PHOTO ROLL # ____-____ FRAMES ____

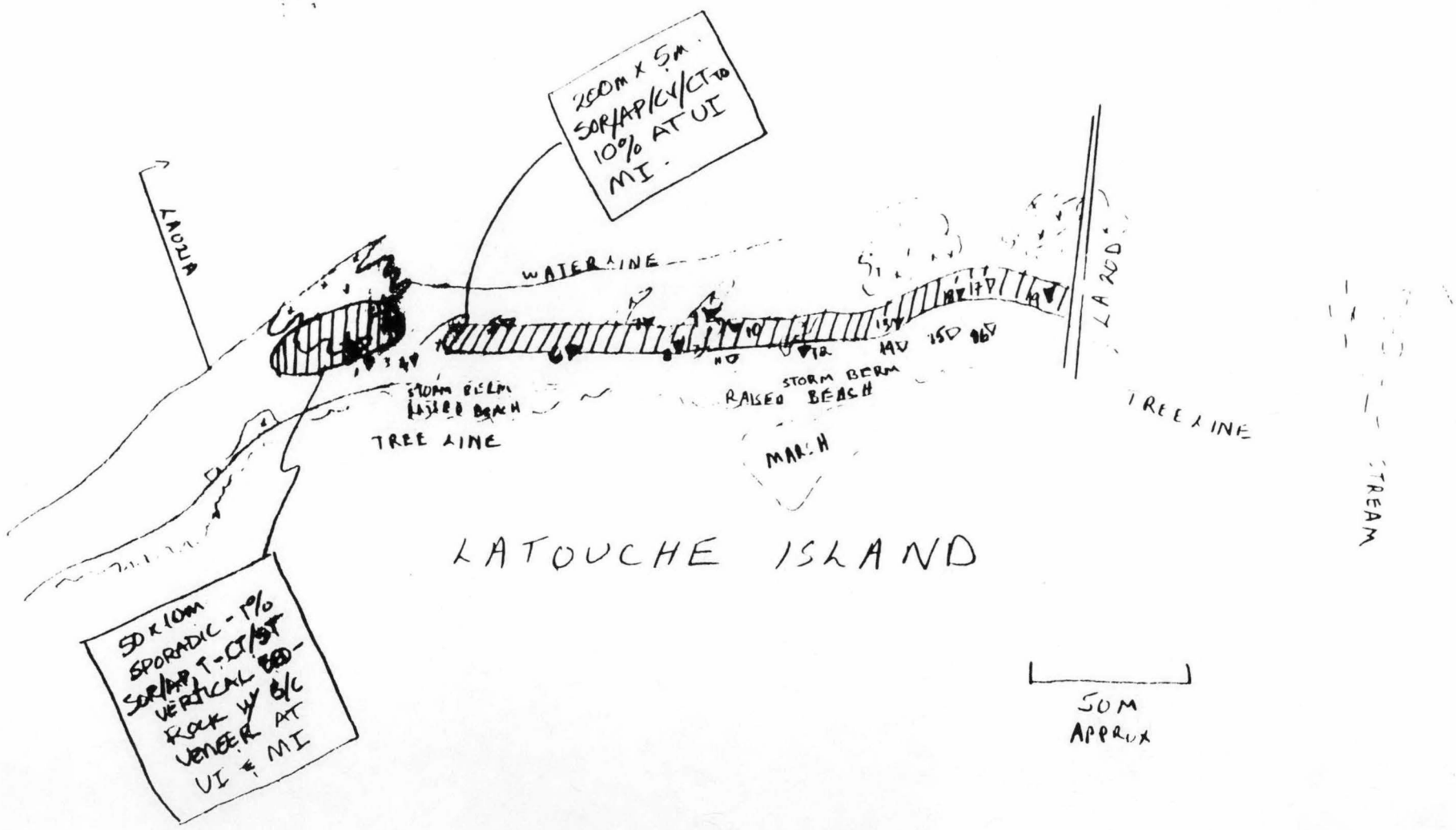
PIT NO.	PIT DEPTH (cm)	SUBSURFACE OIL CHARACTER							OILED ZONE cm–cm	CLEAN BELOW Y/N	H2O LEVEL (cm)	SHEEN COLOR B R S N	PIT ZONE				SURFACE-SUBSURFACE SEDIMENTS	NOTES
		OP	HOR	MOR	LOR	OF	TR	NO					S	UI	MI	LI		
1	45			■					20 - 44	Y				■			RBCP/GPC	
2	24							■	-					■			RBCP/GPCR	
3	15			■					1 - 6	X	10	B			■		BCP/GPCR	Sand AP
4	4		■						1 - 14					■			BCP/GPC	
5	21							■	-						■		BCP/GPCR	
6	16		■						8 - 16	N				■			BCP/GPC	
7	9						■		0 - 0		8	S			■		BCP/R	Concentrated Surface 2 inch
8	10				■				2 - 10					■			BCP/R	to Bedrock
9	11		■		■				2 - 11						■		BCP/R	to Bedrock/Pit Wall
10	16		■		■				6 - 16						■		BCP/GPC	
	24				■			■	-					■			PC/PCG	At base of stain zone
12	30		■		■				22 - 29	Y				■			BPC/PG	
13	16		■						0 - 16	N					■		BCPG/GPR	AP on surface
14	21							■	-					■			BCPG/GPC	
15	24			■					15 - 24	N				■			BCPG/GP	
16	22							■	- -					■			BCPG/PCG	
17	18							■	-		17				■		BCPG/PC	
	15						■		4 - 0	V	10	S			■		BCPG	
	12		■						5 - 0		8	S		■			BCPG/GP	not cont. w/ pit
	12					■			10 - 0					■			BCPG/	mud pit
									-									
									-									
									-									

SHEEN COLOR: B = BROWN; R = RAINBOW; S = SILVER; N = NONE

LA021A
LATOUCHE IS.
8-3-93
1845 - 20:15

CROSBY - MUNSON

Subdivision composed primarily of shallow Bedrock w/ P/C surface sed. Oiling within subdivision occurs throughout as sporadic AP/SOR/ST/CT in the Upper & Middle Intertidal



1993 Surface Oil Summary
Segment LA021 Subdivision A

Location	Area of Oiling Type in Square Meters AP	MS	SOR	CV	OT
A	30.	0.	30.	0.	0.5
B	60.	0.	60.	0.	5.
TOTALS=	90.	0.	90.	0.	7.5

AP= asphalt; MS= mousse; SOR= surface oil residue; CV= cover; OT= coat
Areas are computed by multiplying the affected area by the percent coverage of each oil type. Field categories of percent oil coverage are converted to the median percent value as follows:
continuous= 95%; broken= 70%; patchy= 30%; sporadic= 6%; trace= 0.5%

SUBSURFACE OIL SUMMARY FOR SEGMENT LA021A

Loc.	1993 PIT #	Gr. Sz.	Zn.	En.	Note	TREATMENT 1992	TREATMENT 1993	1992 OILED SED. VOL. (m3) OP	HOR	MOR	LOR	OF/TR	1993 OILED SED. VOL. (m3) OP	HOR	MOR	LOR	OF/TR	1994 OILED SED. VOL. (m3) OP	HOR	MOR	LOR	OF/TR	WT.'ed OIL VOL. 1993	1994	1995	% CHANGE WT.'ed OIL VOL. 93-94	94-95	93-95
ZA	1 20	BCR GPCR	UIM	M		MR	Rs, Rb	0.0	2.3	1.1	0.9	1.0	0.8	2.7	1.1	0.0	0.0	5.1	3.4	2.4	2.3	0.0	14.2	18.1	50.4	27.7	177.9	255.7
							TOTALS=	0.0	2.3	1.1	0.9	1.0	0.8	2.7	1.1	0.0	0.0	5.1	3.4	2.4	2.3	0.0	14.2	18.1	50.4	27.7	177.9	255.7

Loc.= location name of specific oiling area (subsite).
1993 PIT #= the number designations, as indicated on the 1993 survey forms, of the pits in the subsite.
Gr. Sz.= grain size, a dash separates surface from subsurface sediments, B= boulders, C= cobbles, P= pebbles, G= granules, S= sand, M= mud, Pt= peat
Zn.= inter tidal zone, S= supra tidal, H= high inter tidal, M= mid inter tidal, L= low inter tidal.
En.= wave-energy level, H= high, M= moderate, L= low, VL= very low.
TREATMENT= cleanup treatment occurring at the subsite for the given year, ET= equipment tilling (heavy equipment), MT= manual tilling, BR= berm relocation, SR= sediment relocation, Rb= oiled-sediment removal from subsurface, Rs= oiled-sediment removal from the surface, MB= manual breakup, MR= manual raking, ?= unknown, NO no treatment.
OILED SED. VOL.= oiled-sediment volume in cubic meters by year and oil type, OP= oil pore, pore spaces are completely filled with oil resulting in oil oozing out of sediments - water cannot penetrate OP zone, HOR= heavy oil residue, pore spaces partially filled with oil residue but not generally flowing out of sediments, MOR= medium oil residue, heavily coated sediments; pore spaces are not filled with oil - pore spaces may be filled with water, LOR= light oil residue, sediments lightly coated with oil, OF= oil film, continuous layer of sheen or film on sediments - water may bead on sediments, TR= trace, discontinuous film, spots of oil on sediments, an odor or tackiness with no visible evidence of oil, ?= area of subsite not visited or adequately surveyed.
WT.'ed OIL VOL.= weighted oiled-sediment volume = (OP VOL.)*5 + (HOR VOL.)*4 + (MOR VOL.)*3 + (LOR VOL.)*2
% CHANGE WT.'ed VOL.= % change in weighted oiled-sediment volume between the given years = ((year 2 - year1)/(year 1))*100, positive values indicate increases in the amount of oil, negative values indicate decreases, "Inf" (infinite percent increase) indicates newly discovered oil

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/03/93 TIME: 18:45

SEGMENT#: LA021 STATION#: -0-
LOCATION: NW SHORE OF LATOUCHE ISLAND
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO:OVERVIEW PHO9TO LOOKING TO THE SOUTH. D. MUNSON HAS THE ORANG BACKPACK AND IS OVER PIT #3.

TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK004 FRAME #: 30 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/03/93 TIME: 18:45

SEGMENT#: LA021 STATION#: -0-
LOCATION: NW SHORE OF LATOUCHE ISLAND
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO:CLOSE UP OF PIT #3 MOR FROM 1CM TO 6 CM BELOW THE SURFACE.

TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK004 FRAME #: 31 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/03/93 TIME: 18:45

SEGMENT#: LA021 STATION#: -0-
LOCATION: NW SHORE OF LATOUCHE ISLAND
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO:OVERVIEW PHOTO LOOKING TO THE NORTH FROM THE SOUTH END OF SEGMENT LA021 A. THE SHOVEL IS AT PIT #1 AND C.CROSBY AND D.MUNSON ARE AT PIT #3

TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK004 FRAME #: 28 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/03/93 TIME: 18:45

SEGMENT#: LA021 STATION#: -0-
LOCATION: NW SHORE OF LATOUCHE ISLAND
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO:CLOSE UP PHOTO OF PIT #1 MOR 20 TO 44 CM BELOW THE SURFACE.

TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK004 FRAME #: 29 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/03/93 TIME: 18:55

SEGMENT#: LA021 STATION#: -0-
LOCATION: NW SHORE OF LATOUCHE ISLAND
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO:CLOSE UP PHOTO OF SEDIMENTS FROM A PIT DUG BY BM1 BOB TRAVIS. THE WATER FROM THE SEDIMENTS IS CREATING A RAINBOW SHEEN ON THE BOULDER.

TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK004 FRAME #: 34 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/03/93 TIME: 19:15

SEGMENT#: LA021 STATION#: -0-
LOCATION: NW SHORE OF LATOUCHE ISLAND
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO:CLOSE UP PHOTO OF PIT #10 HOR FROM 6 TO 16 CM BELOW THE SURFACE.

TAKEN BY: RUSSELL KUNIBE
ROLL #: 93RTK004 FRAME #: 35 INITIALS: RTK EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/03/93 TIME: 18:55

SEGMENT#: LA021 STATION#: -0-
LOCATION: NW SHORE OF LATOUCHE ISLAND
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO:OVERVIEW PHOTO LOOKING TO THE SOUTH. THE SEDIMENTS ON THE BOULDER IN LOWER RT CORNER ARE IN A CLOSE UP IN PHOTO #34.

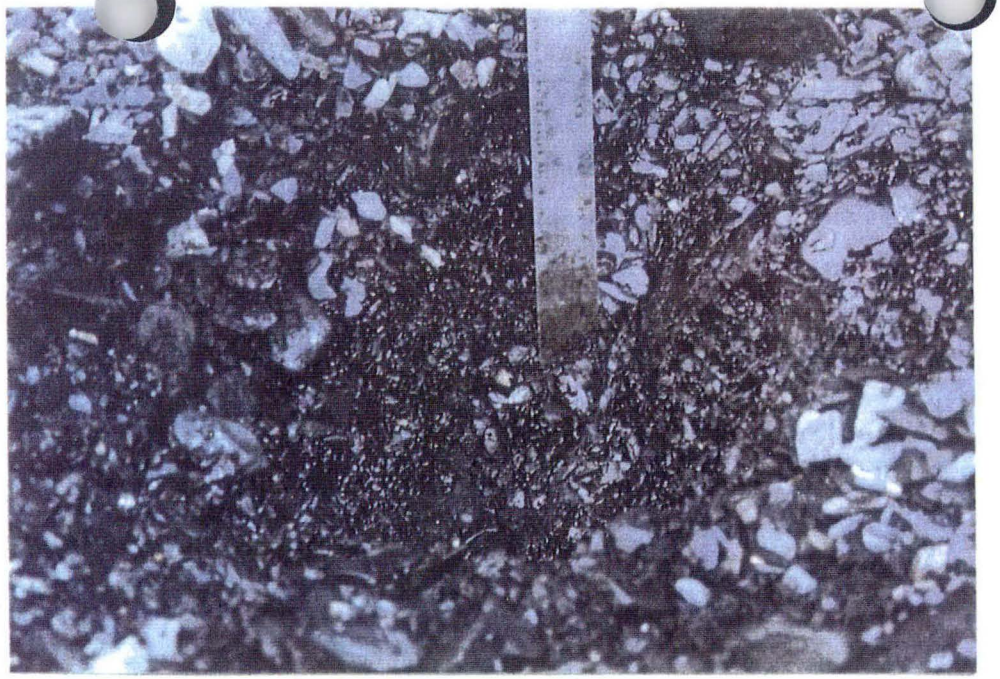
TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK004 FRAME #: 32 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/03/93 TIME: 18:55

SEGMENT#: LA021 STATION#: -0-
LOCATION: NW SHORE OF LATOUCHE ISLAND
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO:OVERVIEW PHOTO LOOKING TO THE NORTH FROM THE SAME SPOT THAT PHOTO # 32 WAS TAKEN. NOTICE THE LOW TO MID INTERTIDAL SHELF.

TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK004 FRAME #: 33 EVIDENCE ID#:



OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/03/93 TIME: 19:15

SEGMENT#: LA021 STATION#: -0-
LOCATION: NW SHORE OF LATOUCHE ISLAND
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO:CLOSE UP PHOTO OF PIT #12 HOR FROM 22 TO 29 CM BELOW THE SURFACE.

TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK004 FRAME #: 36 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/03/93 TIME: 19:15

SEGMENT#: LA021 STATION#: -0-
LOCATION: NW SHORE OF LATOUCHE ISLAND
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO:OVERVIEW OF THE LOCATION OF PIT #12 IN THE MITZ. B.TRAVIS,USCG; D.MUNSON & C. CROSBY, ADEC.

TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK004 FRAME #: 37 EVIDENCE ID#:

LA 031 A

SEGMENT: LA 031 A

LOCATION: Chenega Area Group, northeastern shore of Latouche Island

OTHER STUDIES

PHYSICAL SETTING

Coastal Morphology and Sedimentology

Very large boulders as a veneer on an irregular wave-cut platform with a small storm berm. Stream enters just to the north and supplies pebble and cobble sediments.

Environmental Sensitivity Index (ESI)

Type 2; exposed wave-cut rock platform.

Fetches and Directions (kilometers)

NE= 46; E= 11; SE= 11; S= 17

Energy Level

High.

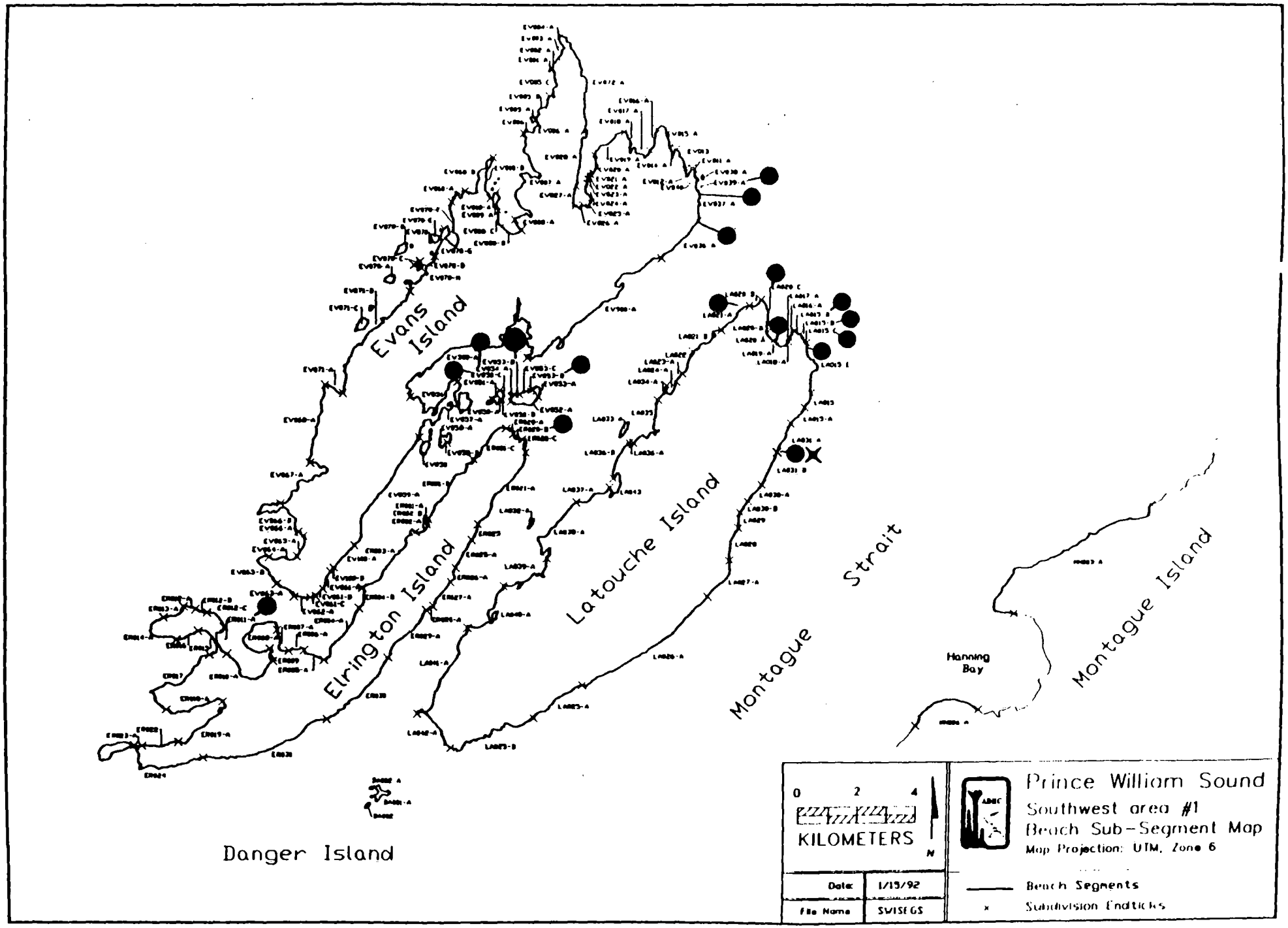
GENERAL BIOLOGICAL SETTING

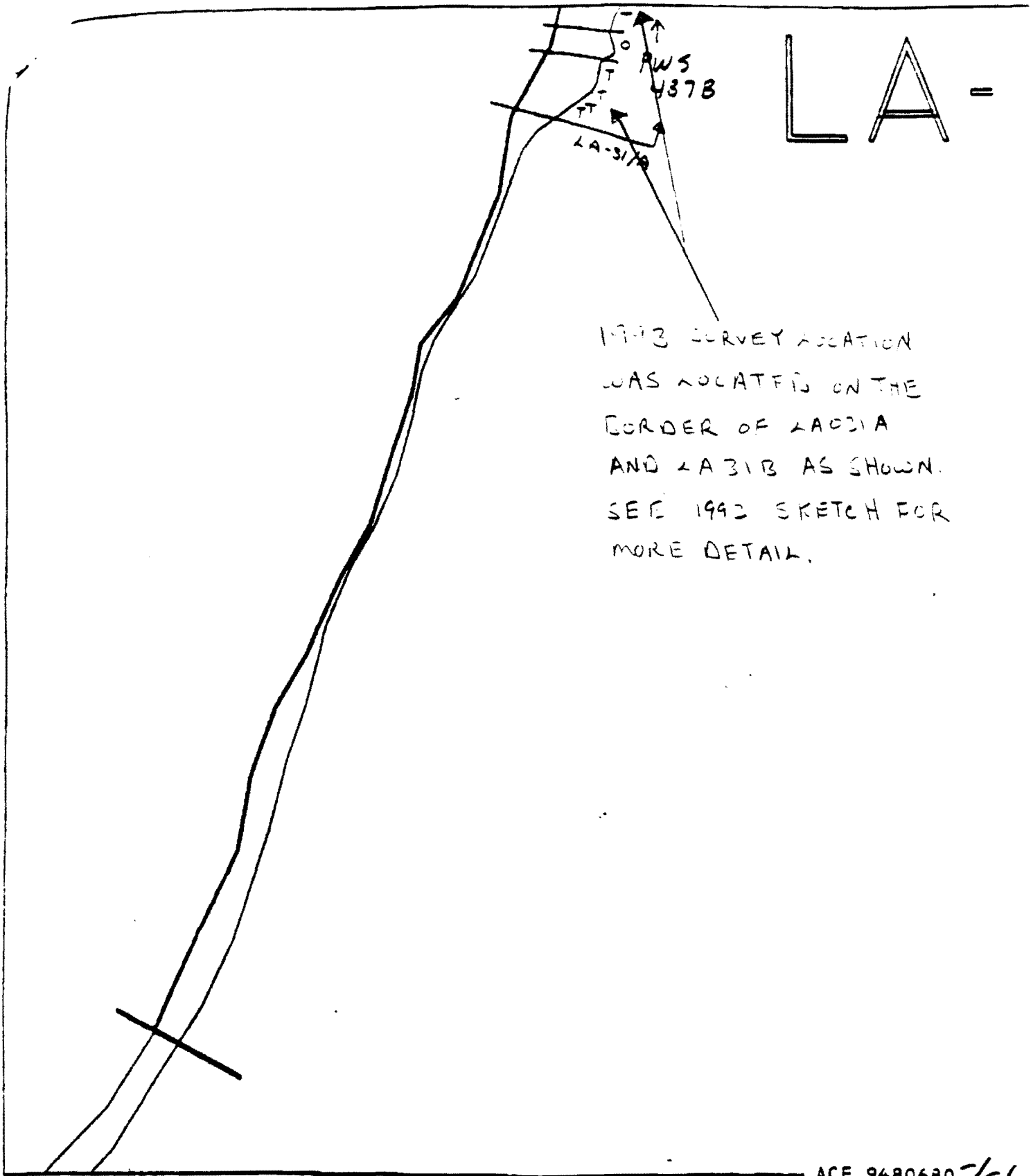
Anadromous stream.
Eagle nest.
Deer harvesting.
Finfish harvesting.

OILING SUMMARY

Surveyors in 1993 recorded two small upper intertidal locations of four square meters each on the southern most portion of LA 031 A. The SOR, MS, CV, and CT occur among very large boulders on a wave-cut platform. Percent coverage within these areas is on the order of 5%. There appears to have been little change since 1992, and the area was apparently not surveyed in 1991. In 1992 the southern most location, location 'A' was recorded as 10 square meters with the same coverage, therefore, this may indicate a slight improvement. Accessible MS was removed at these locations in 1992. It should be noted that in 1992, surveyors reported numerous "non-EVOS" tar balls in the lower intertidal zone at this site.

Surveyors recorded no subsurface oil in 1993, and in 1992, only a small amount was recorded in the area coincident with surface location 'B' (subsurface location ZA). Thus a small improvement may have occurred.


Evans Island
Elrington Island
Latouche Island
Montague Strait
Montague Island
Hanning Bay
Danger Island
0 2 4
KILOMETERS
N
Date 1/15/92
File Name SWISEGS
Prince William Sound
Southwest area #1
Beach Sub-Segment Map
Map Projection: UTM, Zone 6
Beach Segments
Subdivision Endticks



LA-

ACE 9480680 7/5/91

XXXX Wide
//// Medium
---- Narrow
TTTT Very Light
0000 No Oil

LA-31/A

ADEC Segment Length: 2291m

0 100 200 300
METERS

Map Key: PWS-437a
Name: Reimer
Date: 4/8/90
Date Entered:

1993 ADEC RESTORATION PROJECT # 930380
SHORELINE OILING SUMMARY

SEGMENT -A 031

SUBDIVISION A

DATE 9 / 7 / 93

TEAM MEMBERS: ADEC - ERNIE PIPER
DIANNE MUNSON

TIME 09 : 20 to 09 : 40 TIDE LEVEL -1.0 ft. to .5 ft. ENERGY LEVEL: ■ H ☐ M ☐ L

SURVEYED FROM: ■ FOOT ☐ BOAT ☐ HELO WEATHER: ■ SUN ■ CLOUDS ☐ FOG ☐ RAIN ☐ SNOW

TOTAL LENGTH SHORELINE SURVEYED: _____ m NEAR SHORE SHEEN: ☐ BR ☐ RB ☐ SL ■ NONE

LAST OIL CATEGORY LENGTH: H____ m M____ m L____ m VL____ m N____ m NS____ m

	SURFACE OIL CHARACTER										SURFACE SEDIMENT TYPE	SHORE SLOPE	AREA		ZONE				NOTES
	AP	MS	TB	SOR	CV	CT	ST	FL	DB	NO		V H M L	WIDTH m	LENGTH m	S	UI	MI	LI	
A				S	S	P					R B	H	2	2		■			VERY LARGE BLDS
		S			S	S					R, B	H	2	2		■			VERY LARGE BLDS

DISTRIBUTION: C = 91-100%; B = 51-90%; P = 11-50%; S = 1-10%; T = <1%

SLOPE: V = VERTICAL; H = HIGH ANGLE; M = MEDIUM ANGLE; L = LOW ANGLE PHOTO ROLL # _____ - _____ FRAMES _____

PIT NO.	PIT DEPTH (cm)	SUBSURFACE OIL CHARACTER							OILED ZONE cm-cm	CLEAN BELOW Y/N	H2O LEVEL (cm)	SHEEN COLOR B R S N	PIT ZONE				SURFACE-SUBSURFACE SEDIMENTS	NOTES
		OP	HOR	MOR	LOR	OF	TR	NO					S	UI	MI	LI		
									-									
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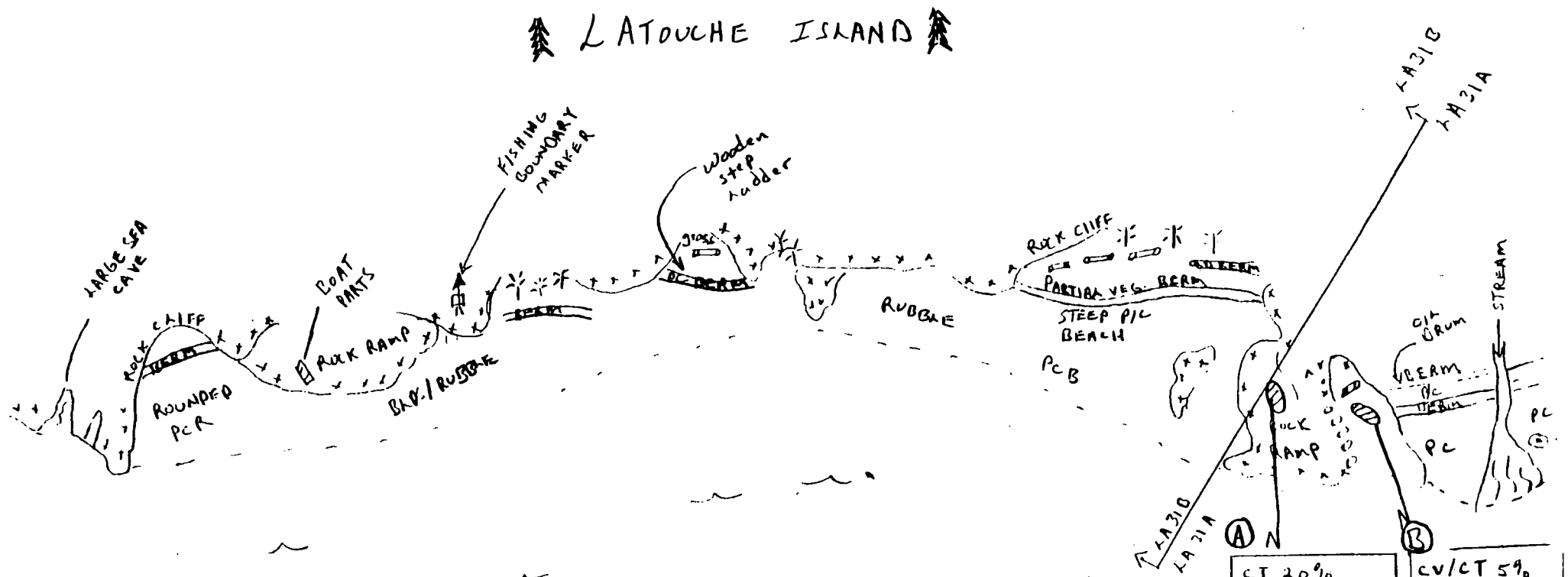
SHEEN COLOR: B = BROWN; R = RAINBOW; S = SILVER; N = NONE

LA 31 A
SEPTEMBER 17, 1993
0900 - 0940
-1.0' to .5'
D. MUNSON



CT 20%
CV 5%
SOR 5%
2 X 2 METERS AMONGST LARGE BOULDERS

CV/CT 5%
HSOR 5%
MS 5%
2 X 2 METERS AMONGST LARGE BOULDERS

No survey conducted in LA 31 B due to very little oiling in 1990 MAYSAP and 1992 FINSAP SURVEY. Survey conducted on border of LA31B and LA31A only.

1993 Surface Oil Summary
Segment LA031 Subdivision A

Location	Area of Oiling Type in Square Meters AP	MS	SOR	CV	OT
A	0.	0.	0.24	0.24	1.2
B	0.	0.24	0.	0.24	0.24
TOTALS=	0.	0.24	0.24	0.48	1.44

AP= asphalt; MS= mousse; SOR= surface oil residue; CV= cover; OT= coat
Areas are computed by multiplying the affected area by the percent coverage of each oil type. Field categories of percent oil coverage are converted to the median percent value as follows:
continuous= 95%; broken= 70%; patchy= 30%; sporadic= 6%; trace= 0.5%

SUBSURFACE OIL SUMMARY FOR SEGMENT LA031A

Loc.	1993 PIT #	Gr. Sz.	Zn.	En.	Note	TREATMENT 1992	TREATMENT 1991	1993 OILED SED. VOL. (m3) OP	HOR	MOR	LOR	OF/TR	1992 OILED SED. VOL. (m3) OP	HOR	MOR	LOR	OF/TR	1991 OILED SED. VOL. (m3) OP	HOR	MOR	LOR	OF/TR	WT.'ed OIL VOL. 1993	1992	1991	% CHANGE WT.'ed VOL. 92-93	91-92	91-93
ZA		BPC PCR	S	H	NON-EVOS TAR BALLS	Rb, Rs	Rb	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.0	?	?	?	?	?	0.0	1.4		100.0		
					TOTALS=			0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.0	100.0	Inf	0.0

Loc.= location name of specific oiling area (subsite).
1993 PIT #= the number designations, as indicated on the 1993 survey forms, of the pits in the subsite.
Gr. Sz.= grain size, a dash separates surface from subsurface sediments, B= boulders, C= cobbles, P= pebbles, G= granules, S= sand, M= mud, Pt= peat.
Zn.= inter tidal zone, S= supra tidal, H= high inter tidal, M= mid inter tidal, L= low inter tidal.
En.= wave-energy level, H= high, M= moderate, L= low, VL= very low.
TREATMENT= cleanup treatment occurring at the subsite for the given year, ET= equipment tilling (heavy equipment), MT= manual tilling, BR= berm relocation, SR= sediment relocation, Rb= oiled-sediment removal from subsurface, Rs= oiled-sediment removal from the surface, MB= manual breakup, MR= manual raking, ?= unknown, NO no treatment.
OILED SED. VOL.= oiled-sediment volume in cubic meters by year and oil type, OP= oil pore, pore spaces are completely filled with oil resulting in oil oozing out of sediments - water cannot penetrate OP zone, HOR= heavy oil residue, pore spaces partially filled with oil residue but not generally flowing out of sediments, MOR= medium oil residue, heavily coated sediments; pore spaces are not filled with oil - pore spaces may be filled with water, LOR= light oil residue, sediments lightly coated with oil, OF= oil film, continuous layer of sheen or film on sediments - water may bead on sediments, TR= trace, discontinuous film, spots of oil on sediments, an odor or tackiness with no visible evidence of oil, ?= area of subsite not visited or adequately surveyed.
WT.'ed OIL VOL.= weighted oiled-sediment volume = (OP VOL.)*5 + (HOR VOL.)*4 + (MOR VOL.)*3 + (LOR VOL.)*2
% CHANGE WT.'ed VOL.= % change in weighted oiled-sediment volume between the given years = ((year 2 - year1)/(year 1))*100. positive values indicate increases in the amount of oil, negative values indicate decreases. "Inf" (infinite percent increase) indicates newly discovered oil

SEGMENT: LN 001 A

LOCATION: Northern Islands Group, north end of Lone Island

OTHER STUDIES

PHYSICAL SETTING

Coastal Morphology and Sedimentology

Gently sloping, boulder and rocky shoreline. Complicated shoreline shape with prominent bedrock outcrops. Wave-cut platform with boulder veneer. Boulder and cobble pockets.

Environmental Sensitivity Index (ESI)

Type 1; exposed rocky.
Type 2; exposed wave-cut platform.
Type 7; gravel beach.

Fetches and Directions (kilometers)

N= 15; NE= 24

Energy Level

High with some moderate bedrock-protected areas.

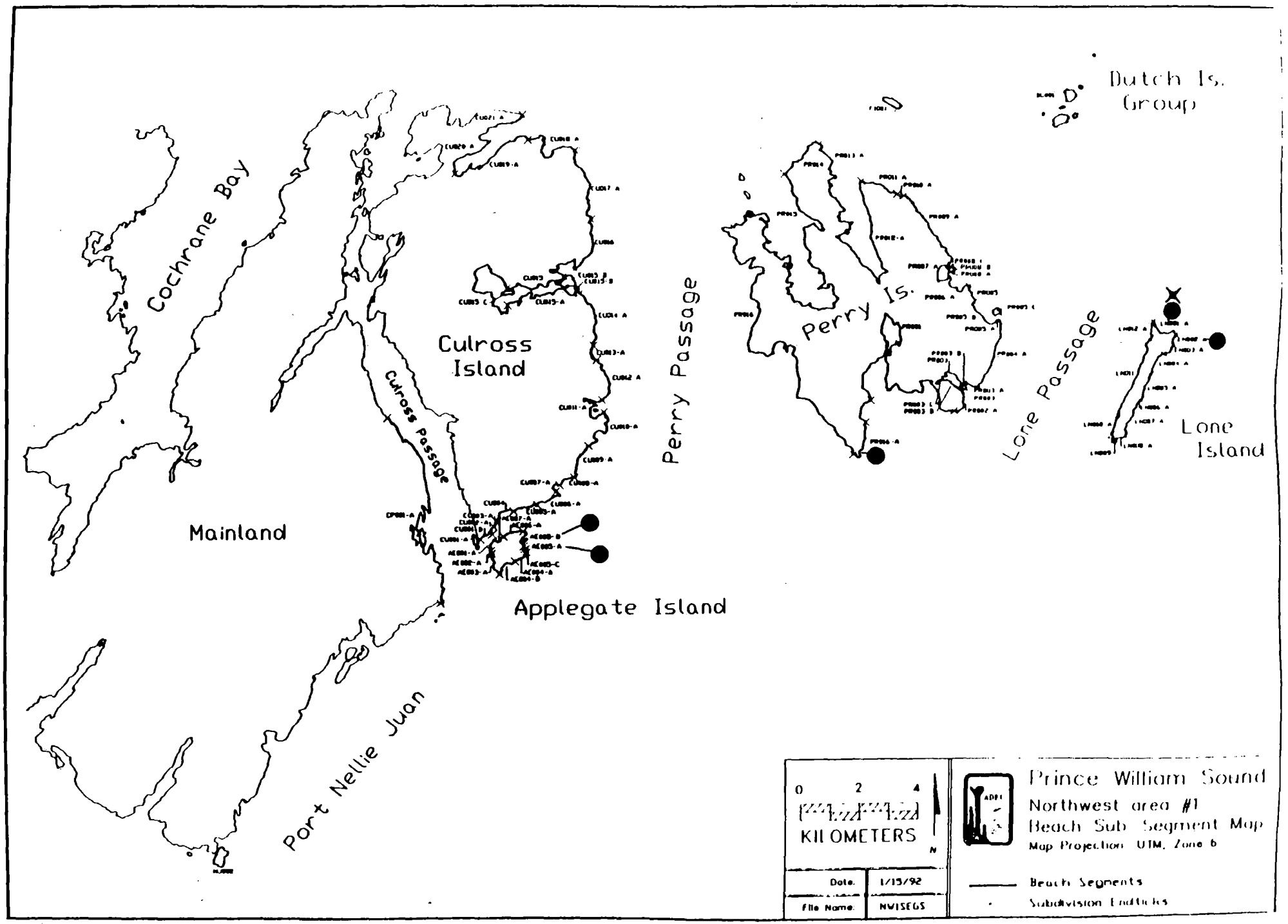
GENERAL BIOLOGICAL SETTING

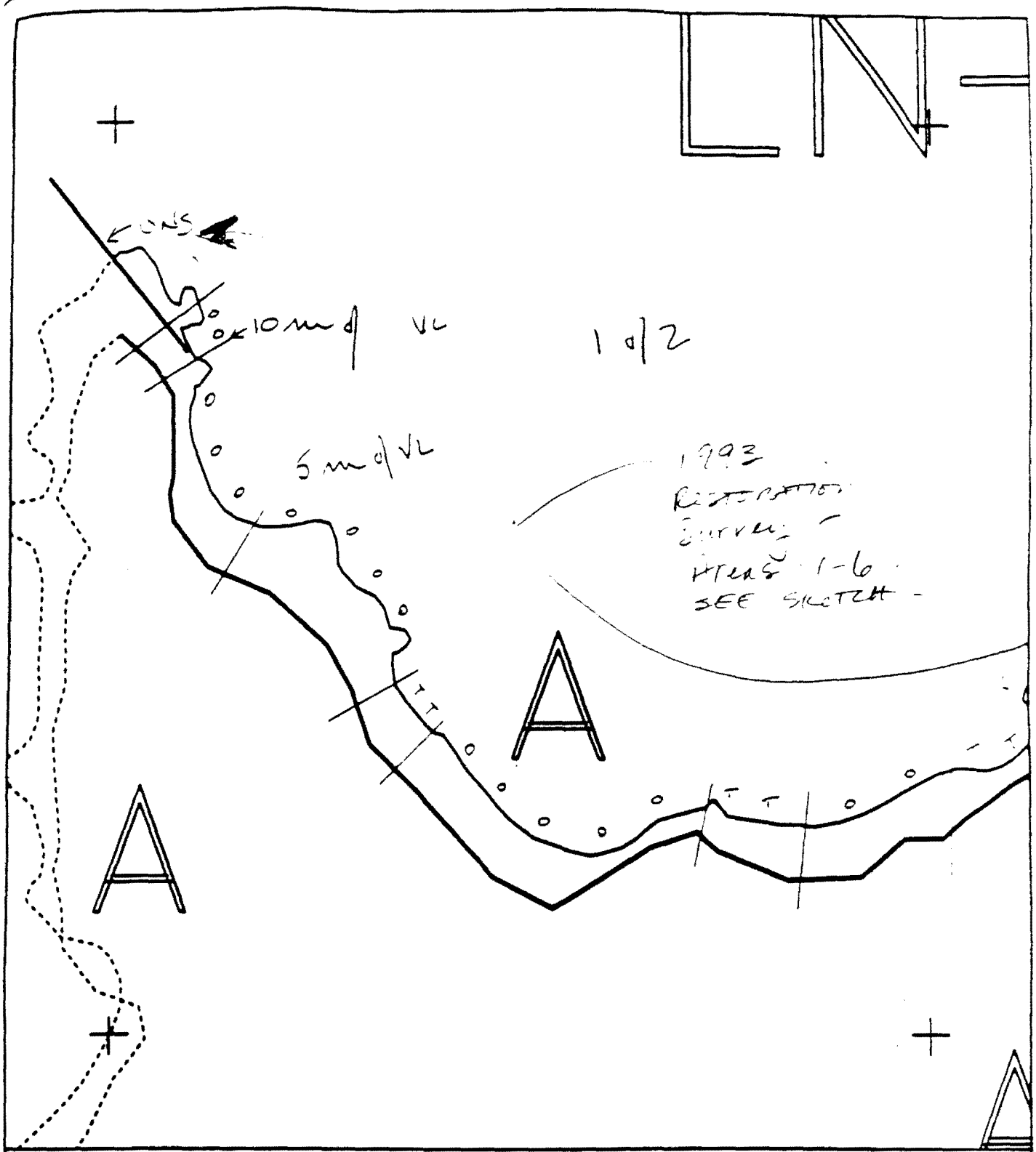
Eagle nest.

OILING SUMMARY

Only one small area of AP and one of MS was present in 1993. In 1992, workers relocated MS in location 'A4'. In 1992, the MS covered an area 5 by 6 m in size and was 2 to 11 cm thick. In 1993, there was only a trace of MS in an area 0.5 by 0.5 m. The AP in location 'A1' was reported in 1992 as about three times the size as it was in 1993. Thus significant improvement has occurred at this site since 1992, largely due to treatment. Significant improvement also occurred at location 'A5' since 1991 when surveyors reported a 2 by 8 m area with 20% coverage of MS. In 1993, this area had less than 11% coverage of tarballs. It should be noted that in 1991, the oiling geomorphologist indicated that "non-ANS" (sp?) tar occurred along this site. It is not know what is meant by his note, but he may have been indicating that tar other than that from the Exxon Valdez was present.

The only subsurface oil recorded in 1993 was a small pocket of HOR. A 200 m^2 area of OF/Tr to MOR was discovered in 1991 in the area coincident with the 1993 surface location 'A2'. This oil was not present in 1993. In 1992, subsurface oil associated with the surface MS in surface location 'A4' was not present in 1993. Therefore, significant improvement in the amounts of subsurface oil occurred.


Dutch Is.
Group
Cochrane Bay
Culross
Island
Culross Passage
Perry Passage
Perry Is.
Lone Passage
Lone
Island
Mainland
Applegate Island
Port Nellie Juan
0 2 4
KILOMETERS
N
Date: 1/15/92
File Name: NWISEGS
Prince William Sound
Northwest area #1
Beach Sub Segment Map
Map Projection: UTM, Zone 6
Beach Segments
Subdivision Endticks



XXXX	Wide
////	Medium
----	Narrow
TTTT	Very Light
0000	No Oil

LN001 A

ADEC Subsegment Length: 1184m

METERS

0 100 200

AK State Plane Zone 4 plotted

EXXON

Subdivision Field Map

Map Key: PWSLN001As

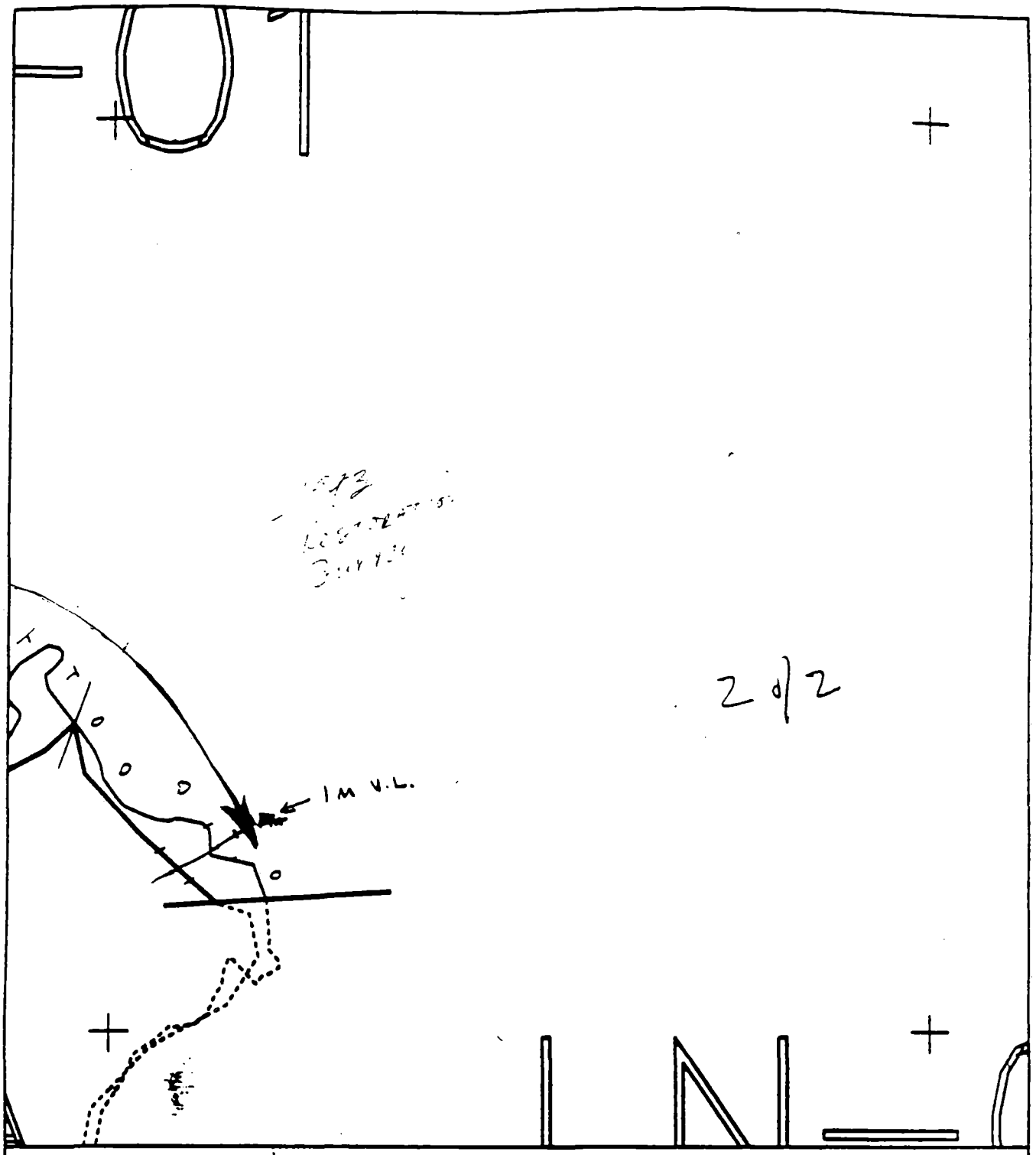
Name: GM

Date: 5-1-91

Date Entered:

ET Ranges 5/4

Reviewed: MC 5/4



2 of 2

XXXX	Wide	LN001 A	Subdivision Field Map
////	Medium	ADEC Subsegment Length: 1184m	Map Key: PWSLN001AB
----	Narrow	METERS	Name: GM
TTTT	Very Light	0 100 200	Date: 5-1-91
0000	No Oil	AK State Plane Zone 4 pln001ab	Date Entered:

REVISED: MC 5/4/91 S

ES revised 5/4

1993 ADEC RESTORATION PROJECT #930380

SHORELINE SURVEY COMMENT SHEET

LOCATION: LONE SEGMENT: LN001 SUBDIVISION: A DATE: 6/29/93

AFFILIATION DNR

NAME Lyn Menefee SIGNATURE Lyn Menefee

Large concentrations of tarballs.

I agree with the survey results.

Note * Large pads of Wally Noerenberg Fish Hatchery's missing fish pens are on the beach by the pond. 30' x 2' ABS pipe needs to be removed by PWSAC

AFFILIATION ADEC

NAME Joanne Hanson SIGNATURE Joanne Hanson

The most significant observation was the improvement in oiling condition from 1992. The State survey crew excavated and exposed oil in 1992 and believe that this treatment greatly enhanced the recovery of this subdivision. Oil remains but in small isolated amounts.

AFFILIATION U.S. Forest Service

NAME Liz Baer SIGNATURE Liz Baer

Only a minimal amount of surface asphalt and tar and not obvious to recreationists. Recommend no additional treatment needed.

AFFILIATION

NAME IVAN NANCE, LT USCGR SIGNATURE

CONCUR WITH ABOVE.

1993 ADEC RESTORATION PROJECT # 930380
SHORELINE OILING SUMMARY

PAGE ____ OF ____

SEGMENT LN001

SUBDIVISION A

DATE 6 / 20 / 93

TEAM MEMBERS: ERNIE PIPER - ADEC
DIANNE MUNSON - ADEC, MARIANNE PROFITA - ADEC
DAN MENEFEE - ADNR
VIC BAER - USFS
IVAN NANCE - USCG

TIME 07 : 00 to 09 : 30 TIDE LEVEL 0.0 ft. to -2.0 ft. ENERGY LEVEL: ■ H ■ M ☐ L

SURVEYED FROM: ■ FOOT ☐ BOAT ☐ HELO WEATHER: ☐ SUN ■ CLOUDS ☐ FOG ☐ RAIN ☐ SNOW

TOTAL LENGTH SHORELINE SURVEYED: ______ m NEAR SHORE SHEEN: ☐ BR ☐ RB ☐ SL ■ NONE

EST. OIL CATEGORY LENGTH: H_____m M_____m L_____m VL_____m N_____m NS_____m

LOC	SURFACE OIL CHARACTER										SURFACE SEDIMENT	SHORE SLOPE	AREA		ZONE				NOTES
	AP	MS	TB	SOR	CV	CT	ST	FL	DB	NO	TYPE	VHML	WIDTH m	LENGTH m	S	UI	MI	LI	
A1	P		S			S	S				B, C, P	L	3	4			■		AP Extends Subsurface
A2			S			S	S				R, B, C, P	L	2	5		■	■		
A3			S			S	S				R, B, C	M	1	20		■	■		
A4		C									B, C	M	.5	.5			■		
A5			S			T	T				B, C	M	2	8		■	■		
A6			S			T	T				R, B, C, P	M				■	■	■	NO FIELD DATA FOR length. See sketch for Area of Oiling

DISTRIBUTION: C = 91–100%; B = 51–90%; P = 11–50%; S = 1–10%; T = <1%

SLOPE: V = VERTICAL; H = HIGH ANGLE; M = MEDIUM ANGLE; L = LOW ANGLE PHOTO ROLL # ______-______ FRAMES ______

PIT NO.	PIT DEPTH (cm)	SUBSURFACE OIL CHARACTER							OILED ZONE	CLEAN BELOW	H2O LEVEL	SHEEN COLOR	PIT ZONE				SURFACE-SUBSURFACE SEDIMENTS	NOTES
		OP	HOR	MOR	LOR	OF	TR	NO	cm–cm	Y/N	(cm)	B R S N	S	UI	MI	LI		
1	23							■	-						■		BC / CP	
2	2		■						5 - 10	Y	—	—				■	BC, P / P G	
3	23							■	-						■		B C / C P, R	
									-									
									-									
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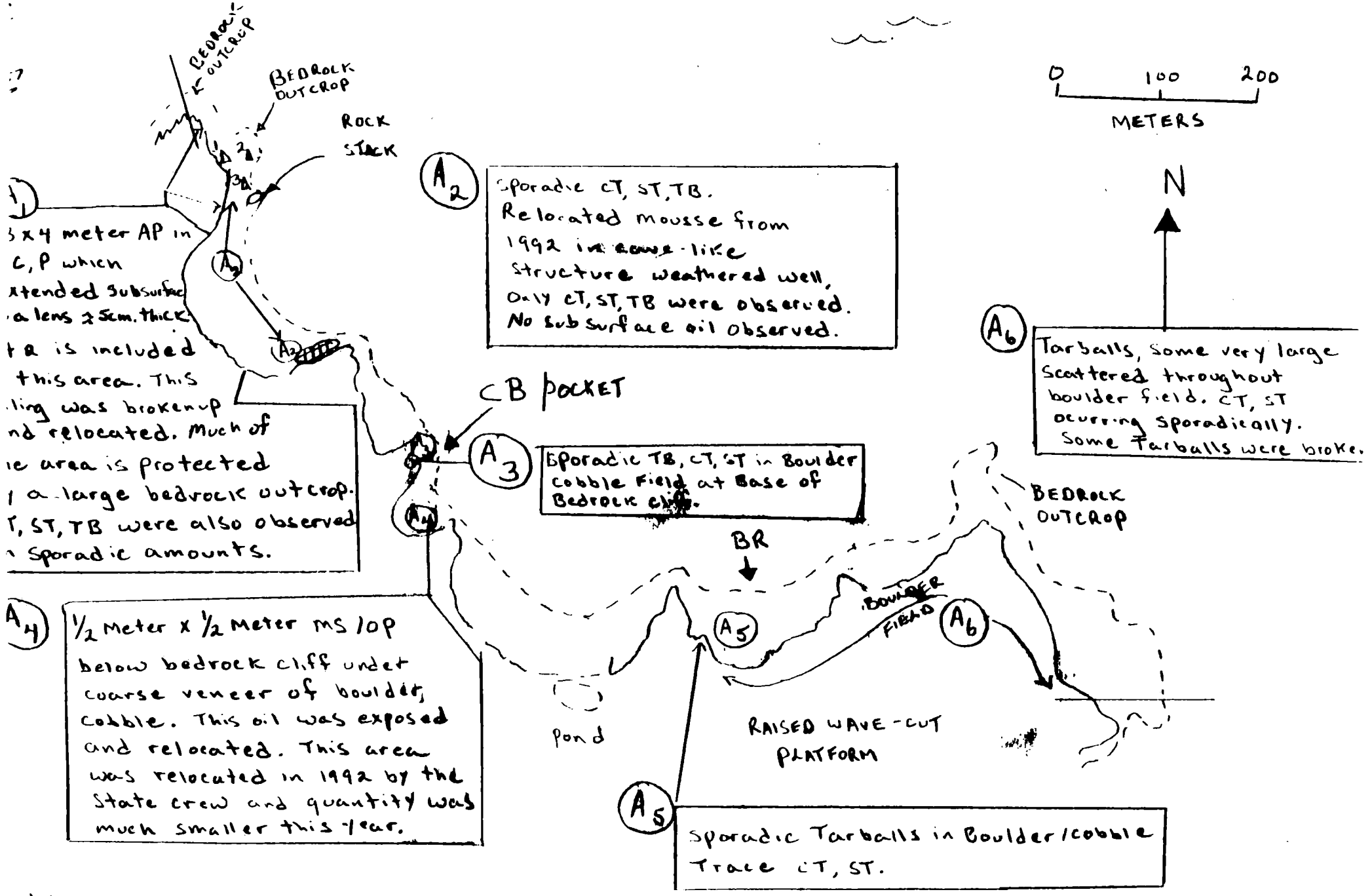
SHEEN COLOR: B = BROWN; R = RAINBOW; S = SILVER; N = NONE

N A
6-20-93



A1

3 x 4 meter AP in
C, P which
xtended subsurfac
a lens 2 5cm. thick
t a is included
this area. This
ling was broken up
nd relocated. Much of
ie area is protected
/ a large bedrock outcrop.
T, ST, TB were also observed
n sporadic amounts.

A2

Sporadic CT, ST, TB.
Relocated mousse from
1992 in ~~some~~ like
structure weathered well,
Only CT, ST, TB were observed.
No subsurface oil observed.

A3

Sporadic TB, CT, ST in Boulder
cobble Field at Base of
Bedrock cliff.

A4

1/2 Meter x 1/2 Meter MS/OP
below bedrock cliff under
coarse veneer of boulder,
cobble. This oil was exposed
and relocated. This area
was relocated in 1992 by the
State crew and quantity was
much smaller this year.

A5

Sporadic Tarballs in Boulder/cobble
Trace CT, ST.

A6

Tarballs, Some very large
Scattered throughout
boulder field. CT, ST
occurring sporadically.
Some Tarballs were broke.

Note AT Site A, observed a large
literine concentration.

·T… … … … … … Tarballs

1993 Surface Oil Summary
Segment LN001 Subdivision A

Location	Area of Oiling Type in Square Meters AP	MS	SOR	CV	CT
A1	3.6	0.	0.	0.	1.72
A2	0.	0.	0.	0.	1.6
A3	0.	0.	0.	0.	1.2
A4	0.	0.2375	0.	0.	0.
A5	0.	0.	0.	0.	0.08
A6					
TOTALS=	3.6	0.2375	0.	0.	2.6

AP= asphalt; MS= mousse; SOR= surface oil residue; CV= cover; CT= coat
Areas are computed by multiplying the affected area by the percent coverage of each oil type. Field categories of percent oil coverage are converted to the median percent value as follows:
continuous= 95%; broken= 70%; patchy= 30%; sporadic= 6%; trace= 0.5%

SUBSURFACE OIL SUMMARY FOR SEGMENT LN001A

Loc.	1993 PIT #	Gr. Sz.	Zn.	En.	Note	TREATMENT 1992	TREATMENT 1991	1993 OILED SED. VOL. (m3) OP	HOR	MOR	LOR	OF/TR	1992 OILED SED. VOL. (m3) OP	HOR	MOR	LOR	OF/TR	1991 OILED SED. VOL. (m3) OP	HOR	MOR	LOR	OF/TR	WT.'ed OIL VOL. 1993	1992	1991	% CHANGE WT.'ed VOL. 93 to 92	92 to 91	93 to 91
ZA	2	BCP-PG	L	M	AP ON SURFACE IN '93	NO	NO	?	0.6	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	?	?	?	?	?	?	1.6		?	?	
ZB	4	BC-BCP	U	M		SR	?	0.0	0.0	0.0	0.0	0.0	2.1	0.0	0.0	0.0	0.0	?	?	?	?	?	0.1	10.5		99.4	?	
ZC		CPG-PGC	U	H		NO	?	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	4.0	9.6	0.0	0.0	11.6	0.0	100.0	100.0
							TOTALS=	0.0	0.6	0.0	0.0	0.0	2.4	0.0	0.0	0.0	0.0	0.0	0.0	1.2	4.0	9.6	0.1	12.1	11.6	99.4	4.4	99.5

Loc.= location name of specific oiling area (subsite).
1993 PIT #= the number designations, as indicated on the 1993 survey forms, of the pits in the subsite.
Gr. Sz.= grain size, a dash separates surface from subsurface sediments, B= boulders, C= cobbles, P= pebbles, G= granules, S= sand, M= mud, Pt= peat.
Zn.= inter tidal zone, S= supra tidal, H= high inter tidal, M= mid inter tidal, L= low inter tidal.
En.= wave-energy level, H= high, M= moderate, L= low, VL= very low.
TREATMENT= cleanup treatment occurring at the subsite for the given year, ET= equipment tilling (heavy equipment), MT= manual tilling, BR= berm relocation, SR= sediment relocation, Rb= oiled-sediment removal from subsurface, Rs= oiled-sediment removal from the surface, MB= manual breakup, MR= manual raking, ?= unknown, NO= no treatment.
OILED SED. VOL.= oiled-sediment volume in cubic meters by year and oil type, OP= oil pore, pore spaces are completely filled with oil resulting in oil oozing out of sediments - water cannot penetrate OP zone, HOR= heavy oil residue, pore spaces partially filled with oil residue but not generally flowing out of sediments, MOR= medium oil residue, heavily coated sediments; pore spaces are not filled with oil - pore spaces may be filled with water, LOR= light oil residue, sediments lightly coated with oil, OF= oil film, continuous layer of sheen or film on sediments - water may bead on sediments, TR= trace, discontinuous film; spots of oil on sediments; an odor or tackiness with no visible evidence of oil, ?= area of subsite not visited or adequately surveyed.
WT.'ed OIL VOL.= weighted oiled-sediment volume = (OP VOL.)*5 + (HOR VOL.)*4 + (MOR VOL.)*3 + (LOR VOL.)*2
% CHANGE WT.'ed VOL.= % change in weighted oiled-sediment volume between the given years = ((year 2 - year1)/(year 1))*100, positive values indicate increases in the amount of oil, negative values indicate decreases, "Inf" (infinite percent increase) indicates newly discovered oil

SEGMENT: LN 002 A

LOCATION: Northern Island Group, northeast shore of Lone Island

OTHER STUDIES

PHYSICAL SETTING

Coastal Morphology and Sedimentology
Wave-cut rock platform with boulder veneers. Pebble high-tide berms present.

Environmental Sensitivity Index (ESI)
Type 2; exposed wave-cut rock platform.

Fetches and Directions (kilometers)
NE= 24; E= 14; SE= 26

Energy Level
Moderate to high.

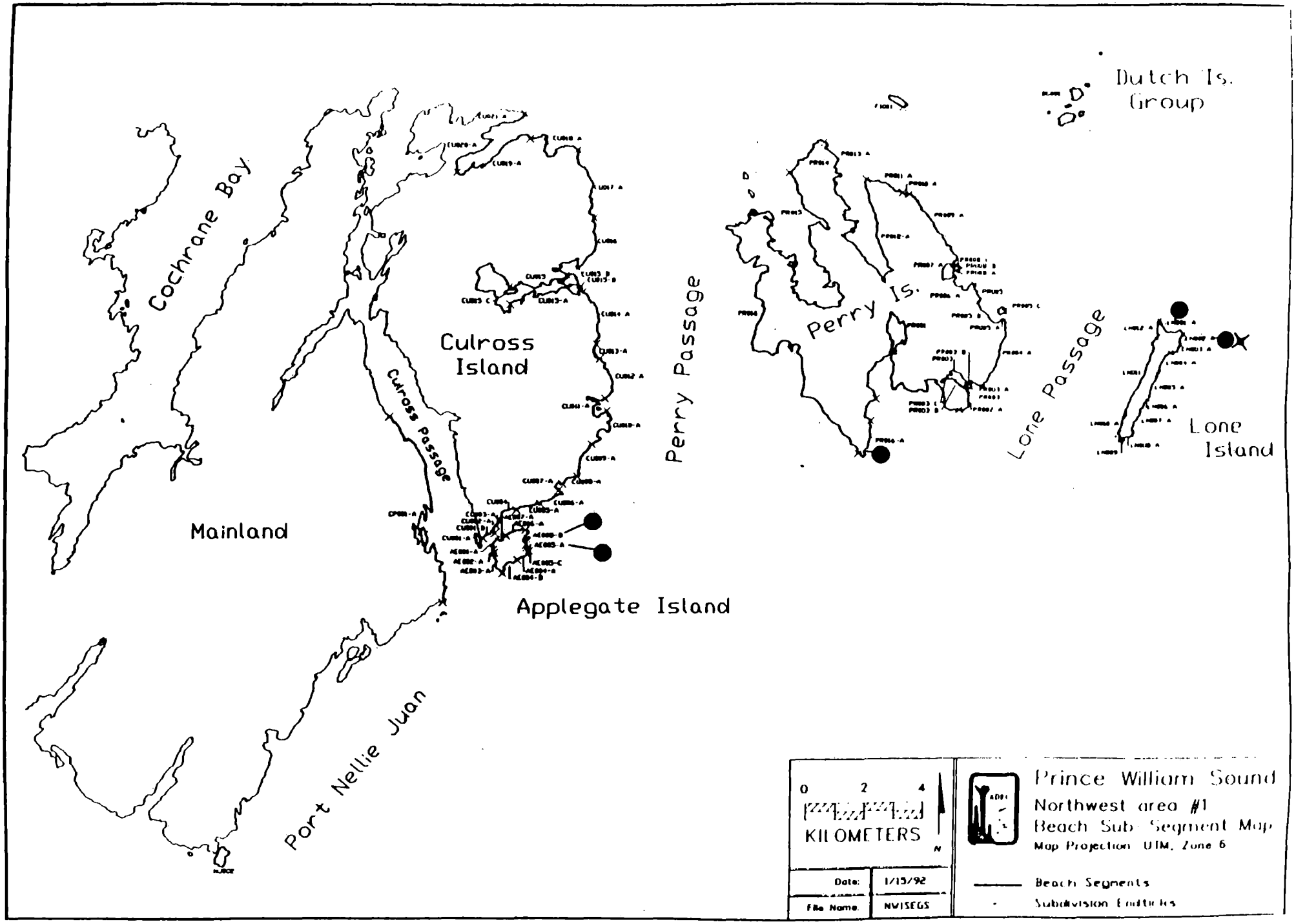
GENERAL BIOLOGICAL SETTING

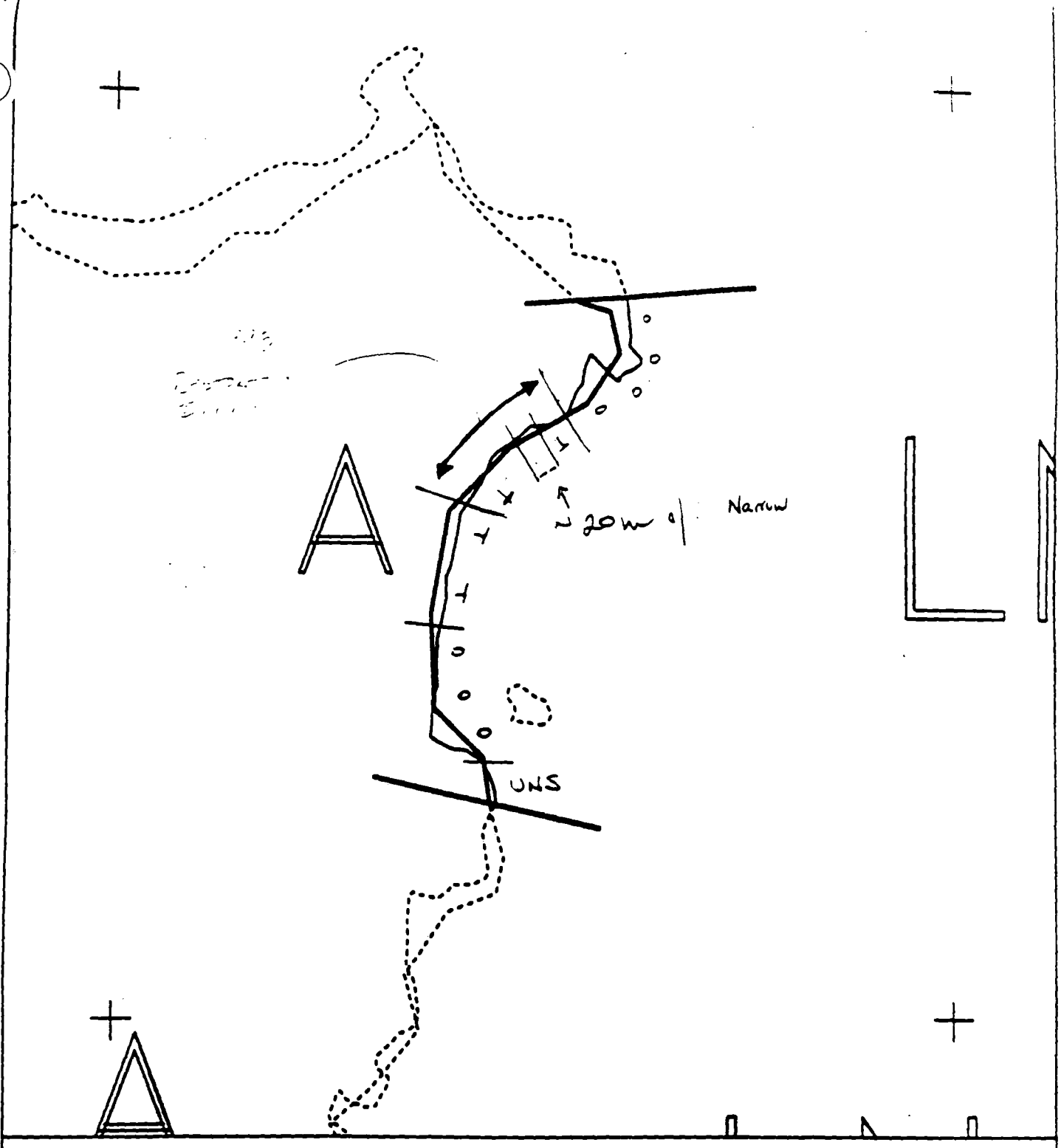
Eagle nest.

OILING SUMMARY

Two small areas of MS and SOR remain in 1993. These areas occur in the upper to supra intertidal zone amongst boulders in the northern part of the segment. Both areas are in a narrow protected cove and were relocated by the 1993 survey team. In 1993 these areas were only 1.5 and 4 m^2 in size, but in 1992 they had a total area of 36 m^2, and a much higher concentration. Workers relocated these sediments in 1992, which resulted in the significant improvement in this area. No detectable improvement occurred from 1991 to 1992. The state vessel performed manual removal (15 geobags) at this segment in 1991, but it is not clear exactly where the sediment was removed.

A small amount of OP and HOR oil was discovered at one location in 1993. The location includes and extends beyond surface location 'B' by a few 10's of meters. Four pits of OP and HOR oil were recorded in 1992, but the pit locations were not indicated on the map. Essentially no subsurface oil was reported in 1991.


Dutch Is.
Group
Cochrane Bay
Culross
Island
Culross Passage
Perry Passage
Perry Is.
Lone Passage
Lone
Island
Mainland
Applegate Island
Port Nellie Juan
0 2 4
KILOMETERS
N
Date: 1/15/92
File Name: NWISEGS
Prince William Sound
Northwest area #1
Beach Sub-Segment Map
Map Projection: UTM, Zone 6
Beach Segments
Subdivision Endpoints



XXXX	Wide	LN002 A
////	Medium	ADEC Subsegment Length: 444m
----	Narrow	METERS
TTTT	Very Light	0 100 200
0000	No Oil	AK State Plane Zone 4 pln83z4

EXXON

Subdivision Field Map
Map Key: PWSLN002A
Name: G. M
Date: 5.1.91
Date Entered:

Revised 7/31/91 + Expanded Map

1993 ADEC RESTORATION PROJECT #930380
SHORELINE SURVEY COMMENT SHEET

ATION Long Is SEGMENT LN 002 SUBDIVISION A DATE 6/20/93

AFFILIATION DNR
NAME Wyn Menefee SIGNATURE Wyn Menefee

Although oil is not visable on the surface, once uncovered the odors are strong. Seems to be some oil extending into a dense substrate. No mussel beds seen to be affected. Isopods and limpets are prolific on the site. There appears to no uses that are affected by remaining oil.

AFFILIATION
NAME IVAN NANCE, LT, USCGR SIGNATURE Ivan Nance

I WOULD NOT CHARACTERIZE ANY OF THE OILING I SAW AS "0 M. HOR WOULD BE THE HIGHEST. THE OILING WHICH REMAINS IS IN PROTECTED AREAS WHICH MINIMIZE THE EFFECT OF WEATHERING. ~~THEM~~

AFFILIATION ADEC
NAME DIANNE MUNSON SIGNATURE Dianne Munson

Heavy subsurface oiling isolated to areas shown on sketch. This oiling was exposed and relocated.

AFFILIATION U.S. Forest Service
NAME Vic Baer SIGNATURE Vic Baer

Very little to no visable surface oil. Recommend no additional treatment needed.

1993 ADEC RESTORATION PROJECT # 930380
SHORELINE OILING SUMMARY

PAGE ____ OF 2

SEGMENT -V 002

SUBDIVISION A

DATE 6 / 20 / 93

TEAM MEMBERS: Marianne Prufita ADEC
Ernie Piper ADEC
Dianne Munson ADEC
Dixon Menefee DNR
[illegible] USFS
Ivan Nance - USCG

TIME 1010 : ____ to [illegible] : ____

TIDE LEVEL -.5 ft. to 2.0 ft.

ENERGY LEVEL: ☐ H ■ M ☐ L

SURVEYED FROM: ■ FOOT ☐ BOAT ☐ HELO

WEATHER: ☐ SUN ■ CLOUDS ☐ FOG ☐ RAIN ☐ SNOW

TOTAL LENGTH SHORELINE SURVEYED: ________ m

NEAR SHORE SHEEN: ☐ BR ☐ RB ☐ SL ■ NONE

EST. OIL CATEGORY LENGTH: H______m M______m L______m VL______m N______m NS______m

LOC	SURFACE OIL CHARACTER										SURFACE SEDIMENT TYPE	SHORE SLOPE V H M L	AREA WIDTH m	AREA LENGTH m	ZONE				NOTES
	AP	MS	TB	SOR	CV	CT	ST	FL	DB	NO					S	UI	MI	LI	
A		■		■							B/c	M	1.5	1.0	■				MS underside boulders
B				■							B/c	M	2.0	2.0		■			
C				S		S	S				RBC	M				■			Large B- Tar spatters
																			sporadic across site

DISTRIBUTION: C = 91–100%; B = 51–90%; P = 11–50%; S = 1–10%; T = <1%

SLOPE: V = VERTICAL; H = HIGH ANGLE; M = MEDIUM ANGLE; L = LOW ANGLE   PHOTO ROLL # ________-________ FRAMES ______

PIT NO.	PIT DEPTH (cm)	SUBSURFACE OIL CHARACTER							OILED ZONE cm–cm	CLEAN BELOW Y/N	H2O LEVEL (cm)	SHEEN COLOR B R S N	PIT ZONE				SURFACE-SUBSURFACE SEDIMENTS	NOTES
		OP	HOR	MOR	LOR	OF	TR	NO					S	UI	MI	LI		
1	16	■	■						5-10	Y				■			Bk P/G/C	Clean layer below
2	13	■							8-11	Y				■			B/c C/P/G	Area C - ST, CT
3	14		■	■					6-9	Y					■		B/c P/G/M	Boulder field
									-									
									-									
									-									
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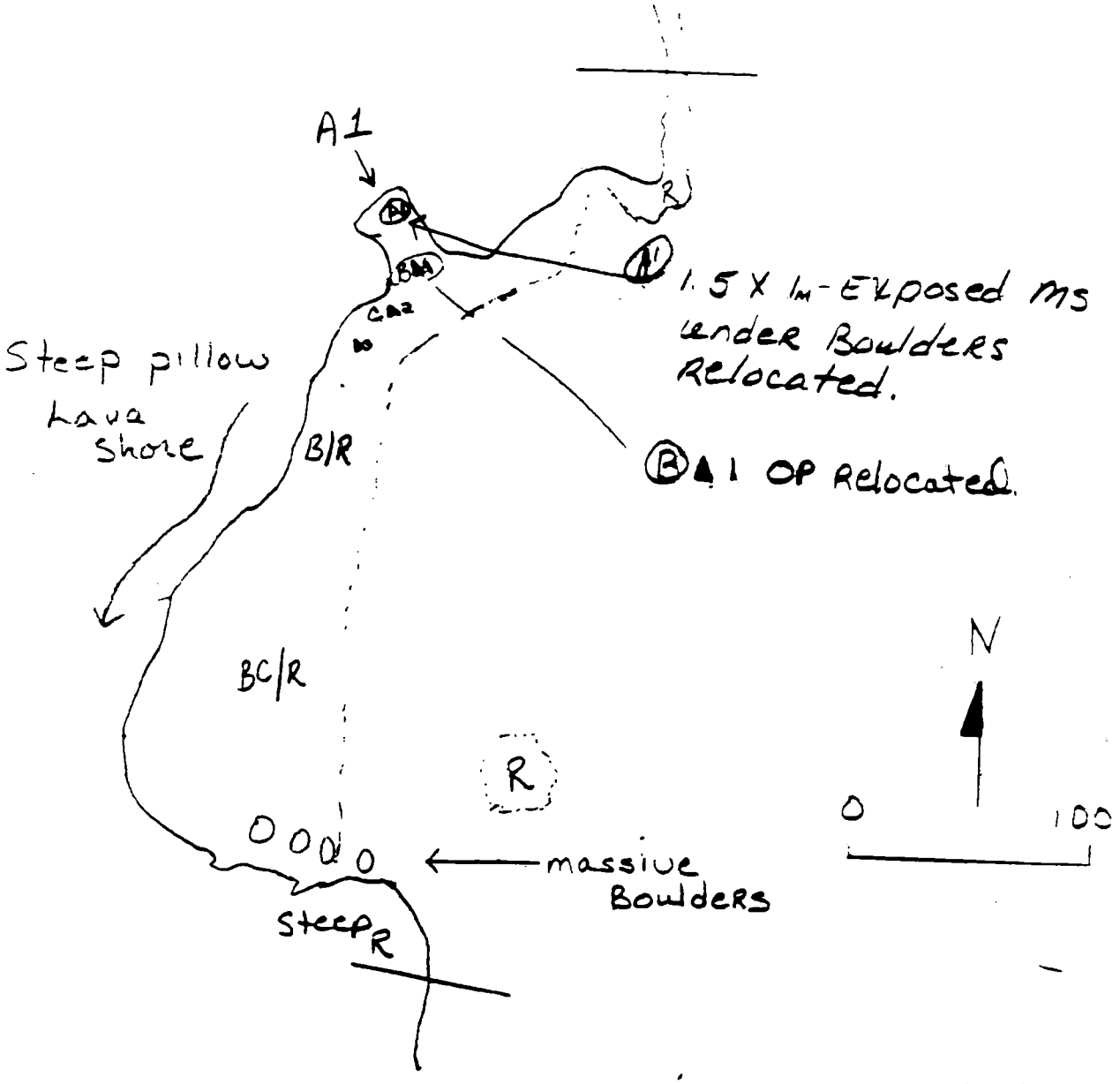
SHEEN COLOR: B = BROWN; R = RAINBOW; S = SILVER; N = NONE

LN OC2A

6/20/93

P20FITA



- sporadic Tan splatters, coat, stain from site B. South in LITE-MITE

1993 Surface Oil Summary

Segment LN002 Subdivision A

Location	Area of Oiling Type in Square Meters AP	MS	SOR	CV	CT
A	0.	1.425	0.	0.	0.
B	0.	0.	3.8	0.	0.
C					
TOTALS=	0.	1.425	3.8	0.	0.

AP= asphalt; MS= mousse; SOR= surface oil residue; CV= cover; CT= coat
Areas are computed by multiplying the affected area by the percent coverage of each oil type. Field categories of percent oil coverage are converted to the median percent value as follows:
continuous= 95%; broken= 70%; patchy= 30%; sporadic= 6%; trace= 0.5%

SUBSURFACE OIL SUMMARY FOR SEGMENT LN002A

Loc.	1993 PIT #	Gr. Sz.	Zn.	En.	Note	TREATMENT 1992	TREATMENT 1991	1993 OILED SED. VOL. (m3) OP	HOR	MOR	LOR	OF/TR	1992 OILED SED. VOL. (m3) OP	HOR	MOR	LOR	OF/TR	1991 OILED SED. VOL. (m3) OP	HOR	MOR	LOR	OF/TR	WT.'ed OIL VOL 1993	1992	1991	% CHANGE WT.'ed VOL. 91 to 93	91 to 92	91 to 93
2A	1-3	BC-PGCM	UM	M		NO	Rs,Rb	1.4	1.4	0.5	0.0	0.0	?	?	?	?	?	0.0	0.0	0.0	0.0	0.2	13.9	?	0.0	?	?	Inf
							TOTALS=	1.4	1.4	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	13.9	0.0	0.0	Inf	0.0	Inf

Loc.= location name of specific oiling area (subsite).
1993 PIT #= the number designations, as indicated on the 1993 survey forms, of the pits in the subsite.
Gr. Sz.= grain size, a dash separates surface from subsurface sediments, B= boulders, C= cobbles, P= pebbles, G= granules, S= sand, M= mud, Pt= peat.
Zn.= inter tidal zone, S= supra tidal, H= high inter tidal, M= mid inter tidal, L= low inter tidal.
En.= wave-energy level, H= high, M= moderate, L= low, VL= very low.
TREATMENT= cleanup treatment occurring at the subsite for the given year, ET= equipment tilling (heavy equipment), MT= manual tilling, BR= berm relocation, SR= sediment relocation, Rb= oiled-sediment removal from subsurface, Rs= oiled-sediment removal from the surface, MB= manual breakup, MR= manual raking, ?= unknown, NO= no treatment.
OILED SED. VOL.= oiled-sediment volume in cubic meters by year and oil type, OP= oil pore, pore spaces are completely filled with oil resulting in oil oozing out of sediments - water cannot penetrate OP zone, HOR= heavy oil residue, pore spaces partially filled with oil residue but not generally flowing out of sediments, MOR= medium oil residue, heavily coated sediments; pore spaces are not filled with oil - pore spaces may be filled with water, LOR= light oil residue, sediments lightly coated with oil, OF= oil film, continuous layer of sheen or film on sediments - water may bead on sediments, TR= trace, discontinuous film, spots of oil on sediments; an odor or tackiness with no visible evidence of oil, ?= area of subsite not visited or adequately surveyed.
WT.'ed OIL VOL.= weighted oiled-sediment volume = (OP VOL.)*5 + (HOR VOL.)*4 + (MOR VOL.)*3 + (LOR VOL.)*2
% CHANGE WT.'ed VOL.= % change in weighted oiled-sediment volume between the given years = ((year 2 - year1)/(year 1))*100, positive values indicate increases in the amount of oil, negative values indicate decreases, "Inf" (infinite percent increase) indicates newly discovered oil

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 06/02/93 TIME: 10:15

SEGMENT#: LN002 STATION#: -0-
LOCATION: Lone Island: location A1.
KEYWORDS: -0-
REASON FOR TAKING PHOTO:Exposed MS/OP under boulder.

TAKEN BY: Marianne Profita INITIALS:_____
ROLL #: 93MSP002 FRAME #: 4 EVIDENCE ID#:_____

Taken by: M Profita

Roll #: 93msp002 Frame #: 4

1-7

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 06/02/93 TIME: 10:15

SEGMENT#: LN002 STATION#: -0-
LOCATION: Lone Island: location A1.
KEYWORDS: -0-
REASON FOR TAKING PHOTO:Exposed MS/OP under boulder.

TAKEN BY: Marianne Profita INITIALS:_____
ROLL #: 93MSP002 FRAME #: 3 EVIDENCE ID#:_____

Taken by: M Profita

Roll #: 93msp002 Frame #: 3

2-7

[redacted]

SEGMENT: MA 002 A

LOCATION: Northern Islands Group, two small islands just north of the mouth of Main Bay in Foul Bay

OTHER STUDIES

PHYSICAL SETTING

Coastal Morphology and Sedimentology

Two low, rocky islands. Wave-cut rock platforms with pockets of boulders, cobbles, and pebbles. Bedrock is splintery.

Environmental Sensitivity Index (ESI)

Type 2; exposed wave-cut rock platform.
Type 7; gravel beach.

Fetches and Directions (kilometers)

N= 22; NE= 46; E= 28; in addition for site 2 SE= 19

Energy Level

High with moderate areas.

GENERAL BIOLOGICAL SETTING

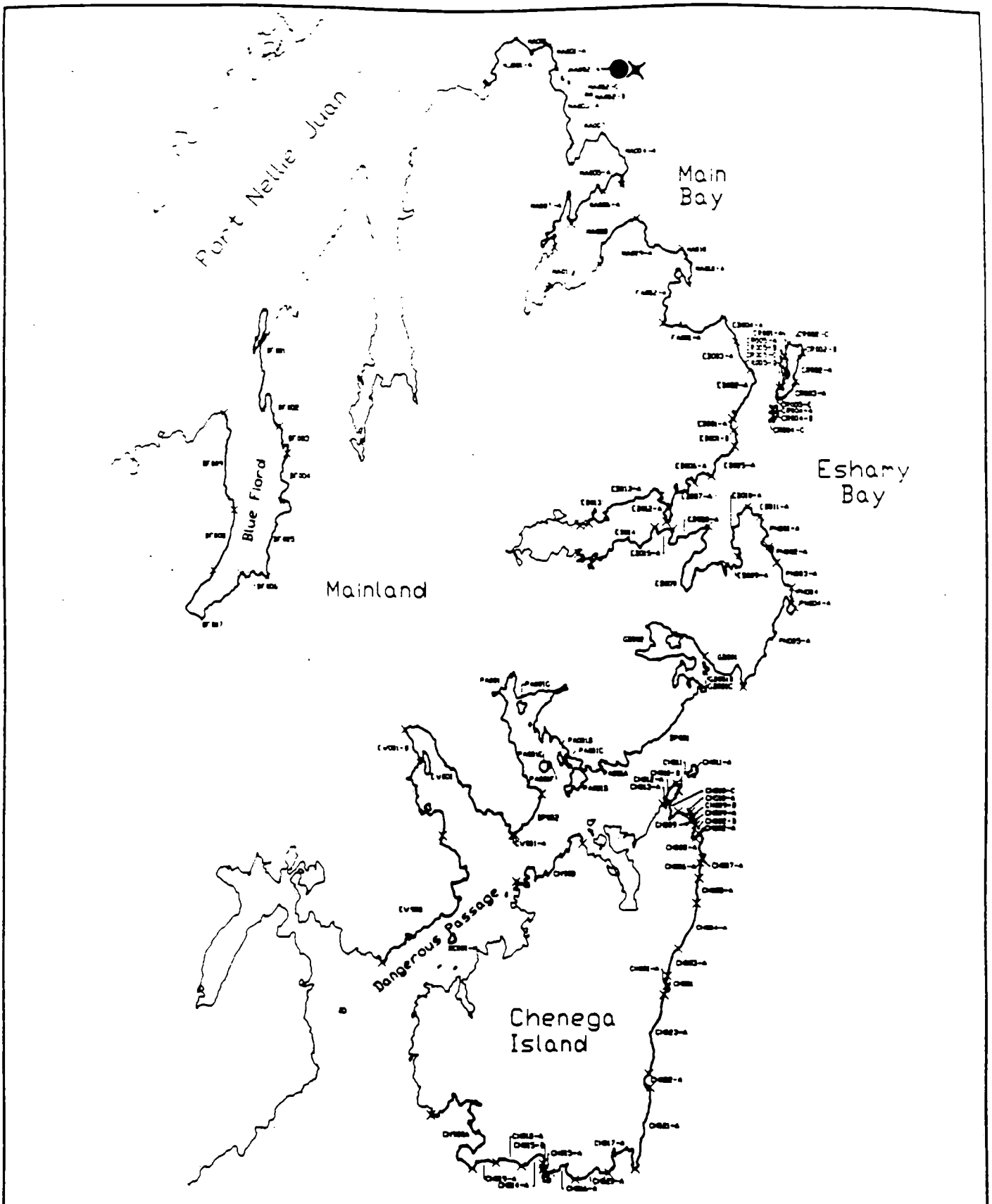
Oiled mussel bed.
Eagle nest.
Fry release.
Fish harvest area.

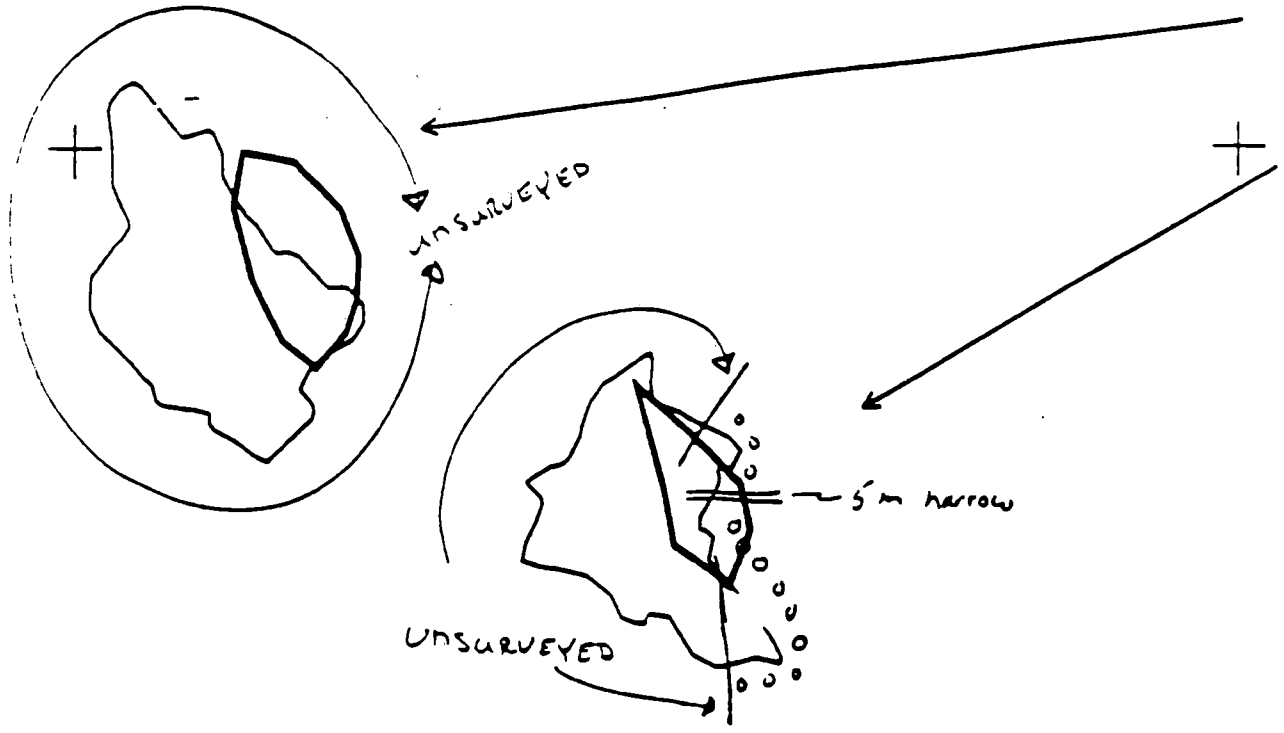
OILING SUMMARY

Only trace amounts of CT was surveyed in one location in 1993. This location, location 'D', contained a greater than 50% cover in a 2 by 5 m area of AP. Several other areas on site #1 contained high concentrations of AP and SOR in 1991 but had no surface oil in 1993. Thus improvement occurred.

Oil in a mussel bed and tide pool on site #1 and in the vicinity of pit #8 was recorded as surface oil in 1991. In 1993, this same area was recorded has having substantial amounts of LOR, MOR, and HOR oil in the mussel bed and above a peat layer. Sheening was observed without disturbance of the sediment. Apparently this location (location ZC) has not improved since 1991 even though it was manually treated in 1991 and 1992.

Another subsurface oil area is location ZA also on site #1. This location occurs in the lower and mid-intertidal zones and was sheening in 1993 (see photo 93MSP003-11). No subsurface oil was recorded here in 1991, but "surface" oil was removed in 1991 and 1992.


Port Nellie Juan
Main Bay
Eshamy Bay
Blue Fiord
Mainland
Dangerous Passage
Chenega Island
0 2 4
KILOMETERS
N
Prince William Sound
Northwest area #2
Beach Sub-Segment Map
Map Projection: UTM, Zone 6
Date: 1/15/92
File Name: NWZSEGS
Beach Segments
Subdivision Endticks



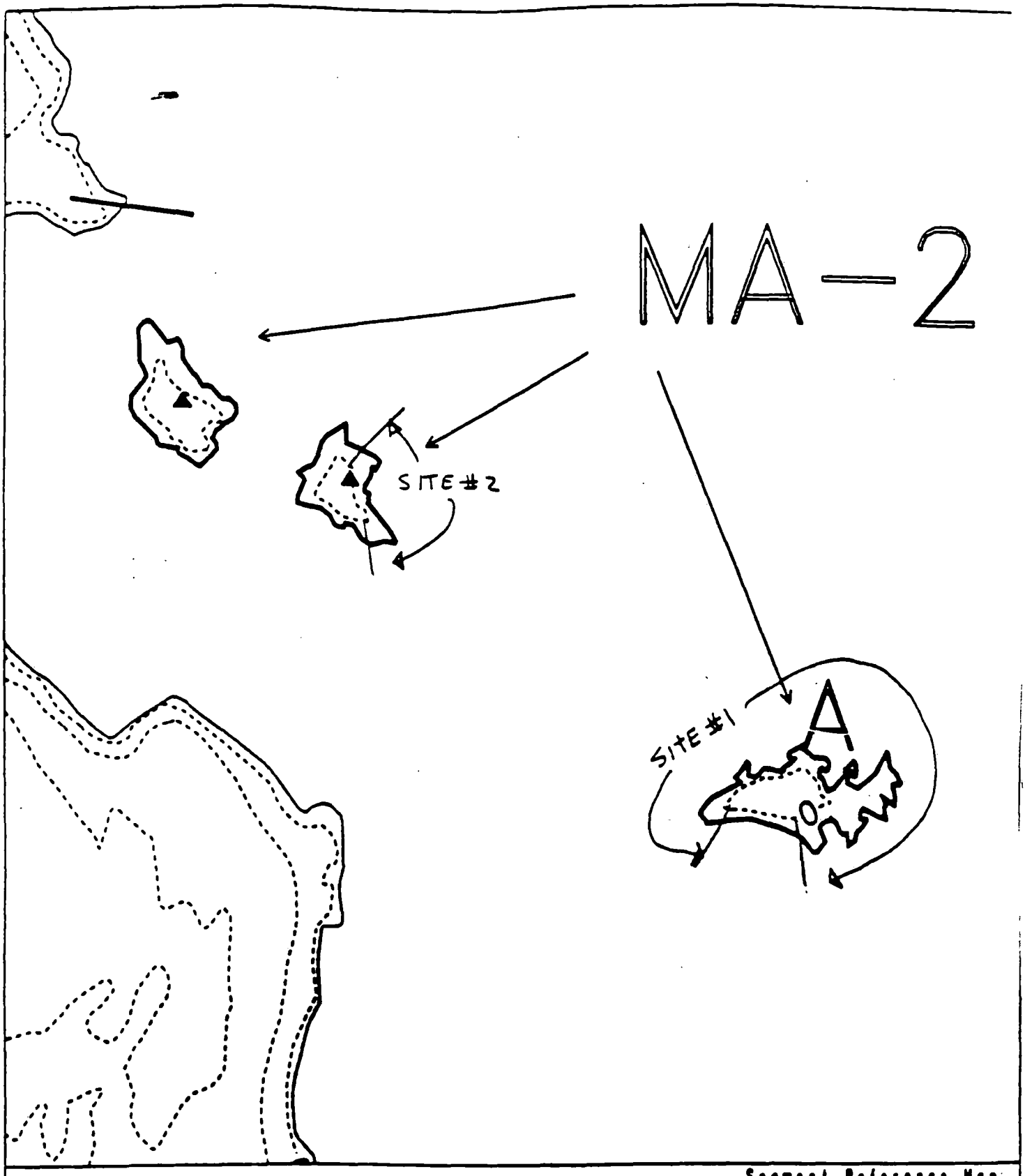
1993 SURVEY LOOKED AT SAME AREAS AS 1992 FINSAP AS MARKED

6/21/93

DM

XXXX	Wide	MA002 A
////	Medium	ADEC Subsegment Length: 1551m
----	Narrow	METERS
TTTT	Very Light	100 200
0000	No Oil	AK State Plane Zone 4 pwsMA002as

Subdivision Field Map
Map Key: PWSMA002As
Name: Reimer
Date: 5/18/92
Date Entered:



MA002

METERS

0 169 338

AK State Plane Zone 4

pwsma02

EXXON

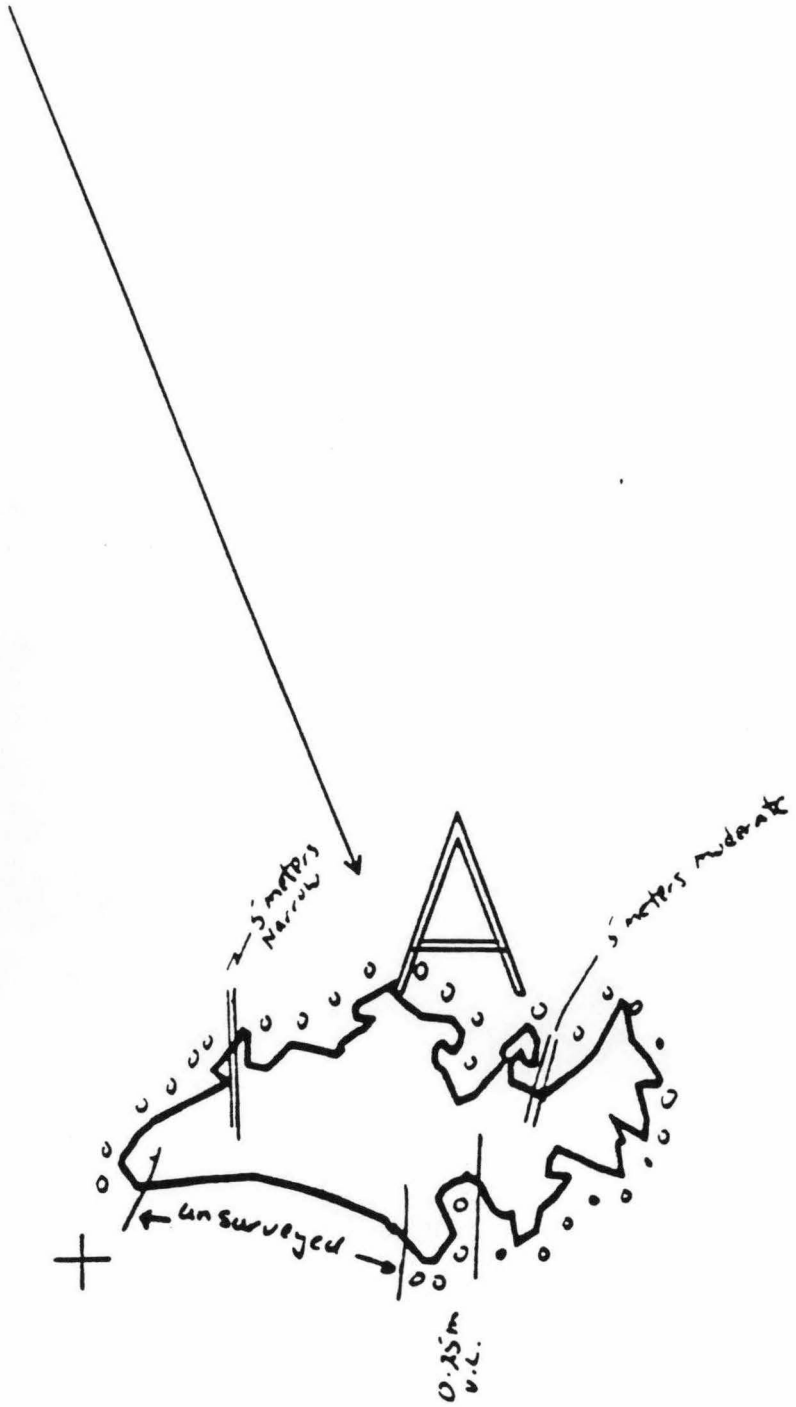
Segment Reference Map
Exxon Coastline

Map Key: PWSMA002

▲ EAGLE NEST

— STREAMS

MAZ



XXXX	Wide	MA002 A
////	Medium	ADEC Subsegment Length: 1551m
----	Narrow	METERS
TTTT	Very Light	0 100 200
0000	No Oil	AK State Plane Zone 4 pma002ab

Subdivision Field Map
Map Key: PWSMA002Ab
Name: Reimer
Date: 5/18/92
Date Entered:

1993 ADEC RESTORATION PROJECT #930380
SHORELINE SURVEY COMMENT SHEET

TION 1N 39W SEGMENT MA002 SUBDIVISION A DATE 6/22/93

AFFILIATION DNR
NAME Mike Pinnafox SIGNATURE Mike Pinnafox

[illegible] fry release, fish harvest, set net site, camping, Eag[illegible] nest. many oil present in mussel bed at site 8 on south island. Aware of Vic and Ivan, who have worked the site before, seal grounds are restricted. Set net sites permitted on one side of south island. Active set net site 200 yards [illegible] bay. 2 oyster catchers are protecting territory near the worst oiled site on South Island.

Middle Island has active eagle nest w/ 2 eaglets present.

AFFILIATION
NAME IVAN NANCE, LT, USCGR SIGNATURE [signature]

AREA TREATED IN FINSAP IS IMPROVED BUT OIL PERSISTS IN LOW ENERGY AREAS.

AFFILIATION U.S. Forest Service
NAME Vic Baer SIGNATURE Vic Baer

[illegible] significant amounts of tar/asphalt on surface, rapid to find). Site 1B Pit 8 (oiled mussel bed) had recovered significantly from last years treatment. No surface oil present, and no need for future treatment.

AFFILIATION
NAME _____ SIGNATURE _____

1993 ADEC RESTORATION PROJECT # 930380
SHORELINE OILING SUMMARY

SEGMENT MA002

SUBDIVISION A

AM MEMBERS: E PIPER - ADEC
D MUNSON - ADEC
M PROFITA - ADEC
J BAER - USFS I. NANCE - USCG
W. MENEFEE - ADNR

DATE 6/21/93

TIME 18 : 50 to 20 : 30 TIDE LEVEL +4.8 ft. to +2.8 ft. ENERGY LEVEL: ■ H ☐ M ☐ L

SURVEYED FROM: ■ FOOT ☐ BOAT ☐ HELO WEATHER: ☐ SUN ■ CLOUDS ☐ FOG ☐ RAIN ☐ SNOW

TOTAL LENGTH SHORELINE SURVEYED: _____ m NEAR SHORE SHEEN: ☐ BR ☐ RB ☐ SL ■ NONE

EST. OIL CATEGORY LENGTH: H_____m M_____m L_____m VL_____m N_____m NS_____m

LOC	SURFACE OIL CHARACTER										SURFACE SEDIMENT TYPE	SHORE SLOPE	AREA WIDTH m	AREA LENGTH m	ZONE S	ZONE UI	ZONE MI	ZONE LI	NOTES
	AP	MS	TB	SOR	CV	CT	ST	FL	DB	NO		V H M L							
D						T	T								■				

DISTRIBUTION: C = 81–100%; B = 51–80%; P = 11–50%; S = 1–10%; T = <1%

SLOPE: V = VERTICAL; H = HIGH ANGLE; M = MEDIUM ANGLE; L = LOW ANGLE PHOTO ROLL # _____-_____ FRAMES _____

PIT NO.	PIT DEPTH (cm)	SUBSURFACE OIL CHARACTER OP	HOR	MOR	LOR	OF	TR	NO	OILED ZONE cm–cm	CLEAN BELOW Y/N	H2O LEVEL (cm)	SHEEN COLOR B R S N	PIT ZONE S	UI	MI	LI	SURFACE-SUBSURFACE SEDIMENTS		NOTES
1	24							■	-		24			■			CP	PG	1ST PG CUT BTW
2	30							■	-		–				■		PG	PG	
3	14			■					6 - 4	4	11	B			■		PG	G	RB SHEEN
4	22		■						6 - 4	4	21	B			■		CP	PG	
5	23				■				8 - 22	Y						■	CP	PG	
6	16							■	-						■		CP	PG	PEAT AT 16CM
7	18				■				11 - 17	Y					■		CP	PG	OYSTER CATCHE
8	14		■						4 - 6	Y	10	B			■		CP	PM	SITE B
									-										
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SHEEN COLOR: B = BROWN; R = RAINBOW; S = SILVER; N = NONE

~~MAYSAR~~ SHORELINE OILING SUMMARY (cont.)

PAGE 2 OF 2

TEAM NO. ______

SEGMENT MA002A

SUBDIVISION A

DATE 6/21/93

NO.	PIT DEPTH (cm)	SUBSURFACE OIL CHARACTER							OILED ZONE	CLEAN BELOW	H2O LEVEL	SHEEN COLOR	PIT ZONE				SURFACE-SUBSURFACE SEDIMENTS	NOTES
		OP	HOR	MOR	LOR	OF	TR	NO	cm-cm	Y/N	(cm)	B R S N	S	UI	MI	LI		
									-									
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SHEEN COLOR: B = BROWN; R = RAINBOW; S = SILVER; N = NONE

OG COMMENTS:

Site 1 - Loc B MUSSEL BED OILING SIMILIAR THROUGHOUT AT SHALLOW DEPTH. HOR/LOR

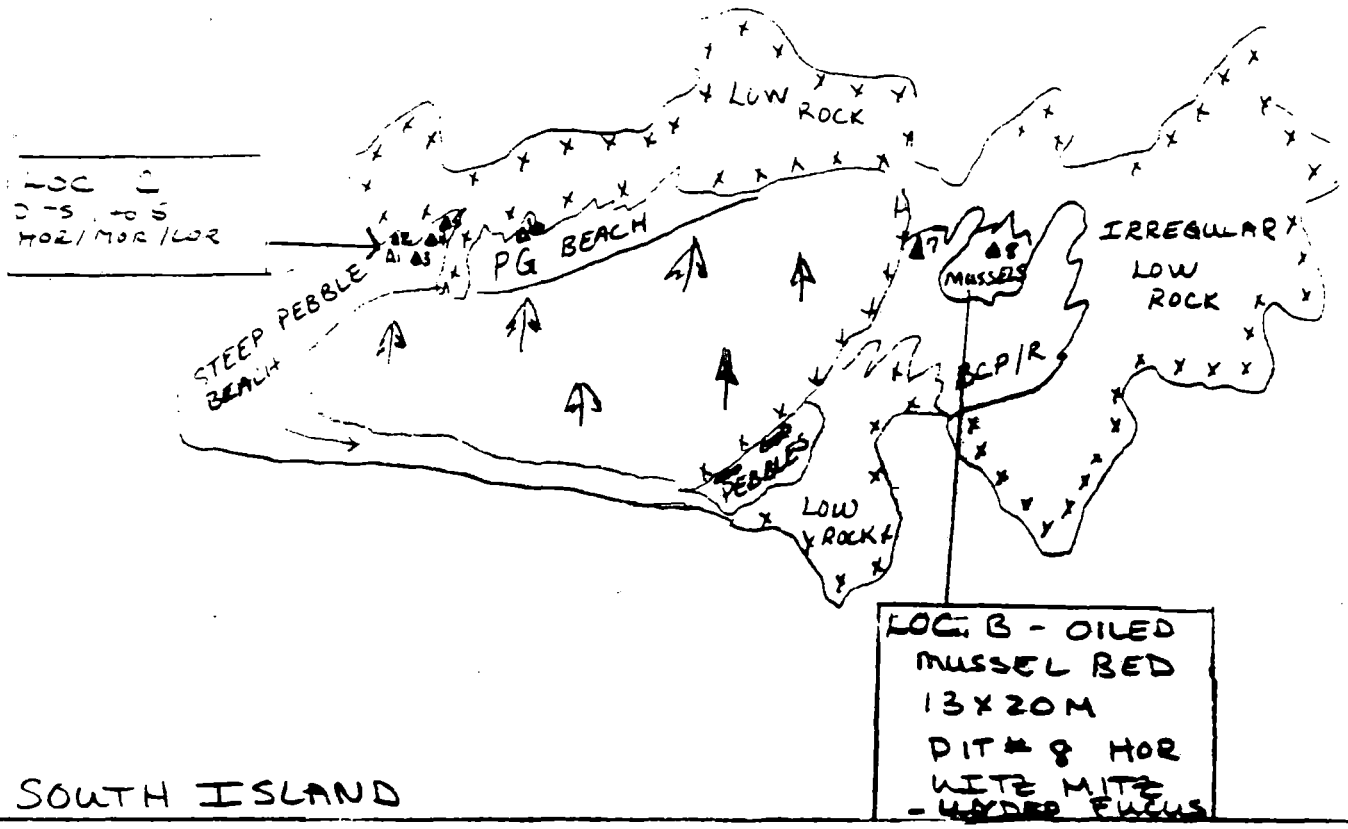
- HEAVY RAINBOW SHEEN PRESENT WITHOUT DISTURBANCE - ACTIVELY SHEENING
- OILING EXTENDS FROM UITZ TO MITZ -
- ALSO PRESENT UNDER FUCUS
- PIT #8 HOR/LOR OILING
- 2 OYSTER CATCHERS AT LOC. B OILED MUSSEL BED

SITE 2 - LIMITED SURVEY DUE TO EAGLE NEST

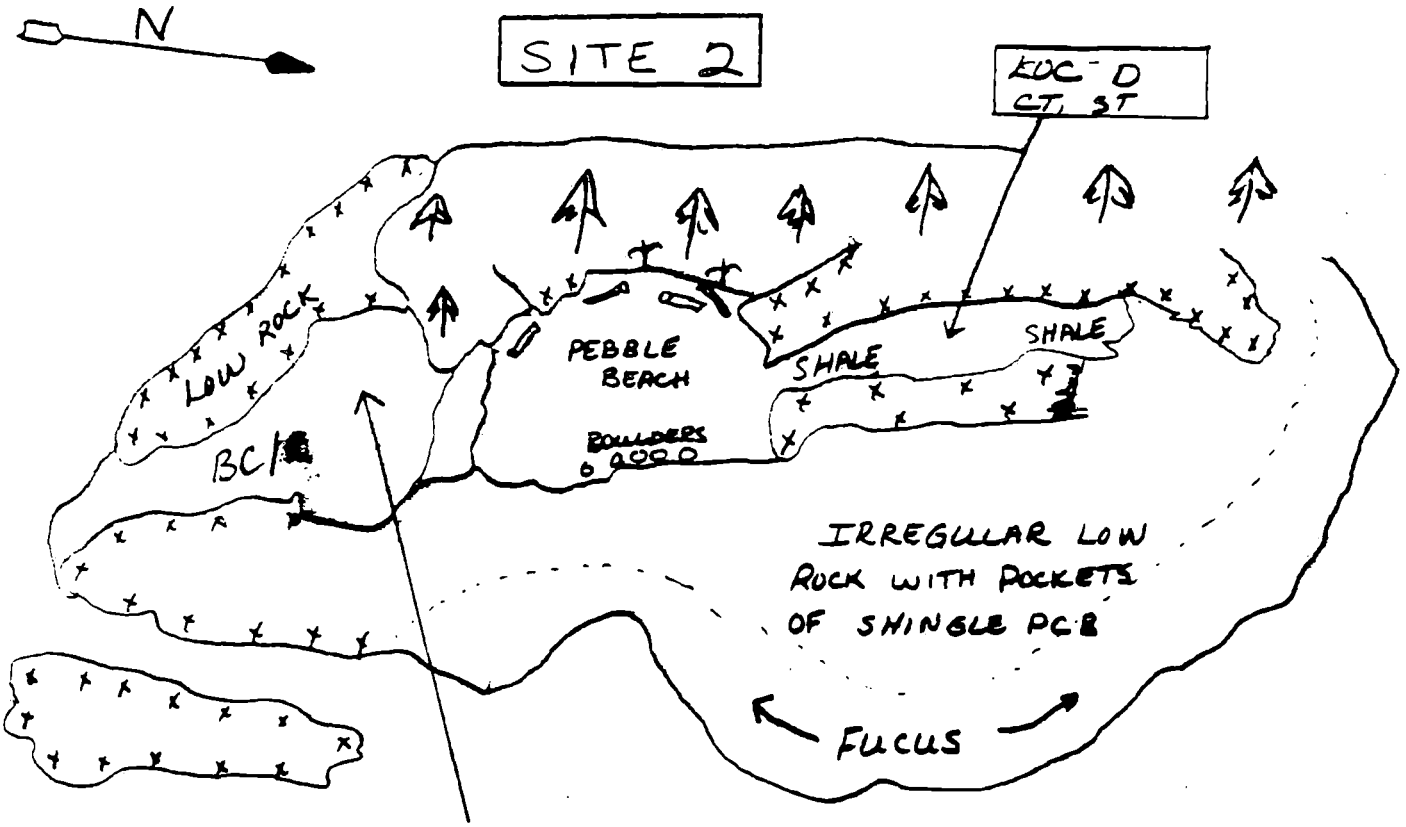
OYSTER CATCHERS PRESENT.

MA 002A
6/21/93
M PROFITA

SITE 1



SITE 2



MIDDLE ISLAND

1993 Surface Oil Summary
Segment MA102 Subdivision A

Location	Area of Oiling Type in Square Meters AP	MS	SOR	CV	OT
D	0.	0.	0.	0.	0.05
TOTALS=	0.	0.	0.	0.	0.05

AP= asphalt; MS= mousse; SOR= surface oil residue; CV= cover; OT= coat
Areas are computed by multiplying the affected area by the percent coverage of each oil type. Field categories of percent oil coverage are converted to the median percent value as follows:
continuous= 95%; broken= 70%; patchy= 30%; sporadic= 6%; trace= 0.5%

SUBSURFACE OIL SUMMARY FOR SEGMENT MA002A

Loc.	1993 PIT #	Gr. Sz.	Zn.	En.	Note	TREATMENT 1992	TREATMENT 1991	1991 OILED SED. VOL. (m3) OP	HOR	MOR	LOR	OP/TR	1992 OILED SED. VOL. (m3) OP	HOR	MOR	LOR	OP/TR	1991 OILED SED. VOL. (m3) OP	HOR	MOR	LOR	OP/TR	WT.'ed OIL VOL. 1992	WT.'ed OIL VOL. 1991	WT.'ed OIL VOL. 1990	% CHANGE WT.'ed OIL VOL. 92-91	% CHANGE WT.'ed OIL VOL. 91-90	% CHANGE WT.'ed OIL VOL. 92-90
ZA	3 5	GP-PGPt	ML	M		MT, Rs, Rb	Rs, MR	0.0	1.8	0.6	1.7	0.0	?	?	?	?	?	?	?	?	?	?	12.8					
ZB	7	GP PG	M	M		NO	NO	0.0	0.0	0.0	0.2	0.0	?	?	?	?	?	?	?	?	?	?	0.2					
ZC	8	GP-PMPt	M	M	MUSSELS, ACTIVE SHEENING	Rs, Rb	Rs, Rb	0.0	5.1	5.1	5.4	0.0	0.0	0.5	0.0	0.0	0.0	?	?	?	?	?	46.8	1.0		4581.8		
ZD		PG GPt	U	M		MT, Rs, Rb	Rs, MR	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	?	?	?	?	?	0.0	0.0		100		
							TOTALS=	0.0	6.9	5.7	7.3	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	59.8	1.0	0.0	4581.8	0.0	4581.8

Loc.= location name of specific oiling area (subsite).
1993 PIT #= the number designations, as indicated on the 1993 survey forms, of the pits in the subsite.
Gr. Sz.= grain size, a dash separates surface from subsurface sediments, B= boulders, C= cobbles, P= pebbles, G= granules, S= sand, M= mud, Pt= peat.
Zn.= inter tidal zone, S= supra tidal, H= high inter tidal, M= mid inter tidal, L= low inter tidal.
En.= wave-energy level, H= high, M= moderate, L= low, VL= very low.
TREATMENT= cleanup treatment occurring at the subsite for the given year, ET= equipment tilling (heavy equipment), MT= manual tilling, BR= berm relocation, SR sediment relocation, Rb= oiled-sediment removal from subsurface, Rs= oiled-sediment removal from the surface, MB= manual breakup, MR= manual raking, ?= unknown, NO no treatment.
OILED SED. VOL.= oiled-sediment volume in cubic meters by year and oil type, OP= oil pore, pore spaces are completely filled with oil resulting in oil oozing out of sediments - water cannot penetrate OP zone, HOR= heavy oil residue, pore spaces partially filled with oil residue but not generally flowing out of sediments, MOR= medium oil residue, heavily coated sediments; pore spaces are not filled with oil - pore spaces may be filled with water, LOR= light oil residue, sediments lightly coated with oil, OP= oil film, continuous layer of sheen or film on sediments - water may bead on sediments, TR= trace, discontinuous film, spots of oil on sediments, an odor or tackiness with no visible evidence of oil, ?= area of subsite not visited or adequately surveyed.
WT.'ed OIL VOL.= weighted oiled-sediment volume = (OP VOL.)*5 + (HOR VOL.)*4 + (MOR VOL.)*3 + (LOR VOL.)*2
% CHANGE WT.'ed VOL.= % change in weighted oiled-sediment volume between the given years = ((year 2 - year1)/(year 1))*100, positive values indicate increases in the amount of oil, negative values indicate decreases, "Inf" (infinite percent increase) indicates newly discovered oil

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 06/21/93 TIME: -0-

SEGMENT#: MA002 STATION#: -0-
LOCATION: MAIN BAY
KEYWORDS: -0-
REASON FOR TAKING PHOTO:RAINBOW SHEEN AT LOCATION C SITE 1.

TAKEN BY: MARIANNE PROFITA INITIALS:_____
ROLL #: 93MSP003 FRAME #: 11 EVIDENCE ID#:_____

Taken by: M Profita

Roll #: 93MSP003 Frame #: 11

SEGMENT: PR 016 A

LOCATION: Northern Islands Group, Meares Point on south tip of Perry Island

OTHER STUDIES

NOAA transect station =N-17.

PHYSICAL SETTING

Coastal Morphology and Sedimentology

Pebble and cobble pocket beach. Sediments are well rounded. Grain size grades from pebbles to boulders in the lower intertidal. Multiple high-tide berms are commonly present as well as a storm berm. A small gravel tombolo is present in the center of the pocket, and grain size abruptly increases toward each limb. A freshwater lake lies behind the beach causing abundant outflow of freshwater through the beachface at least in the southern half of the pocket.

Environmental Sensitivity Index (ESI)

Type 7, gravel beach.

Fetches and Directions (kilometers)

E= 24; SE= 24

Energy Level

High.

GENERAL BIOLOGICAL SETTING

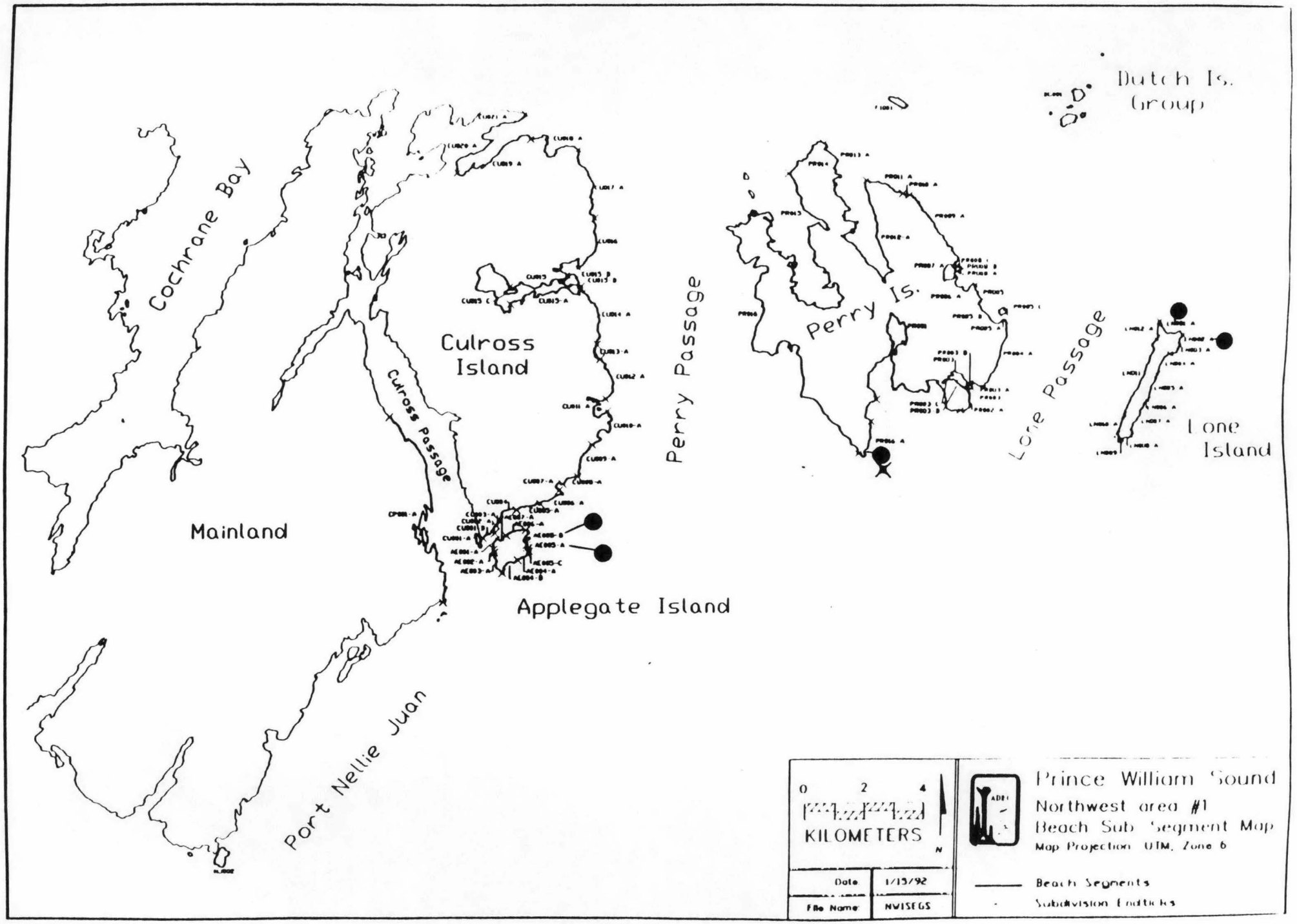
Eagle nest.
Fish harvest area.

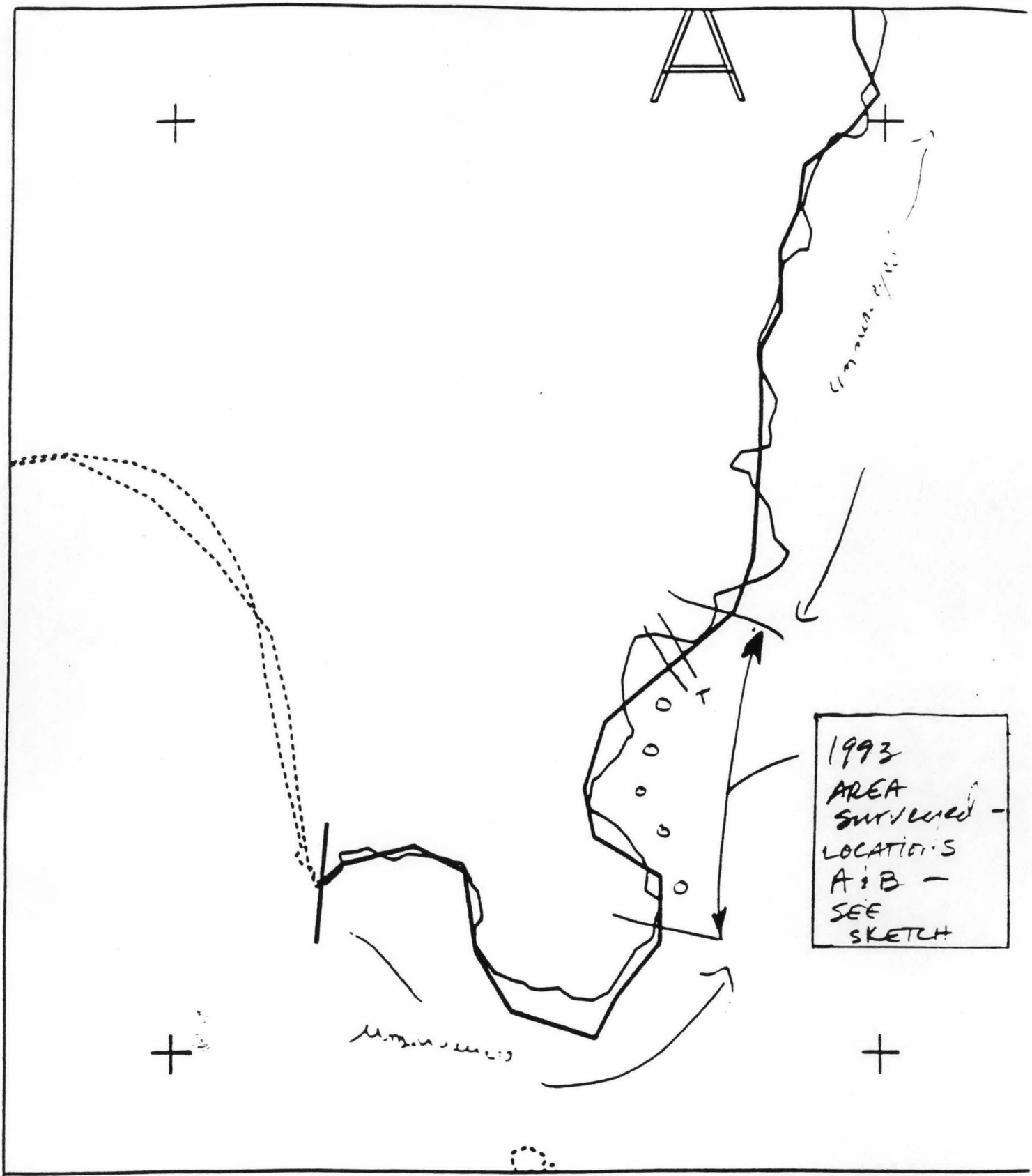
OILING SUMMARY

One area of AP and SOR remains in the boulder field at the base of the bedrock on the north limb. It was estimated that less than 11% coverage occurs at this location, but in 1991 more than 11% was present. Manual pickup occurred at this location in 1991.

Two areas of significant subsurface oil remain at this site. Both areas (ZA and ZB) are in the southern half of the site. Location ZA is in the upper and mid intertidal zones amongst boulders along the south limb. MOR and HOR oil occurs here, and there has been no improvement since 1991. Location ZB is in the mid intertidal zone just south of the tombolo. MOR and LOR occurs below clean surface boulders and cobbles in this exposed portion of the site. Much improvement occurred here with less than half of the oil remaining in 1993 than was present in 1991.

Several other small areas of subsurface oil completely cleaned up since 1991, despite only minor treatment in 1991 and no treatment in 1992. Overall, the amount of subsurface oil has decreased by 50% since 1991. The berm was relocated in 1990.


Dutch Is.
Group
Cochrane Bay
Culross
Island
Culross Passage
Perry Passage
Perry Is.
Lone Passage
Lone
Island
Mainland
Applegate Island
Port Nellie Juan
0 2 4
KILOMETERS
N
Date
1/13/92
File Name
NVISEGS
Prince William Sound
Northwest area #1
Beach Sub Segment Map
Map Projection UTM, Zone 6
Beach Segments
Subdivision Endticks



XXXX Wide
//// Medium
---- Narrow
TTTT Very Light
0000 No Oil

PR016 A

ADEC Subsegment Length: 1708m

METERS

0 100 200

AK State Plane Zone 4
ppr016aa

Subdivision Field Map

Map Key: PWSPR016Ae

Name: M Simpson

Date: 3 May 93

Date Entered:

1993 ADEC RESTORATION PROJECT #930380
SHORELINE SURVEY COMMENT SHEET

LOCATION PERRY ISLAND SEGMENT PR-16 SUBDIVISION A DATE 8/22/93

AFFILIATION
NAME IVAN NANCE, LT, USCGR SIGNATURE [signature]

SUBSURFACE OIL PRESENT IN BOULDER AREAS AND MITZ. STORM BERM RELOCATION IN 1990 WAS EFFECTIVE BUT OIL DESCRIBED ABOVE HAS BEEN PERSISTENT. NO SHEEN IN FROM UNDISTURBED AREAS NOTED.

AFFILIATION U.S. Forest Service
NAME Ric Baer SIGNATURE [signature]

Small amounts of tar and needles observed on surfaces of bedrock. Subsurface oil in rocky area on south end of beach that could be treated with PES51, but is not necessary (area A) During clean-up of beach the old beach logs were windrowed above the high tide line and are still there in that unnatural state. These logs should have been relocated after the clean-up was completed with heavy equipment. It is now going to be very difficult if not impossible to improve appearance.

AFFILIATION DNR
NAME Wyn Menefee SIGNATURE Wyn Menefee

Recording of oil on DEC sheet is correct. Human use is prevalent. Gillnet + set net site. Two hiking trails (well used) eminate from beach to otherside of Mears Point. Sub surface oil persisting. The beach logs were all pushed up to the top berm above extreme tides. Looks unnatural [redacted] forms potential camping area. Mariculture [redacted] in same bay. Note additional report on S. Perry [redacted] site. Oil not sheening until disturbed.

AFFILIATION
NAME _____ SIGNATURE _____

1993 ADEC RESTORATION PROJECT # 930380
SHORELINE OILING SUMMARY

PAGE ____ OF ____

SEGMENT DR2a

SUBDIVISION A

DATE 6/20/93

AM MEMBERS: E. Piper - ADEC
D Munson - ADEC
[illegible] - ADEC
J Baer - USFS
N Menette - DNR
IVAN nance - USCG

TIME 1730: ____ to 2015: ____ TIDE LEVEL 6' ft. to 3' ft. ENERGY LEVEL: ■ H ☐ M ☐ L

SURVEYED FROM: ■ FOOT ☐ BOAT ☐ HELO WEATHER: ☐ SUN ■ CLOUDS ☐ FOG ☐ RAIN ☐ SNOW

TOTAL LENGTH SHORELINE SURVEYED: ____ m NEAR SHORE SHEEN: ☐ BR ☐ RB ☐ SL ■ NONE

EST. OIL CATEGORY LENGTH: H____m M____m L____m VL____m N____m NS____m

LOC	SURFACE OIL CHARACTER										SURFACE SEDIMENT TYPE	SHORE SLOPE	AREA		ZONE				NOTES
	AP	MS	TB	BOR	CV	CT	ST	FL	DB	NO		V H M L	WIDTH m	LENGTH m	S	UI	MI	LI	
A						S	S									■			South SEABROOK face pitted & MINK in TAR
B	S			S			S						8	10		■			INTERSTICIALLY in BOULDER Dimensions are from SURVEYING done in 1991

DISTRIBUTION: C = 81–100%; B = 51–80%; P = 11–50%; S = 1–10%; T = <1%

SLOPE: V = VERTICAL; H = HIGH ANGLE; M = MEDIUM ANGLE; L = LOW ANGLE PHOTO ROLL # ____-____ FRAMES ____

PIT NO.	PIT DEPTH (cm)	SUBSURFACE OIL CHARACTER							OILED ZONE cm-cm	CLEAN BELOW Y/N	H2O LEVEL (cm)	SHEEN COLOR	PIT ZONE				SURFACE-SUBSURFACE SEDIMENTS	NOTES
		OP	HOR	MOR	LOR	OF	TR	NO				B R S N	S	UI	MI	LI		
1	46			■					20-41	N	44-46	B		■			B/G P/G/M	South end BOULDERS.
2	22				■				9-17	Y	—				■		B/G/P P/G	
3	24		■						2-24	N	21-24	B			■		G/C/R-P/G/R	overlying Bedrock
4	23			■					15-19	Y	18-23	B			■		B/C P/G/M	
5	29							■	-	Y	—					■	B/C G/M/P	
6	21			■					U -	U	4-21	B		■			B/C P/G/M	Brown gobules-tar
7	33			■					16-U	U	26-33	B			■		B/C P/G/C	Brown goo, H2o
8	40							■	-		33-40	N			■		B/C G/P	
9	33				■			■	-		27-33	N			■		B/G C/P/G	
10	26				■			■	-		14-26	N			■		B/C C/P/G	
11	28			■	■				20-26	Y	24-28	B			■		B/G C/P/G	
12	34			■	■				16-U	U	26-34	B			■		B/G C[illegible]	H2O FILLED
13	43			■	■				30-44	Y	29-33	B			■		B/G P/G	H2O Filled
14	33			■	■				24-U	U	30-33	B			■		C/P B/G	
15	34							■	-			N		■			C/P B/G	
16	51							■	-			N			■		C/P P/G	
17	21							■	-			N				■	P/G P/G	
18	33							■	-		25-33	N			■		B/C C/P/G	H2o Filled
	24							■	-		20-24	N			■		C/G P/G	
20	28							■	-		21-28	N		■			P P/G	
21	32							■	-		31-32	N		■			B/P P/G/M	
22	16							■	-		15-16	N		■			B/C/P G/P	
									-									

SHEEN COLOR: B=BROWN; R=RAINBOW; S=SILVER; N=NONE

~~MAYSAP~~ SHORELINE OILING SUMMARY (cont.)

PAGE __ OF __

TEAM NO. _____

SEGMENT PR10 SUBDIVISION A DATE 6/20/93

NO.	PIT DEPTH (cm)	SUBSURFACE OIL CHARACTER							OILED ZONE	CLEAN BELOW	H2O LEVEL	SHEEN COLOR	PIT ZONE				SURFACE-SUBSURFACE SEDIMENTS	NOTES
		OP	HOR	MOR	LOR	OF	TR	NO	cm-cm	Y/N	(cm)	B R S N	S	UI	MI	LI		
									-									
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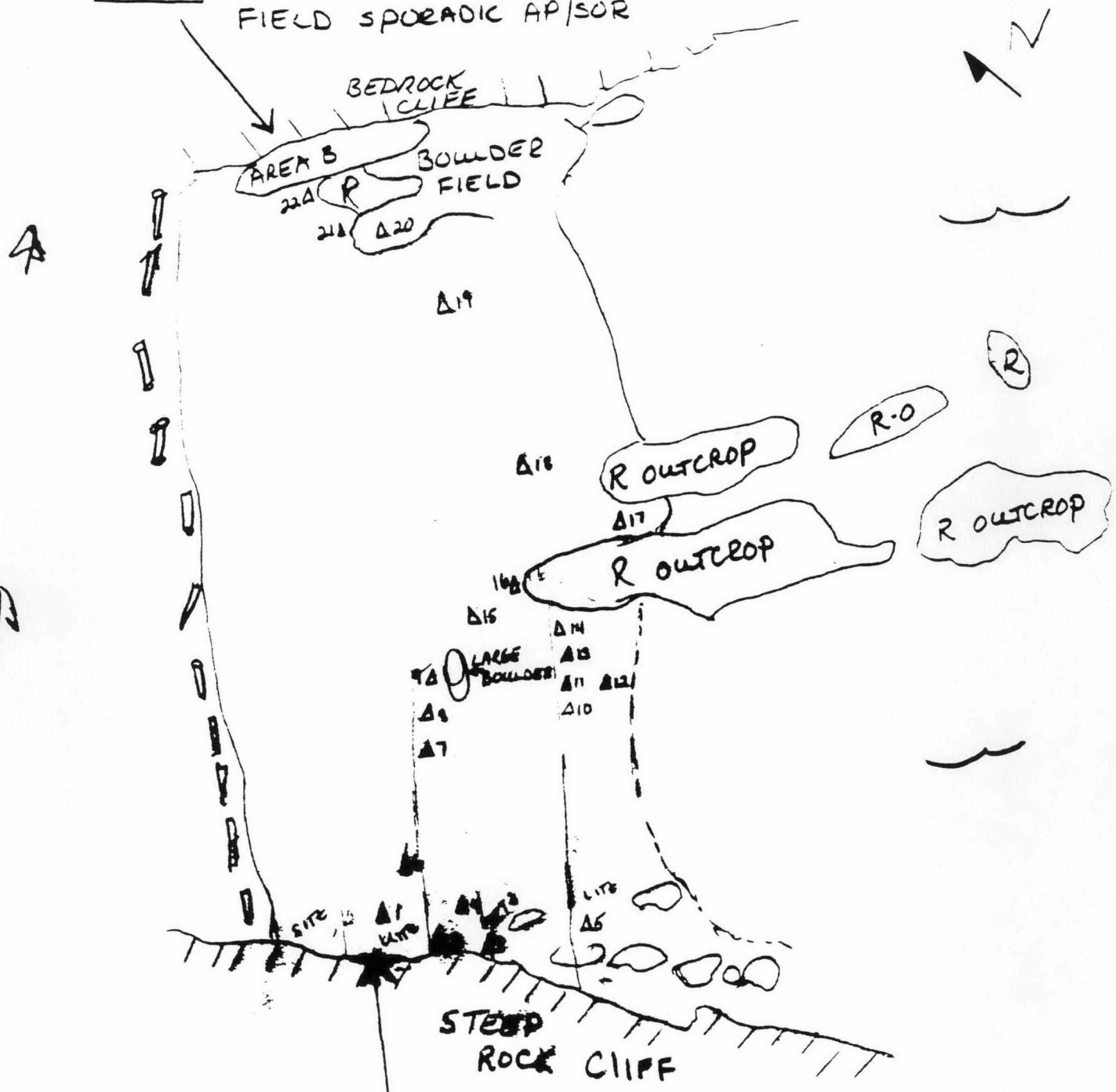
SHEEN COLOR: B = BROWN; R = RAINBOW; S = SILVER; N = NONE

OG COMMENTS:

- We used / Traveled Deer trails from beach thru woods to other side of Mear's point.

- See [illegible] for Area A + B Comments.

PRO16 A
6/20/93



1993 Surface Oil Summary

Segment PR016 Subdivision A

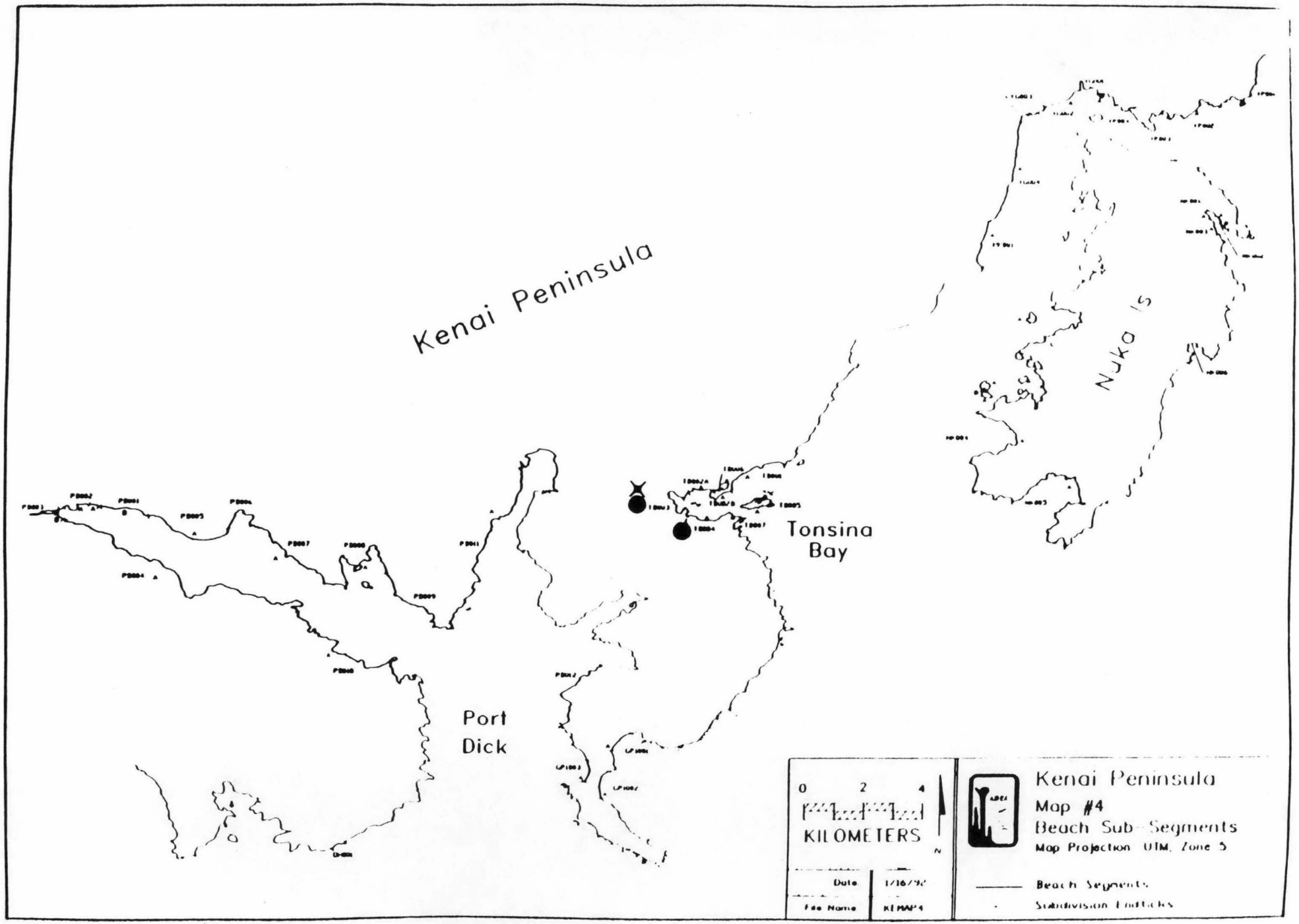
Location	Area of Oiling Type in Square Meters				
	AP	MS	SOR	CV	OT
A					
B	4.8	0.	4.8	0.	0.
TOTALS=	4.8	0.	4.8	0.	0.

AP= asphalt; MS= mousse; SOR= surface oil residue; CV= cover; OT= boat
Areas are computed by multiplying the affected area by the percent coverage of each oil type. Field categories of percent oil coverage are converted to the median percent value as follows:
continuous= 95%; broken= 70%; patchy= 30%; sporadic= 6%; trace= 1.5%

SUBSURFACE OIL SUMMARY FOR SEGMENT PR016A

Loc.	1993 PIT #	Gr. Sz.	Zn.	En.	Note	TREATMENT 1992	TREATMENT 1991	1993 OILED SED. VOL. (m3) OF	HOR	MOR	LOR	OF/TR	1992 OILED SED. VOL. (m3) OP	HOR	MOR	LOR	OF/TR	1991 OILED SED. VOL. (m3) OF	HOR	MOR	LOR	OF/TR	WT.'ed OIL VOL. 1993	1992	1991	% CHANGE WT.'ed VOL.		
2A	1-4,6	BCPR-PCGR	UM	H		NO	ks	0.0	6.3	12.9	2.3	0.0	0.0	5.9	4.9	2.5	0.0	0.0	7.1	0.0	0.0	0.0	68.4	43.5	0.0			
2B	7-13	BC-CPG	M	H		NO	NO	0.0	0.0	10.1	7.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.4	33.8	0.0	0.0	45.5	0.0	100.0			
2C		CP-PG	U	H	STORM BERM	NO	NO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.0	0.8	0.0	0.0	0.0	0.0	2.8	5.6			
2D		PC-P	SU	H	STORM BERM	NO	NO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	1.5	0.0	0.0	0.0	2.3	4.6			
2E		CBP-PBSM	UML	H		NO	NO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.7	0.0	4.9	0.0	0.0	0.0	0.2	0.0	0.0	14.0	0.4			
2F		BP-PG	M	H		NO	NO	0.0	0.0	0.0	0.0	0.0	?	?	?	?	?	0.0	1.4	0.0	0.0	0.0	0.0	?	5.6			
2G		CP-PGC	UM	H		NO	NO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.2	0.0	0.0	0.0	12.5			
2H		BP-PS	S	H		NO	NO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4			
2I		B-G	M	H		NO	ks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0			
							TOTALS-	0.0	6.3	22.9	9.9	0.0	0.0	5.9	9.6	5.0	4.9	0.0	23.6	35.0	7.0	0.0	113.9	62.5	117.5			

Loc.= location name of specific oiling area (subsite).
1993 PIT #= the number designations, as indicated on the 1993 survey forms, of the pits in the subsite.
Gr. Sz.= grain size, a dash separates surface from subsurface sediments, B= boulders, C= cobbles, P= pebbles, G= granules, S= sand, M= mud, Pt= peat.
Zn.= inter tidal zone, S= supra tidal, H= high inter tidal, M= mid inter tidal, L= low inter tidal.
En.= wave-energy level, H= high, M= moderate, L= low, VL= very low.
TREATMENT= cleanup treatment occurring at the subsite for the given year, ET= equipment tilling (heavy equipment), MT= manual tilling, BR= berm relocation, SR= sediment relocation, Rb= oiled-sediment removal from subsurface, Rs= oiled-sediment removal from the surface, MB= manual breakup, MR= manual raking, ?= unknown, NO= no treatment.
OILED SED. VOL.= oiled-sediment volume in cubic meters by year and oil type, OP= oil pore, pore spaces are completely filled with oil resulting in oil oozing out of sediments - water cannot penetrate OP zone, HOR= heavy oil residue, pore spaces partially filled with oil residue but not generally flowing out of sediments, MOR= medium oil residue, heavily coated sediments; pore spaces are not filled with oil - pore spaces may be filled with water, LOR= light oil residue, sediments lightly coated with oil, OF= oil film, continuous layer of sheen or film on sediments - water may bead on sediments, TR= trace, discontinuous film, spots of oil on sediments, an odor or tackiness with no visible evidence of oil, ?= area of subsite not visited or adequately surveyed.
WT.'ed OIL VOL.= weighted oiled-sediment volume = (OP VOL.)*5 + (HOR VOL.)*4 + (MOR VOL.)*3 + (LOR VOL.)*2
% CHANGE WT.'ed VOL.= % change in weighted oiled-sediment volume between the given years = ((year 2 - year1)/(year 1))*100, positive values indicate increases in the amount of oil, negative values indicate decreases, "Inf" (infinite percent increase) indicates newly discovered oil


Kenai Peninsula
Nuka Is
Tonsina Bay
Port Dick
0 2 4
KILOMETERS
N
Kenai Peninsula
Map #4
Beach Sub-Segments
Map Projection UTM, Zone 5
Beach Segments
Subdivision Endticks

1993 ADEC RESTORATION PROJECT #930380
SHORELINE SURVEY COMMENT SHEET

SEGMENT E-2 SUBDIVISION E DATE 7 / 93

AFFILIATION
NAME LOGER McDonald SIGNATURE

comments - attorney

AFFILIATION
NAME SIGNATURE

AFFILIATION
NAME SIGNATURE

AFFILIATION
NAME SIGNATURE

1993 ADEC RESTORATION PROJECT # 930380
SHORELINE OILING SUMMARY

PAGE 1 OF 1

SEGMENT T3003

MEMBERS: C Cecchi - ADEC
R MacCampbell - ADNR
E Ennis - ADNR

SUBDIVISION A

DATE 09 / 16 / 93

E 10 : 30 to 1 : 15 TIDE LEVEL +3 ft. to +5 ft. ENERGY LEVEL: ☐ H ☐ M ☒ L

RVEYED FROM: ☒ FOOT ☐ BOAT ☐ HELO WEATHER: ☒ SUN ☐ CLOUDS ☐ FOG ☐ RAIN ☐ SNOW

TAL LENGTH SHORELINE SURVEYED: _____ m NEAR SHORE SHEEN: ☐ BR ☐ RB ☐ SL ☒ NONE

OIL CATEGORY LENGTH: H_____m M_____m L_____m VL_____m N_____m NS_____m

L	SURFACE OIL CHARACTER										SURFACE SEDIMENT TYPE	SHORE SLOPE V H M L	AREA WIDTH m	AREA LENGTH m	ZONE S	ZONE UI	ZONE MI	ZONE LI	NOTES
	AP	MS	TB	SCR	CV	CT	ST	FL	DB	NO									
1				2							CPGSM	M	4	30					SEE OG NOTES
2	2										CPGS	M	10	12					"
				5				5			CPGSM	L	15	5					"

DISTRIBUTION: C = 81–100%; B = 51–80%; P = 11–50%; S = 1–10%; T = <1%

OPE: V = VERTICAL; H = HIGH ANGLE; M = MEDIUM ANGLE; L = LOW ANGLE PHOTO ROLL # _____-_____ FRAMES _____

PIT NO.	PIT DEPTH (cm)	SUBSURFACE OIL CHARACTER OP	HOR	MOR	LOR	OF	TR	NO	OILED ZONE cm-cm	CLEAN BELOW Y/N	H2O LEVEL (cm)	SHEEN COLOR B R S N	PIT ZONE S	PIT ZONE UI	PIT ZONE MI	PIT ZONE LI	SURFACE-SUBSURFACE SEDIMENTS	NOTES
NO PIT DATA RECORDED																		
GENERAL GRND SURVEY ONLY																		

SHEEN COLOR: B = BROWN; R = RAINBOW; S = SILVER; N = NONE

RESTORATION SHORELINE OILING SUMMARY (cont.)

TEAM NO. ____

SEGMENT TB003 SUBDIVISION A DATE 09/16/91

NO.	PIT DEPTH (cm)	SUBSURFACE OIL CHARACTER OP	HOR	MOR	LOR	OF	TR	NO	OILED ZONE cm-cm	CLEAN BELOW Y/N	H2O LEVEL (cm)	SHEEN COLOR B R S N	PIT ZONE S	UI	MI	LI	SURFACE-SUBSURFACE SEDIMENTS	NOTES
									-									
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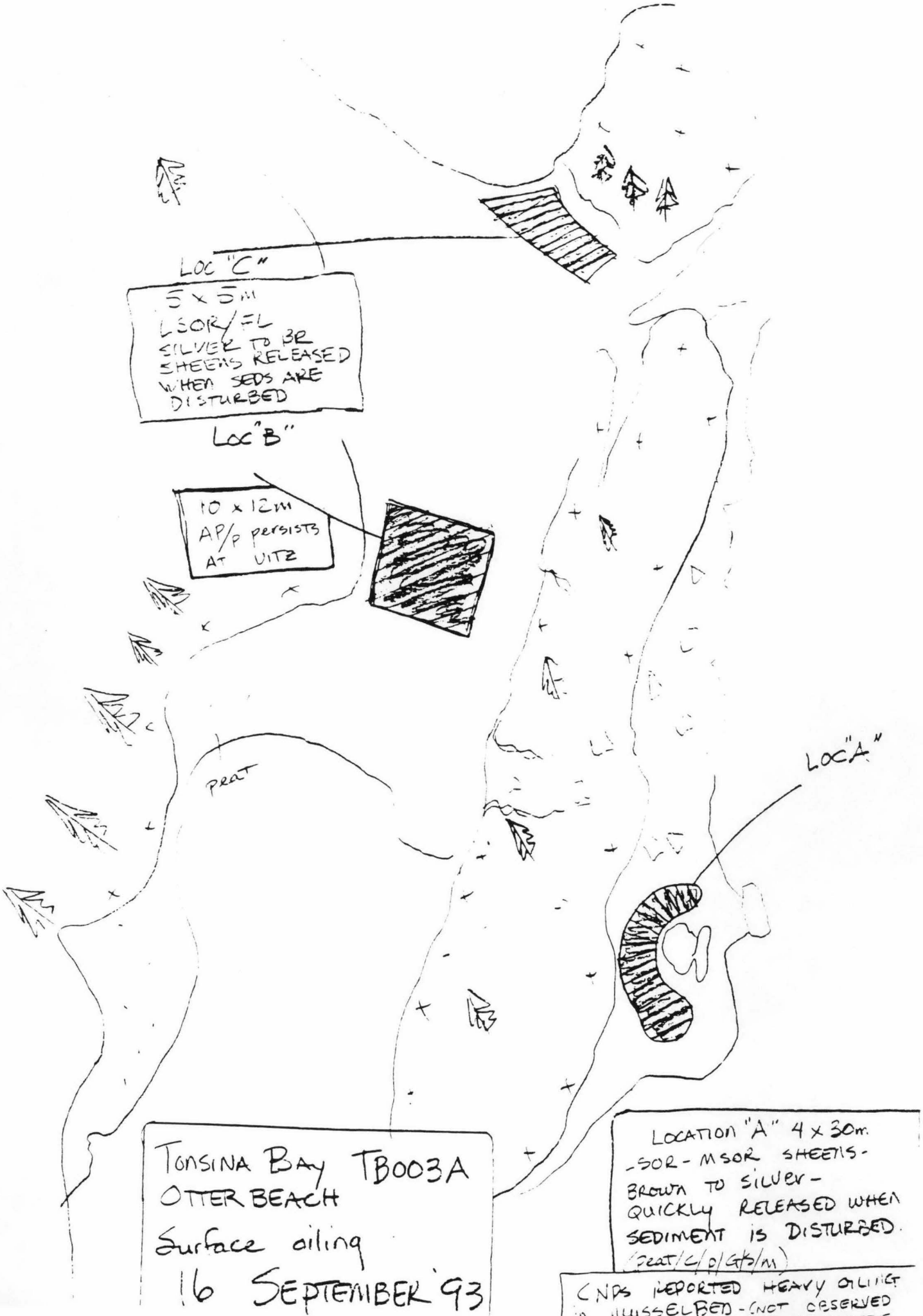
SHEEN COLOR: B = BROWN; R = RAINBOW; S = SILVER; N = NONE

LOG COMMENTS: Surface oiling only - PITS NOT RECORDED -

LOCATION "A": MSOR/LSOR/FL LOCATED IN peat/p/c/G/S/m - SOUTHERN END OF ISLAND. NPS PERFORMED MUSSEL STUDY DURING SPRING/SUMMER '93 REPORTED OILED MUSSEL BED - THIS BED WAS NOT OBSERVED DURING THIS SURVEY DUE TO TIDE HEIGHT.

LOCATION "B": AP-(HARD) - PATCHY COVERAGE OF 10x12m AREA AT UITZ to MITZ -

LOCATION "C": LSOR/MSOR/FL-S 15x5m LOCATED IN THE LITZ BEHIND/AT THE BASE OF BEDROCK ISLAND (NORTHERN SIDE)


LOC "C"
5 x 5m
LSOR/FL
SILVER TO BR
SHEENS RELEASED
WHEN SEDS ARE
DISTURBED
Loc "B"
10 x 12m
AP/P persists
AT UITZ
PEAT
LOC "A"
TONSINA BAY TB003A
OTTER BEACH
Surface oiling
16 SEPTEMBER '93
LOCATION "A" 4 x 30m.
-SOR - MSOR SHEETS -
BROWN TO SILVER -
QUICKLY RELEASED WHEN
SEDIMENT IS DISTURBED.
(PEAT/C/O/GR/M)
CNPS REPORTED HEAVY OILING
IN MUSSELBED - (NOT OBSERVED

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 09/16/93 TIME: 1030

SEGMENT#: TB003 STATION#: -0-
LOCATION: TONSINA BAY, GULF OF ALASKA
KEYWORDS: -0-
REASON FOR TAKING PHOTO:ASPHALT MAT PERSISTS LANDWARD SIDE OF SMALL ISLAND AT THE UITZ OF SMALL SADDLE. LOCATION B.

TAKEN BY: CLARA CROSBY INITIALS: CSC
ROLL #: 93CSC010 FRAME #: 1 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 09/16/93 TIME: 1030

SEGMENT#: TB003 STATION#: -0-
LOCATION: TONSINA BAY, GULF OF ALASKA
KEYWORDS: -0-
REASON FOR TAKING PHOTO:ASPHALT MAT PERSISTS AT "OTTER BEACH". LOCATION B.

TAKEN BY: CLARA CROSBY INITIALS: CC
ROLL #: 93CSC009 FRAME #: 35 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 09/16/93 TIME: 1030

SEGMENT#: TB003 STATION#: -0-
LOCATION: TONSINA BAY, GULF OF ALASKA
KEYWORDS: -0-
REASON FOR TAKING PHOTO:J.JOHNSON (ADNR) HOLDING FRIABLE AP THAT PERSISTS LANDWARD SIDE OF SMALL ISLAND AT THE UITZ OF SMALL SADDLE. LOCATION B

TAKEN BY: CLARA CROSBY INITIALS: CSC
ROLL #: 93CSC010 FRAME #: 3 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 09/16/93 TIME: 1030

SEGMENT#: TB003 STATION#: -0-
LOCATION: TONSINA BAY, GULF OF ALASKA
KEYWORDS: -0-
REASON FOR TAKING PHOTO:J.JOHNSON (ADNR) HOLDING FRIABLE AP THAT PERSISTS LANDWARD SIDE OF SMALL ISLAND AT THE UITZ OF SMALL SADDLE. LOCATION B

TAKEN BY: CLARA CROSBY INITIALS: CSC
ROLL #: 93CSC010 FRAME #: 2 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 09/16/93 TIME: 1030

SEGMENT: TB003 STATION: -0-
LOCATION: TONSINA BAY, GULF OF ALASKA
KEYWORD: -0-
REASON FOR TAKING PHOTO:LOCATION A, AREA WAS ACTIVELY SHEENING UPON ARRIVAL. SHEEN WAS NOT THE RESULT OF AGITATION.

TAKEN BY: CLARA CROSBY INITIALS: CSC
ROLL #:93CSC010 FRAME #: 5 EVIDENCE ID#:_____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 09/16/93 TIME: 1030

SEGMENT: TB003 STATION: -0-
LOCATION: TONSINA BAY, GULF OF ALASKA
KEYWORD: -0-
REASON FOR TAKING PHOTO:CLOSE-UP OF AP THAT PERSISTS LANDWARD SIDE OF SMALL ISLAND AT THE UITZ OF SMALL SADDLE. LOCATION B

TAKEN BY: CLARA CROSBY INITIALS: CSC
ROLL #:93CSC010 FRAME #: 4 EVIDENCE ID#:_____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 09/16/93 TIME: 1030

SEGMENT: TB003 STATION: -0-
LOCATION: TONSINA BAY, GULF OF ALASKA
KEYWORD: -0-
REASON FOR TAKING PHOTO:OILING IN LOCATION A, LSOR/MSOR MIXED WITH FINE SEDIMENT AT LITZ.

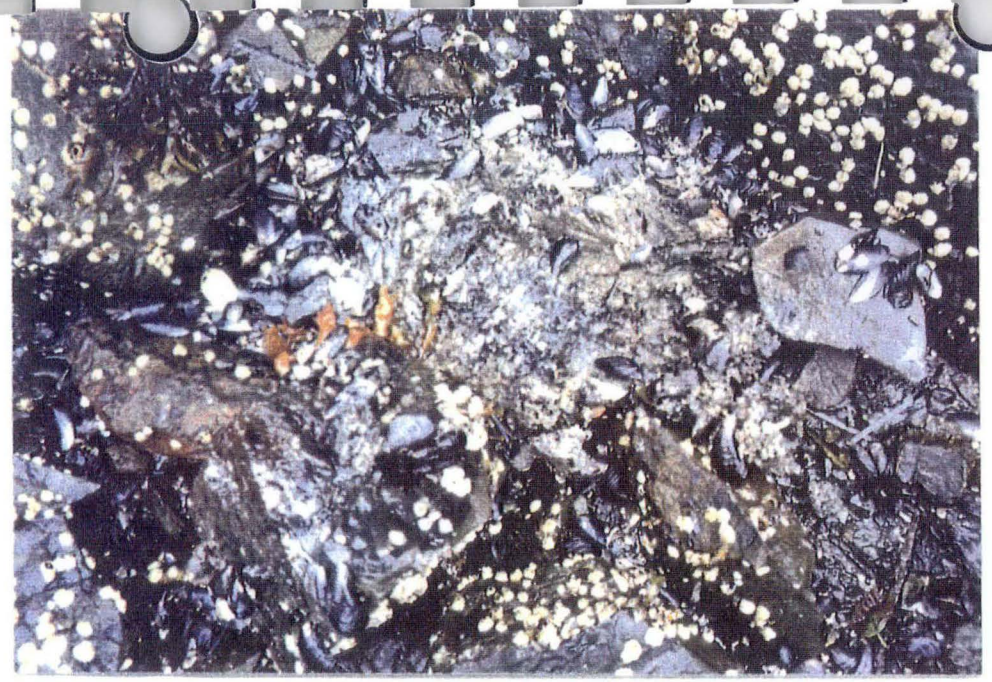
TAKEN BY: CLARA CROSBY INITIALS: CSC
ROLL #:93CSC010 FRAME #: 7 EVIDENCE ID#:_____

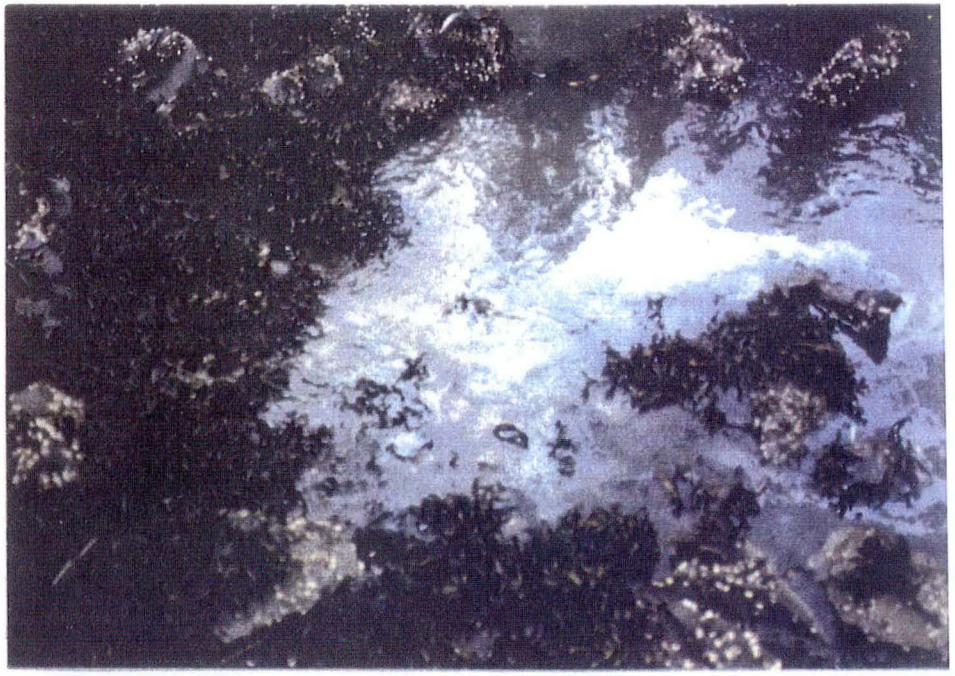
OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 09/16/93 TIME: 1030

SEGMENT: TB003 STATION: -0-
LOCATION: TONSINA BAY, GULF OF ALASKA
KEYWORD: -0-
REASON FOR TAKING PHOTO:LOCATION A, AREA WAS ACTIVELY SHEENING UPON ARRIVAL. SHEEN WAS NOT THE RESULT OF AGITATION.

TAKEN BY: CLARA CROSBY INITIALS: CSC
ROLL #:93CSC010 FRAME #: 6 EVIDENCE ID#:_____





OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 09/16/93 TIME: 1030

SEGMENT#: TB003 STATION#: -0-
LOCATION: TONSINA BAY, GULF OF ALASKA
KEYWORDS: -0-
REASON FOR TAKING PHOTO:OILING IN LOCATION A, LSOR/MSOR MIXED WITH FINE SEDIMENT AT LITZ. ANEROBIC MUD WAS ASSOCIATED WITH THE OILING IN THE LITZ.

TAKEN BY: CLARA CROSBY INITIALS: CSC
ROLL #: 93CSC010 FRAME #: 9 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 09/16/93 TIME: 1030

SEGMENT: TB003 STATION: -0-
LOCATION: TONSINA BAY, GULF OF ALASKA
KEYWORD: -0-
REASON FOR TAKING PHOTO:OILING IN LOCATION A, LSOR/MSOR MIXED WITH FINE SEDIMENT AT LITZ.

TAKEN BY: CLARA CROSBY INITIALS: CSC
ROLL #:93CSC010 FRAME #: 8 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 09/16/93 TIME: 1030

SEGMENT#: TB003 STATION#: -0-
LOCATION: TONSINA BAY, GULF OF ALASKA
KEYWORDS: -0-
REASON FOR TAKING PHOTO:OILING IN LOCATION A, SHEENS WERE EASILY INDUCED FROM AGITATION OF SEDIMENT AT LITZ. SILVER TO RAINBOW SHEENS.

TAKEN BY: CLARA CROSBY INITIALS: CSC
ROLL #: 93CSC010 FRAME #: 11 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 09/16/93 TIME: 1030

SEGMENT#: TB003 STATION#: -0-
LOCATION: TONSINA BAY, GULF OF ALASKA
KEYWORDS: -0-
REASON FOR TAKING PHOTO:OILING IN LOCATION A, LSOR/MSOR MIXED WITH FINE SEDIMENT AT LITZ. ANEROBIC MUD WAS ASSOCIATED WITH THE OILING IN THE LITZ.

TAKEN BY: CLARA CROSBY INITIALS: CSC
ROLL #: 93CSC010 FRAME #: 10 EVIDENCE ID#:

SEGMENT: TB 004 A

LOCATION: Kenai Peninsula, south shore of Tonsina Bay

OTHER STUDIES

PHYSICAL SETTING

Coastal Morphology and Sedimentology

Gently sloping pocket beach formed by a stream delta. Sediments are subangular pebbles and cobbles on the surface with a sand and mud matrix in the subsurface. Angular boulders occur in the upper intertidal and sediments decrease in size down the beach. Drift logs and a storm berm are present on the western portion of the beach. The stream has several distributary channels that cross the delta.

Environmental Sensitivity Index (ESI)

Type 7; gravel beach.
Type 8; sheltered rocky.

Fetches and Directions (kilometers)

N= 1; NE= 12

Energy Level

Low to moderate.

GENERAL BIOLOGICAL SETTING

Oiled mussel and fucus beds.
Eel grass and subtidal clam bed (clam bed not well developed).
Eagle nest.
Herring spawning.
Fish harvest area.

OILING SUMMARY

A 20 by 60 m area with a 1 to 11% coverage of SOR remains in the mid and lower intertidal zones. Active sheening was observed throughout this location (location 'A') which includes fucus and mussel beds in front of the stream entrance. This area has improved somewhat since 1991, although it is very difficult to estimate percent coverage of the oil.

Silver sheens were observed in location 'D'; this area, however, undoubtedly significantly improved since 1991. Location 'D' is in the mid to upper intertidal and contained more than 10% SOR in a 20 by 70 m area in 1991. In 1993, only trace amounts were observed in an area 10 by 20 m.

Manual raking, tilling, and removal occurred at locations 'A' and 'D' in 1991, and in location 'A' in 1992.

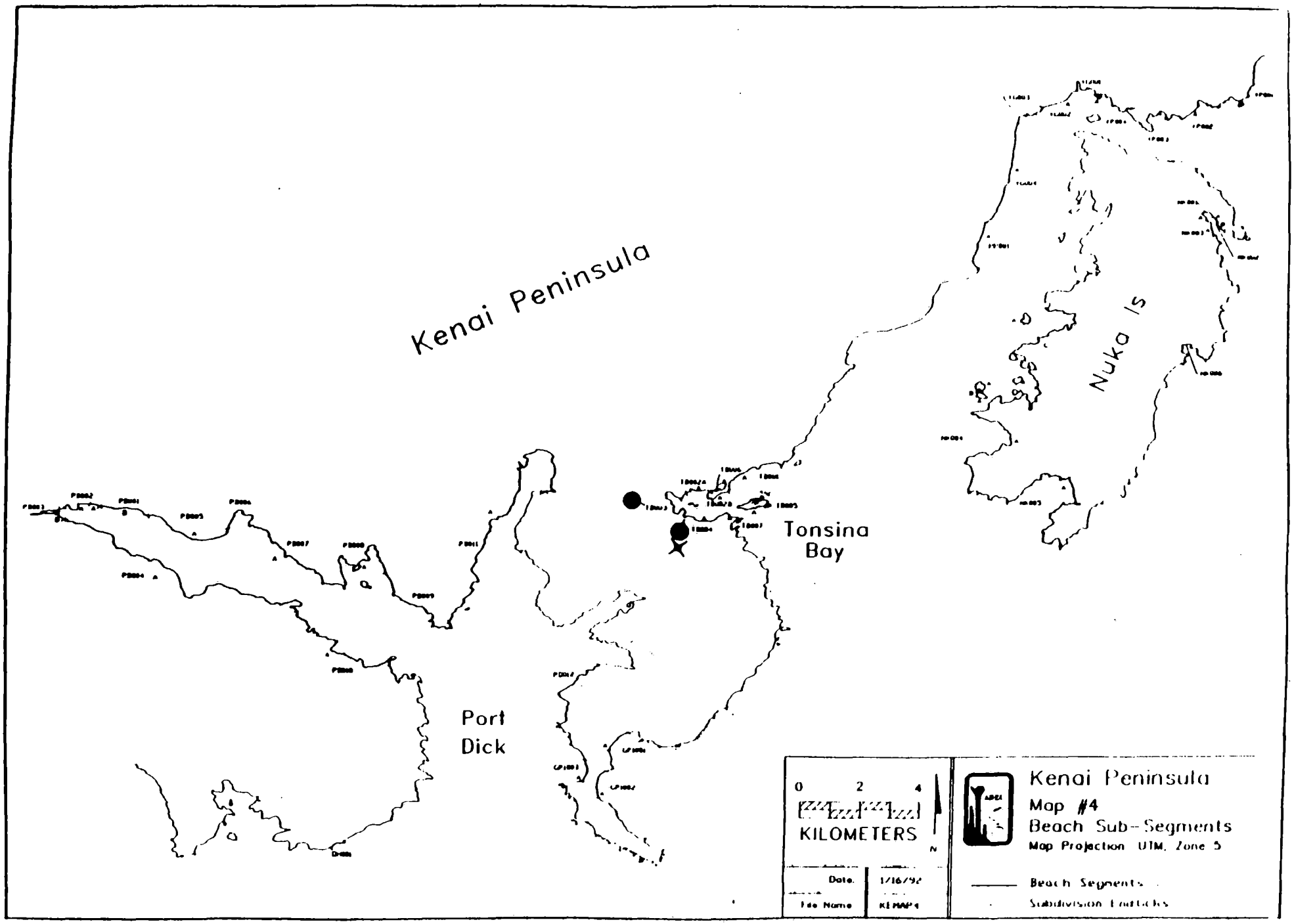
Small amounts of subsurface oil remain. Location ZB is a HOR and OP layer 1 by 7 m in size. Location 'C' was defined as surface oil but one could also interpret the oil as

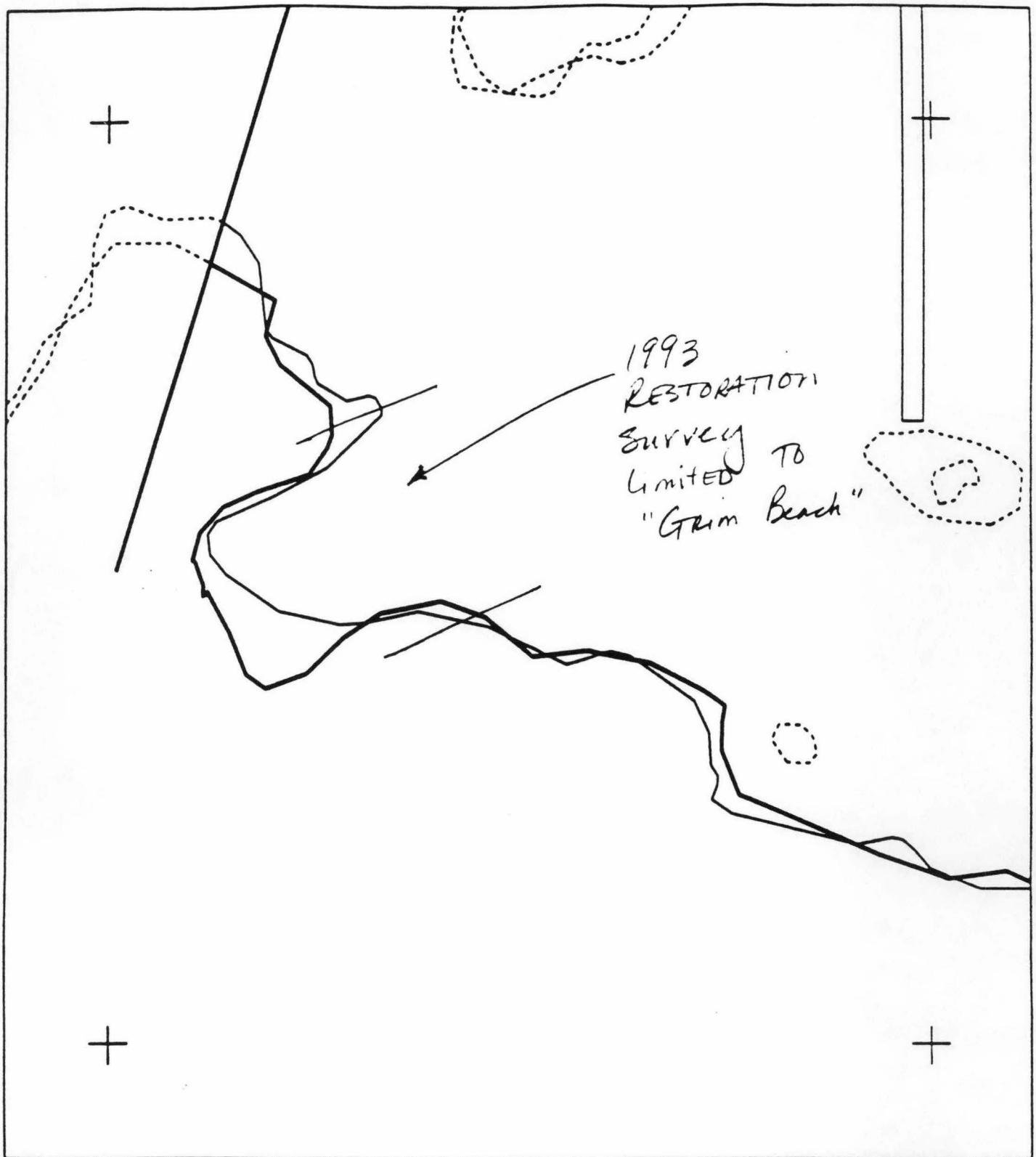
subsurface. Photo 93CSC009-31 shows the surface and shallow subsurface layer exposed along a cut stream bank in location 'C'.

Location ZA retains a small amount of LOR below mussels and fucus in an area of 30 square meters, but this is a great improvement over 1991 conditions when MOR oil covered a 1200 square meter area.

The above mentioned subsurface areas were treated in 1991 with manual raking, tilling, and removal, and in addition, workers removed oil on the surface in location ZA in 1992

Overall, conditions have greatly improved since 1991, but persistent sheening is evidence of continuing pollution.


Kenai Peninsula
Nuka Is
Tonsina Bay
Port Dick
0 2 4
KILOMETERS
N
Date
1/16/92
File Name
KEMAP4
Kenai Peninsula
Map #4
Beach Sub-Segments
Map Projection UTM, Zone 5
Beach Segments
Subdivision Endpoints



XXXX	Wide
////	Medium
----	Narrow
TTTT	Very Light
0000	No Oil

TB004 A

ADEC Subsegment Length: 3198m

METERS

0 100 200

AK State Plane Zone 4
alb004aa

EXXON

Subdivision Field Map

Map Key: KENTB004Aa

Name: CSC

Date: 16 Sept '93

Date Entered:

1993 ADEC RESTORATION PROJECT #930380

SHORELINE SURVEY COMMENT SHEET

LOCATION Tonsina Bay SEGMENT TB004 SUBDIVISION A DATE 9 / 16 / 93

AFFILIATION DNR Div of Parks

NAME Roger L. MacCampbell SIGNATURE [signature]

Surveyed L-MITZ, sheens observed on surface throughout area due to light rain, particularly near streams. Pink salmon observed in streams (4-5)

Subsurface oil found 10-13 cm deep in areas B + C mousse w/ heavy sheen when mixed w/ water. Area A + (Map) found surface oil + sheens spotty throughout area.

Does not appear to be as much fucus as in 89-90

Evidence of work from previous years still visible.

AFFILIATION

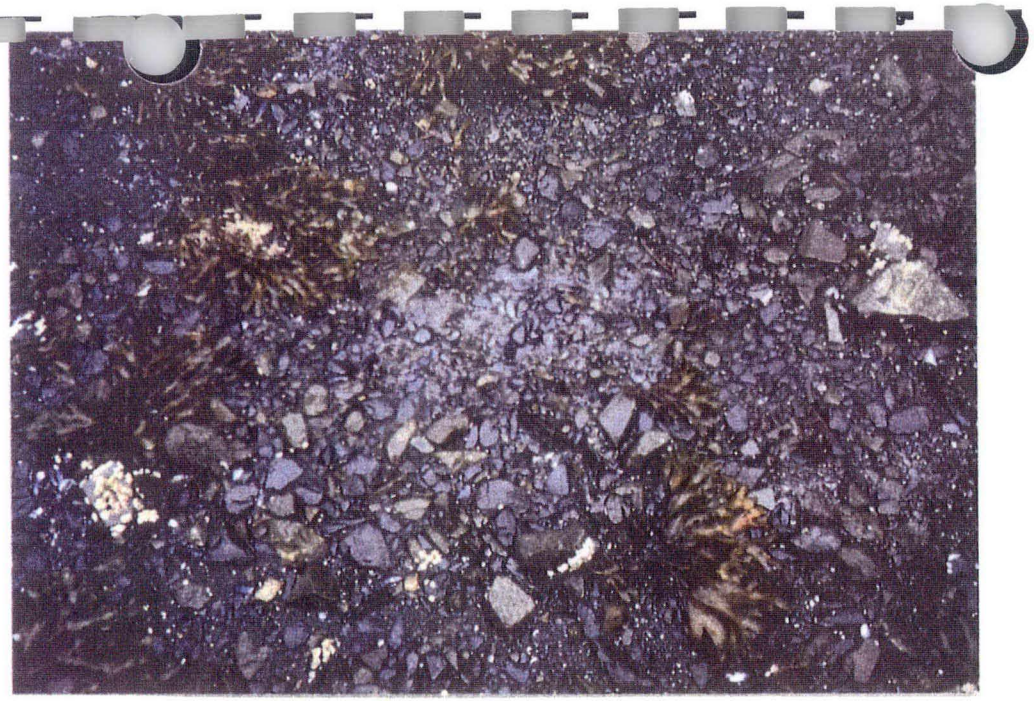
NAME ______ SIGNATURE ______

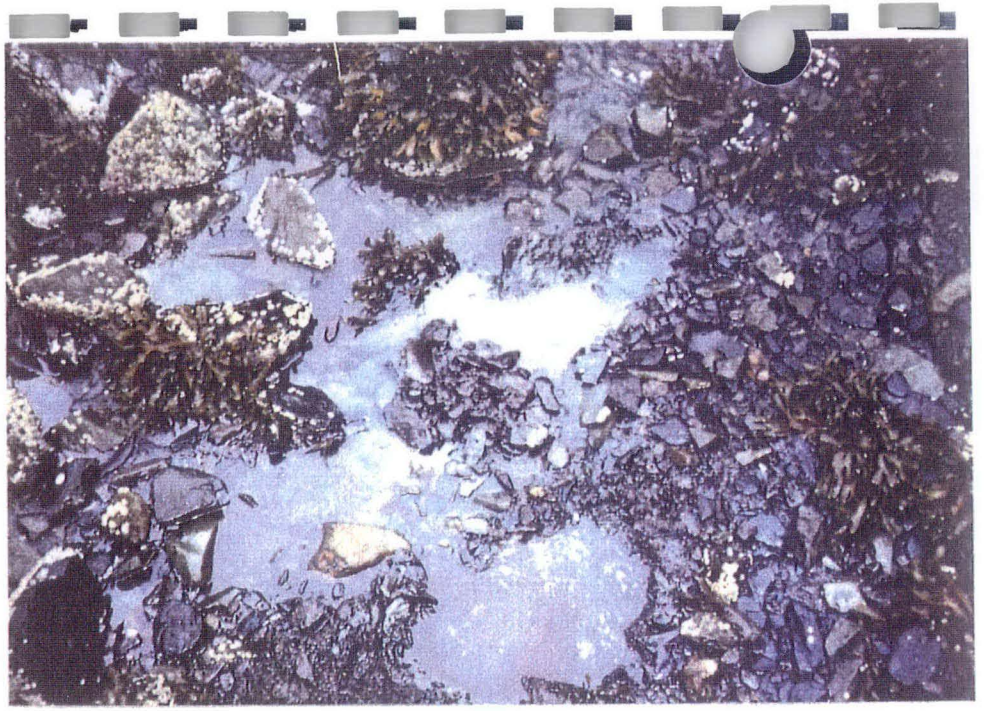
AFFILIATION

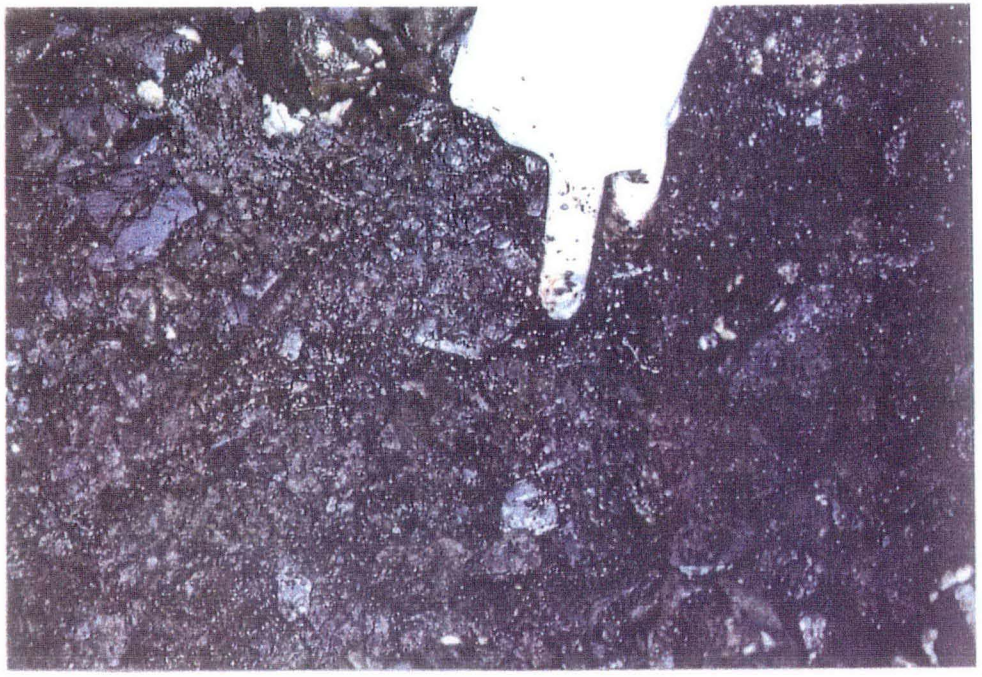
NAME ______ SIGNATURE ______

AFFILIATION

NAME ______ SIGNATURE ______







OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 09/16/93 TIME: 09:00

SEGMENT: TB004 STATION: 312
LOCATION: TONSINA BAY, GULF OF ALASKA
KEYWORD: -0-
REASON FOR TAKING PHOTO:SHEEN FROM LSOR AND LOR IN PIT FOUND IN MITZ, LOCATION A

TAKEN BY: CLARA CROSBY INITIALS: CC
ROLL #:93CSC009 FRAME #: 20 EVIDENCE ID#:_____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 09/16/93 TIME: 09:00

SEGMENT: TB004 STATION: 312
LOCATION: TONSINA BAY, GULF OF ALASKA
KEYWORD: -0-
REASON FOR TAKING PHOTO:SURFACE LSOR IN MITZ AND SHEEN, UNDISTURBED SEDIMENT. LOCATION A

TAKEN BY: CLARA CROSBY INITIALS: CC
ROLL #:93CSC009 FRAME #: 19 EVIDENCE ID#:_____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 09/16/93 TIME: 09:00

SEGMENT: TB004 STATION: 312
LOCATION: TONSINA BAY, GULF OF ALASKA
KEYWORD: -0-
REASON FOR TAKING PHOTO:HOR/OP AT PIT #4, LOCATION B

TAKEN BY: CLARA CROSBY INITIALS: CC
ROLL #:93CSC009 FRAME #: 23 EVIDENCE ID#:_____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 09/16/93 TIME: 09:00

SEGMENT: TB004 STATION: 312
LOCATION: TONSINA BAY, GULF OF ALASKA
KEYWORD: -0-
REASON FOR TAKING PHOTO:HOR/OP AT PIT #4, LOCATION B

TAKEN BY: CLARA CROSBY INITIALS: CC
ROLL #:93CSC009 FRAME #: 22 EVIDENCE ID#:_____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 09/16/93 TIME: 0900

SEGMENT#: TB004 STATION#: 312
LOCATION: TONSINA BAY, GULF OF ALASKA
KEYWORDS: -0-
REASON FOR TAKING PHOTO:PIT #5, HOR/OP, LOCATION B

TAKEN BY: CLARA CROSBY INITIALS: CC
ROLL #: 93CSC009 FRAME #: 25 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 09/16/93 TIME: 09:00

SEGMENT#: TB004 STATION#: 312
LOCATION: TONSINA BAY, GULF OF ALASKA
KEYWORDS: -0-
REASON FOR TAKING PHOTO:HOR/OP AT PIT #5, LOCATION B

TAKEN BY: CLARA CROSBY INITIALS: CC
ROLL #: 93CSC009 FRAME #: 24 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 09/16/93 TIME: 0930

SEGMENT#: TB004 STATION#: 312
LOCATION: TONSINA BAY, GULF OF ALASKA
KEYWORDS: -0-
REASON FOR TAKING PHOTO:PIT #9, HOR/OP, BROWN SHEEN ON PIT WATER. LOCATION B

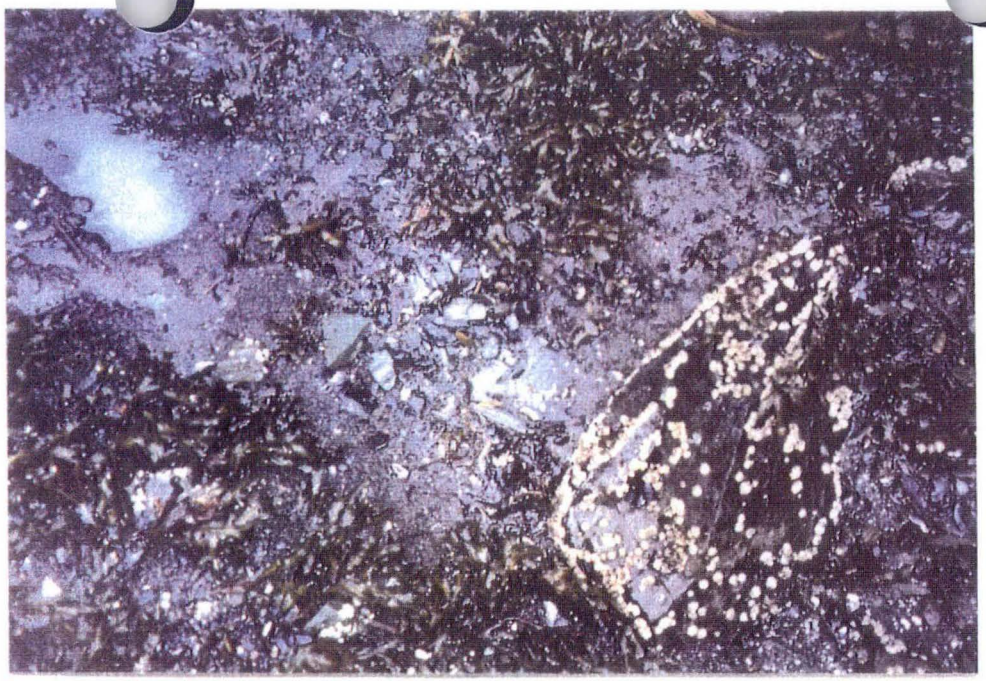
TAKEN BY: CLARA CROSBY INITIALS: CC
ROLL #: 93CSC009 FRAME #: 28 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 09/16/93 TIME: 0930

SEGMENT#: TB004 STATION#: 312
LOCATION: TONSINA BAY, GULF OF ALASKA
KEYWORDS: -0-
REASON FOR TAKING PHOTO:PIT #9, HOR/OP, BROWN SHEEN ON PIT WATER. LOCATION B

TAKEN BY: CLARA CROSBY INITIALS: CC
ROLL #: 93CSC009 FRAME #: 27 EVIDENCE ID#:



OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 09/16/93 TIME: 09:00

SEGMENT#: TB004 STATION#: 312
LOCATION: TONSINA BAY, GULF OF ALASKA
KEYWORDS: -0-
REASON FOR TAKING PHOTO:SHEEN ON STREAM, SILVER SHEENS FORMING BROWN SHEENS AND MS, LOCATION A

TAKEN BY: CLARA CROSBY INITIALS: CSC
ROLL #: 93CSC009 FRAME #: 16 EVIDENCE ID#:_____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 09/16/93 TIME: 09:00

SEGMENT#: TB004 STATION#: 312
LOCATION: TONSINA BAY, GULF OF ALASKA
KEYWORDS: -0-
REASON FOR TAKING PHOTO:SURFACE OIL OBSERVED ACTIVELY SHEENING IN MITZ, LSOR-HSOR, LOCATION A

TAKEN BY: CLARA CROSBY INITIALS: CSC
ROLL #: 93CSC009 FRAME #: 15 EVIDENCE ID#:_____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 09/16/93 TIME: 09:00

SEGMENT#: TB004 STATION#: 312
LOCATION: TONSINA BAY, GULF OF ALASKA
KEYWORDS: -0-
REASON FOR TAKING PHOTO:SHEEN ON STREAM, SILVER SHEENS FORMING BROWN SHEENS AND MS, EDGE OF LOCATION A

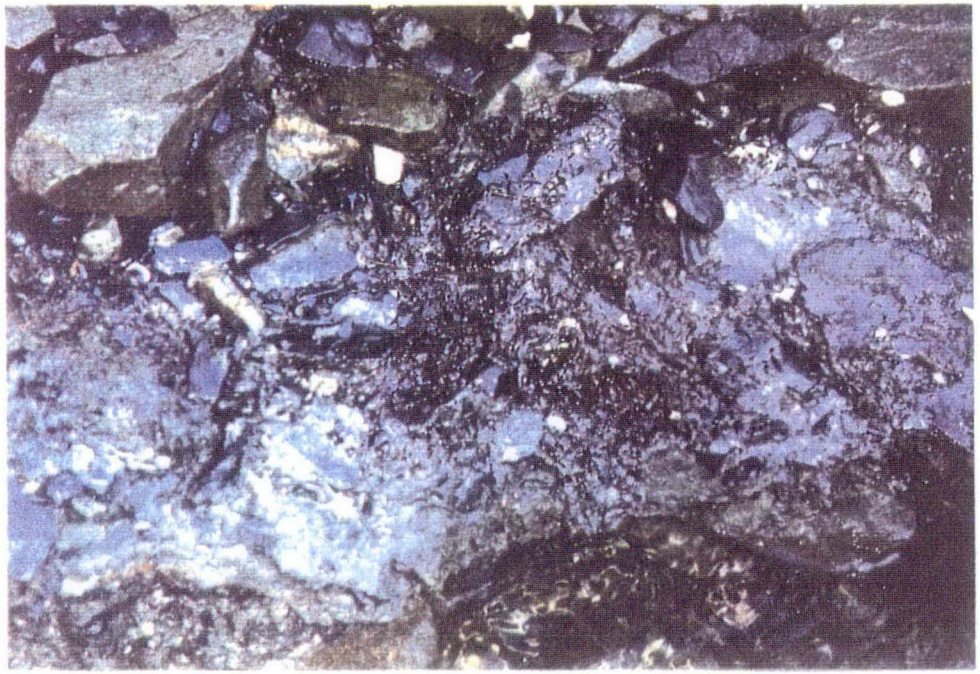
TAKEN BY: CLARA CROSBY INITIALS: CSC
ROLL #: 93CSC009 FRAME #: 18 EVIDENCE ID#:_____

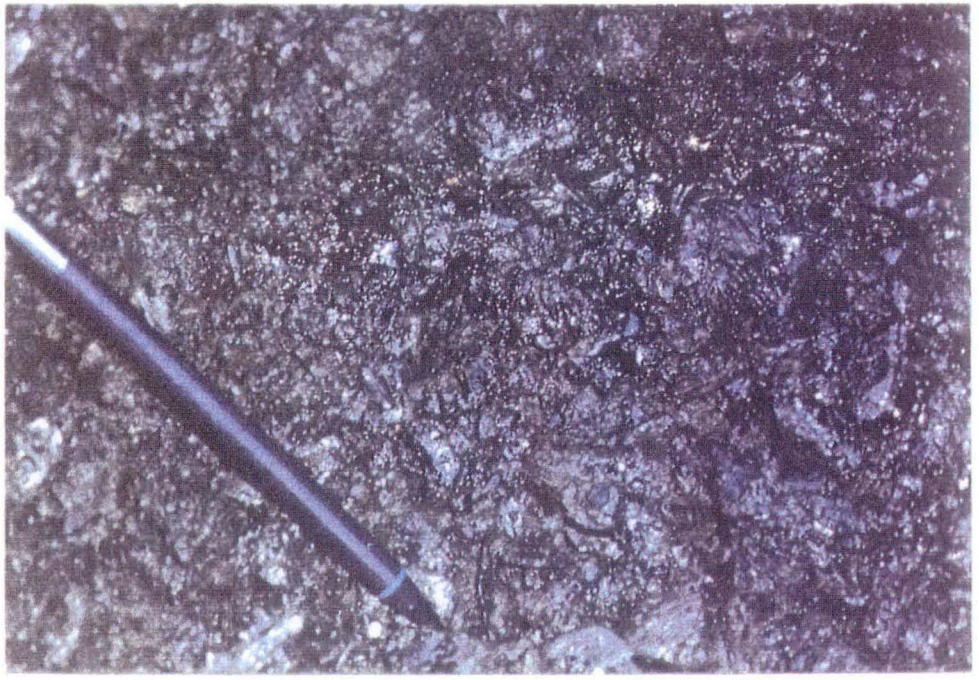
OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 09/16/93 TIME: 09:00

SEGMENT#: TB004 STATION#: 312
LOCATION: TONSINA BAY, GULF OF ALASKA
KEYWORDS: -0-
REASON FOR TAKING PHOTO:SHEEN ON STREAM, SILVER SHEENS FORMING BROWN SHEENS AND MS, EDGE OF LOCATION A

TAKEN BY: CLARA CROSBY INITIALS: CSC
ROLL #: 93CSC009 FRAME #: 17 EVIDENCE ID#:_____





OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 09/16/93 TIME: 0930

SEGMENT: TB004 STATION: 312
LOCATION: TONSINA BAY, GULF OF ALASKA
KEYWORD: -0-
REASON FOR TAKING PHOTO:OILING ALONG LOCATION C, STREAM HAS CUT A CROSS-SECTION ALONG THE OILED BANK EXPOSING HOR/HSOR. REFERENCE PHOTO #14 FOR OVERVIEW OF AREA.

TAKEN BY: CLARA CROSBY INITIALS: CC
ROLL #:93CSC009 FRAME #: 31 EVIDENCE ID#:_____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 09/16/93 TIME: 0930

SEGMENT: TB004 STATION: 312
LOCATION: TONSINA BAY, GULF OF ALASKA
KEYWORD: -0-
REASON FOR TAKING PHOTO:OIL FLOWING FROM SEDIMENT, HOR/OP AT PIT #9, IN LOCATION B.

TAKEN BY: CLARA CROSBY INITIALS: CC
ROLL #:93CSC009 FRAME #: 30 EVIDENCE ID#:_____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 09/16/93 TIME: 0930

SEGMENT#: TB004 STATION#: 312
LOCATION: TONSINA BAY, GULF OF ALASKA
KEYWORDS: -0-
REASON FOR TAKING PHOTO:OILING ALONG LOC C, HOR/HOR IN PIT #11.

TAKEN BY: CLARA CROSBY INITIALS: CC
ROLL #: 93CSC009 FRAME #: 34 EVIDENCE ID#:_____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 09/16/93 TIME: 0930

SEGMENT: TB004 STATION: 312
LOCATION: TONSINA BAY, GULF OF ALASKA
KEYWORD: -0-
REASON FOR TAKING PHOTO:OILING ALONG LOC C, CLOSE-UP OF HOR/OP/HSOR IN PHOTO 31. REFERENCE PHOTO #14 FOR OVERVIEW OF AREA.

TAKEN BY: CLARA CROSBY INITIALS: CC
ROLL #:93CSC009 FRAME #: 32 EVIDENCE ID#:_____

1993 ADEC RESTORATION PROJECT # 930380
SHORELINE OILING SUMMARY

SEGMENT Boom

SUBDIVISION 4

TEAM MEMBERS: CIARA Crosby - ADEC
ROGER MacCampbell - ADNR
JEFF Johnson - ADNR

DATE 09 / 16 / 93

TIME 08 : 00 to 09 : 30 TIDE LEVEL -1.3 ft. to 0 ft. ENERGY LEVEL: ☐ H ■ M ■ L

SURVEYED FROM: ■ FOOT ☐ BOAT ☐ HELO WEATHER: ☐ SUN ■ CLOUDS ☐ FOG ■ RAIN ☐ SNOW

TOTAL LENGTH SHORELINE SURVEYED: _____ m NEAR SHORE SHEEN: ☐ BR ☐ RB ■ SL ☐ NONE

EST. OIL CATEGORY LENGTH: H_____m M_____m L_____m VL_____m N_____m NS_____m

LOC	SURFACE OIL CHARACTER										SURFACE SEDIMENT	SHORE SLOPE	AREA		ZONE				SEE OIL NOTES PG 2, NOTES
	AP	MS	TB	SOR	CV	CT	ST	FL	DB	NO	TYPE	V H M L	WIDTH m	LENGTH m	S	UI	MI	LI	
A				S				S			CPGM	L	20	60			■	■	Sheens throughout Loc
B				T				T			CPG	L	1	7			■		Mod Subsurface
C				S				B			CPGS	L	1	6				■	Mod found subsurf.
D				T				T			CPGS	L	10	20		■	■		LSOR to HSOR/ Silver sheens
E				T				T			CPGSM	L	2	3				■	MSOR to LSOR

DISTRIBUTION: C = 81–100%; B = 51–80%; P = 11–50%; S = 1–10%; T = <1%

SLOPE: V = VERTICAL; H = HIGH ANGLE; M = MEDIUM ANGLE; L = LOW ANGLE PHOTO ROLL # _____ - _____ FRAMES _____

PIT NO.	PIT DEPTH (cm)	SUBSURFACE OIL CHARACTER							OILED ZONE cm–cm	CLEAN BELOW Y/N	H2O LEVEL (mm)	SHEEN COLOR S R S N	PIT ZONE				SURFACE-SUBSURFACE SEDIMENTS	NOTES
		OP	HOR	MOR	LOR	OF	TR	NO					S	UI	MI	LI		
1	15					■			2 - 7	Y	12	S				■	CPGS/PGSM	
2	20				■				3 - 4	Y	—	—			■		CPGS/PGSM	Decent in PIT -
3	12				■				0 - 3	U	3	SRB			■		CP/PGSM	
4	18	■	■	■					0 - M	Y	—	—				■	CP/PGSM	
5	19	■	■	■					0 - 13	Y	—	—			■		P/PGSM	
6	29							■	— —	—	27	N			■		P/PGSM	
7	17							■	0 - [illegible]	Y	—	—			■		CP/PGSM	Decent LSOR
8	10				■			■	0 - 3	Y	—	—			■		CP/PGSM	LSOR
9	13	■		■	■	■		■	[illegible] - 4	U	9	B			■		CP/PGSM	
10	12			■	■	■		■	— —	—	—	—			■		P/PGSM	
11	15			■	■	■		■	10 - 13	Y	—	—			■		CPS/SM	

SHEEN COLOR: B = BROWN; R = RAINBOW; S = SILVER; N = NONE

RESTORATION SHORELINE OILING SUMMARY (cont.)

PAGE 2 OF —

TEAM NO. ____

SEGMENT B004

SUBDIVISION A

DATE 09/16/93

PIT NO.	PIT DEPTH (cm)	SUBSURFACE OIL CHARACTER							OILED ZONE	CLEAN BELOW	H2O LEVEL	SHEEN COLOR	PIT ZONE				SURFACE-SUBSURFACE SEDIMENTS	NOTES
		OP	HOR	MOR	LOR	OF	TR	NO	cm-cm	Y/N	(cm)	B R S N	S	UI	MI	LI		
									-									
									-									
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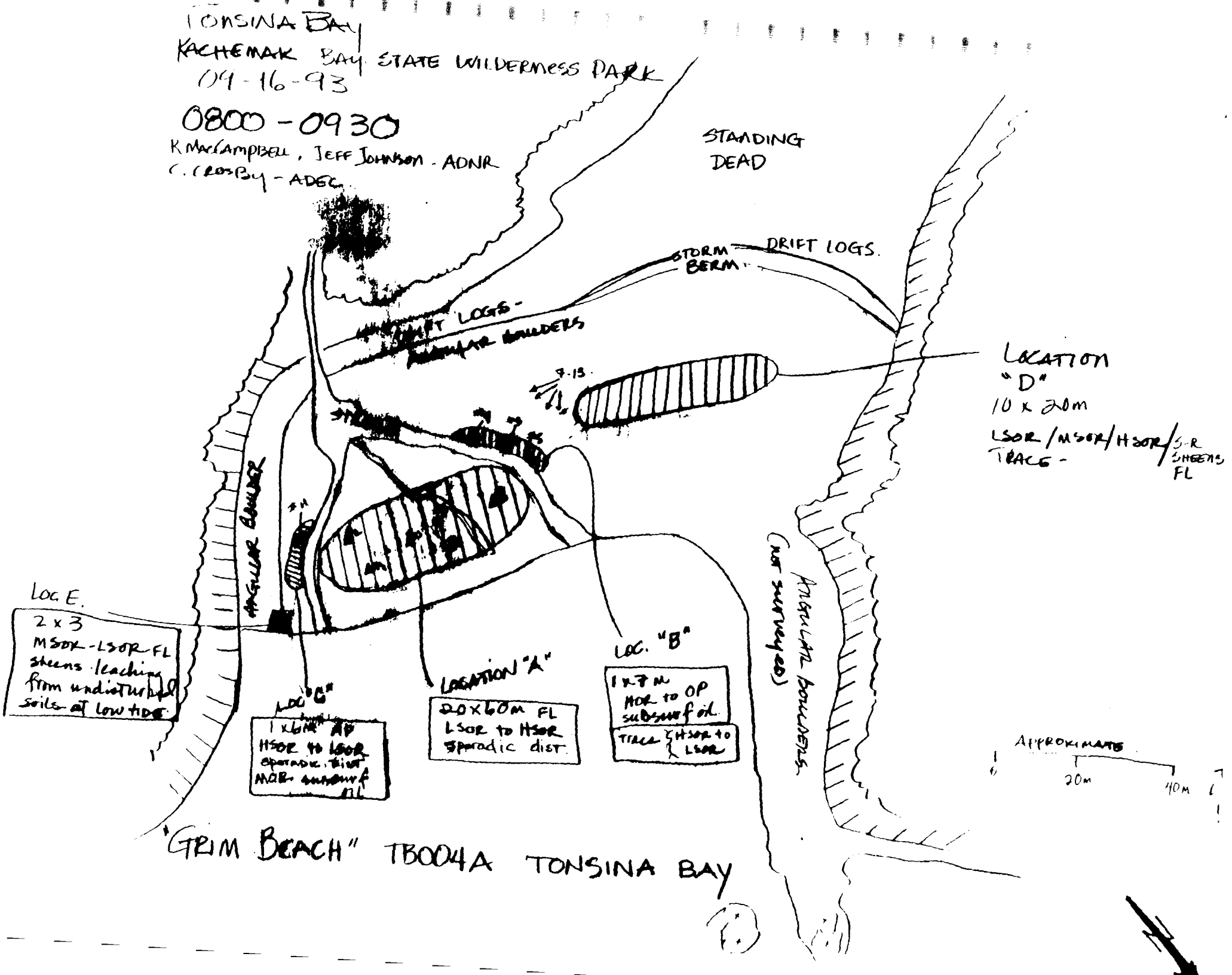
SHEEN COLOR: B = BROWN; R = RAINBOW; S = SILVER; N = NONE

OG COMMENTS: Survey limited to Low-Mid Intertidal zone.

Light rain induced Sil to Br Sheens throughout the intertidal in locations A, ~~B, C~~ & D, E. Sheens/FL associated with surface oil residual – L-H.

Evidence [illegible]evious work – (ie. impressions from Landing Craft & excavation pits) remain.

In locations B & C – subsurface oiling persists below cobble armor – up to 13 cm deep.


TONSINA BAY
KACHEMAK BAY STATE WILDERNESS PARK
09-16-93
0800-0930
K MacCAMPBELL, JEFF JOHNSON - ADNR
C. CROSBY - ADEC
STANDING DEAD
STORM BERM
DRIFT LOGS
ANGULAR BOULDERS
LOCATION "D"
10 x 20m
LSOR/MSOR/HSOR/S-R SHEENS TRACE - FL
LOC. E.
2 x 3
MSOR-LSOR FL sheens leaching from undisturbed soils at low tide
LOC "C"
1 x 6m AP
HSOR to LSOR sporadic dist
MOR subsurf oil
LOCATION "A"
20 x 60m FL
LSOR to HSOR
sporadic dist
LOC. "B"
1 x 7m
MOR to OP subsurf oil
TRACE to HSOR to LSOR
ANGULAR BOULDERS (NOT SURVEYED)
APPROXIMATE
20m
40m
"GRIM BEACH" TB004A TONSINA BAY

1993 Surface Oil Summary
Segment TB004 Subdivision A

Location	Area of Oiling Type in Square Meters AP	MS	SOR	CV	CT
A	0.	0.	72.	0.	0.
B	0.	0.	0.035	0.	0.
C	0.	0.	0.36	0.	0.
D	0.	0.	1.	0.	0.
E	0.	0.	0.03	0.	0.
TOTALS=	0.	0.	73.425	0.	0.

AP= asphalt; MS= mousse; SOR= surface oil residue; CV= cover; CT= coat
Areas are computed by multiplying the affected area by the percent coverage of each oil type. Field categories of percent oil coverage are converted to the median percent value as follows:
continuous= 95%; broken= 70%; patchy= 30%; sporadic= 6%; trace= 0.5%

SUBSURFACE OIL SUMMARY FOR SEGMENT TB004A

						TREATMENT		1993 OILED SED. VOL. (m3)					1992 OILED SED. VOL. (m3)					1991 OILED SED. VOL. (m3)					WT.'ed OIL VOL.			% CHANGE WT.'ed VOL.		
Loc.	1993 PIT #	Gr. Sz.	Zn.	En.	Note	1992	1991	OP	HOR	MOR	LOR	OF/TR	OP	HOR	MOR	LOR	OF/TR	OP	HOR	MOR	LOR	OF/TR	1993	1992	1991	92 to 93	91 to 92	91 to 93
ZA	1,2	CPGS-PGSM	ML	M	MUSSELS, FUCUS	Rs	MT, Rs, Rb	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	36.7	1.1	0.0	0.3	0.0	112.3	Inf	-100.0	-99.7
ZB	3-5,9	CP-PGSM	ML	M		NO	NO	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	1.1	0.0	0.6	Inf	-100.0	82.2
ZC	11	CPS-SMPG	M	M		NO	MT, Rs. Rb	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.7	0.0	-100.0	-95.5
							TOTALS=	0.1	0.1	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	36.9	1.1	0.0	1.4	0.0	113.6	Inf	-100.0	-98.7

Loc.= location name of specific oiling area (subsite).
1993 PIT #= the number designations, as indicated on the 1993 survey forms, of the pits in the subsite.
Gr. Sz.= grain size, a dash separates surface from subsurface sediments, B= boulders, C= cobbles, P= pebbles, G= granules, S= sand, M= mud, Pt= peat.
Zn.= inter tidal zone, S= supra tidal, H= high inter tidal, M= mid inter tidal, L= low inter tidal.
En.= wave-energy level, H= high, M= moderate, L= low, VL= very low.
TREATMENT= cleanup treatment occurring at the subsite for the given year, ET= equipment tilling (heavy equipment), MT= manual tilling, BR= berm relocation, SR= sediment relocation, Rb= oiled-sediment removal from subsurface, Rs= oiled-sediment removal from the surface, MB= manual breakup, MR= manual raking, ?= unknown, NO= no treatment.
OILED SED. VOL.= oiled-sediment volume in cubic meters by year and oil type, OP= oil pore, pore spaces are completely filled with oil resulting in oil oozing out of sediments - water cannot penetrate OP zone, HOR= heavy oil residue, pore spaces partially filled with oil residue but not generally flowing out of sediments, MOR= medium oil residue, heavily coated sediments; pore spaces are not filled with oil - pore spaces may be filled with water, LOR= light oil residue, sediments lightly coated with oil, OF= oil film, continuous layer of sheen or film on sediments - water may bead on sediments, TR= trace, discontinuous film; spots of oil on sediments; an odor or tackiness with no visible evidence of oil, ?= area of subsite not visited or adequately surveyed.
WT.'ed OIL VOL.= weighted oiled-sediment volume = (OP VOL.)*5 + (HOR VOL.)*4 + (MOR VOL.)*3 + (LOR VOL.)*2
% CHANGE WT.'ed VOL.= % change in weighted oiled-sediment volume between the given years = ((year 2 - year1)/(year 1))*100, positive values indicate increases in the amount of oil, negative values indicate decreases. "Inf" (infinite percent increase) indicates newly discovered oil.

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 09/16/93 TIME: 09:00

SEGMENT: TB004 STATION: 312
LOCATION: TONSINA BAY, GULF OF ALASKA
KEYWORD: -0-
REASON FOR TAKING PHOTO:PAN OVERVIEW OF "GRIM BEACH", TONSINA BAY, PHOTOS 7-11.

TAKEN BY: CLARA CROSBY INITIALS: CSC
ROLL #:93CSC009 FRAME #: 9 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 09/16/93 TIME: 09:00

SEGMENT: TB004 STATION: 312
LOCATION: TONSINA BAY, GULF OF ALASKA
KEYWORD: -0-
REASON FOR TAKING PHOTO:PAN OVERVIEW OF "GRIM BEACH", TONSINA BAY, PHOTOS 7-11.

TAKEN BY: CLARA CROSBY INITIALS: CSC
ROLL #:93CSC009 FRAME #: 10 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 09/16/93 TIME: 09:00

SEGMENT: TB004 STATION: 312
LOCATION: TONSINA BAY, GULF OF ALASKA
KEYWORD: -0-
REASON FOR TAKING PHOTO:PAN OVERVIEW OF "GRIM BEACH", TONSINA BAY, PHOTOS 7-11.

TAKEN BY: CLARA CROSBY INITIALS: CSC
ROLL #:93CSC009 FRAME #: 7 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 09/16/93 TIME: 09:00

SEGMENT: TB004 STATION: 312
LOCATION: TONSINA BAY, GULF OF ALASKA
KEYWORD: -0-
REASON FOR TAKING PHOTO:PAN OVERVIEW OF "GRIM BEACH", TONSINA BAY, PHOTOS 7-11.

TAKEN BY: CLARA CROSBY INITIALS: CSC
ROLL #:93CSC009 FRAME #: 8 EVIDENCE ID#:

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 09/16/93 TIME: 09:00

SEGMENT: TB004 STATION: 312
LOCATION: TONSINA BAY, GULF OF ALASKA
KEYWORD: -0-
REASON FOR TAKING PHOTO:SHEEN IN STREAM, SILVER TO BROWN. AREA WAS ACTIVELY SHEENING UPON ARRIVAL AND NOT THE RESULT OF SEDIMENT AGGITATION.

TAKEN BY: CLARA CROSBY INITIALS: CSC
ROLL #:93CSC009 FRAME #: 13 EVIDENCE ID#:_____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 09/16/93 TIME: 09:00

SEGMENT: TB004 STATION: 312
LOCATION: TONSINA BAY, GULF OF ALASKA
KEYWORD: -0-
REASON FOR TAKING PHOTO:PAN OVERVIEW OF "GRIM BEACH", TONSINA BAY, PHOTOS 7-11.

TAKEN BY: CLARA CROSBY INITIALS: CSC
ROLL #:93CSC009 FRAME #: 11 EVIDENCE ID#:_____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 09/16/93 TIME: 09:00

SEGMENT: TB004 STATION: 312
LOCATION: TONSINA BAY, GULF OF ALASKA
KEYWORD: -0-
REASON FOR TAKING PHOTO:SHEEN IN STREAM, SILVER TO BROWN. AREA WAS ACTIVELY SHEENING UPON ARRIVAL AND NOT THE RESULT OF SEDIMENT AGITATION.

TAKEN BY: CLARA CROSBY INITIALS: CSC
ROLL #:93CSC009 FRAME #: 12 EVIDENCE ID#:_____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 09/16/93 TIME: 09:00

SEGMENT: TB004 STATION: 312
LOCATION: TONSINA BAY, GULF OF ALASKA
KEYWORD: -0-
REASON FOR TAKING PHOTO:PHOTOLOCATION C, ALONG STREAM BANK, HSOR TO HOR/OP AT EASTERN END OF BEACH.

TAKEN BY: CLARA CROSBY INITIALS: CSC
ROLL #: 93CSC009 FRAME #: 14 EVIDENCE ID#:_____