

**1993 SHORELINE ASSESSMENT
DATA REPORT: VOLUME 2
(Ground Surveys EV037A through KN136A)**

GC
1552
P75
E993
RP93038
G52d
v.2

Prepared by the

**Alaska Department of Environmental Conservation (ADEC)
Exxon Valdez Oil Spill Restoration
410 Willoughby Avenue
Juneau, Alaska 99801**

for the

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

Project #930380

**Project Manager
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Clara Crosby, ADEC**

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

January, 1994



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EV 037 A

SEGMENT: EV 037 A

LOCATION: Chenega Area Group, northeastern Evans Island.

OTHER STUDIES

PHYSICAL SETTING

Coastal Morphology and Sedimentology

Beach 'A' is the northern area surveyed and includes two irregularly shaped pocket beaches separated by a mostly intertidal promontory. Sediments are very poorly sorted, angular, compact cobbles to large boulders with pebbles and subsurface granular matrix. Bedrock outcrops are also present. Location 'B' as designated on the sketch map is a small beach with relatively sorted, rounded, cobble gravel, and high-tide berms in the mid to upper intertidal and boulders in the mid to low intertidal. Peat underlies portions of location 'B'.

Beach 'B' is to the south of beach 'A' and is a broad pocket beach with very poorly sorted sediments similar to beach 'A'. Very large boulders and bedrock dominate on the southern limb of this beach.

Environmental Sensitivity Index (ESI)

Type 1; exposed rocky.

Type 7; gravel beach.

Fetches and Directions (kilometers)

NE= 37

Energy Level

Moderate.

GENERAL BIOLOGICAL SETTING

Eagle nest.

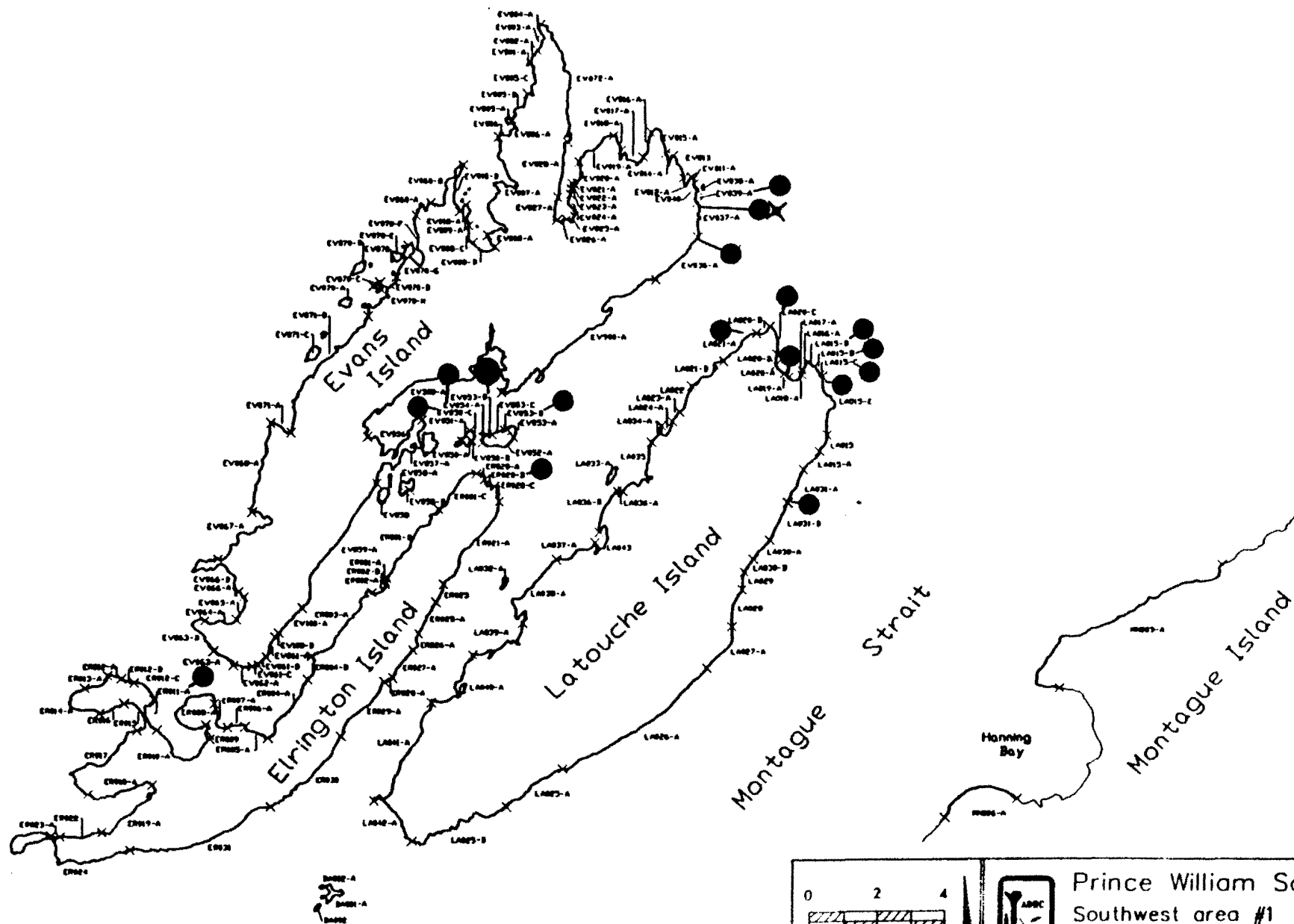
Fish harvesting.

Deer harvesting.

OILING SUMMARY

In beach 'A' two large areas on each end of the site have relatively high concentration of AP between boulders. No measurable improvement has occurred since 1991. At beach 'B' two adjacent areas with relatively high concentrations of AP, SOR and MS under boulders are present, and no apparent improvement has occurred.

In beach 'A' one area with significant subsurface oiling remains. This area is associated with surface location 'A' on the 1993 survey. Here OP oil is associated with AP among boulders. Another area described by the pits 3 through 9, 11, and 12 showed great improvement since 1992 and 1991. Aggressive treatment in 1992, which included oiled-sediment removal, caused this improvement. In beach 'B' newly discovered subsurface oil, including OP, was found to occur discontinuously across the central part of the beach. Overall, the amount of subsurface oil surveyed greatly increased from 1991 to 1993. This is largely due to a more thorough 1993 survey in the area of surface location 'A' (see sketch map).



Danger Island



Prince William Sound
Southwest area #1
Beach Sub-Segment Map
Map Projection: UTM, Zone 6

Date: 1/15/92
File Name: SWISEGS

— Beach Segments
X Subdivision Endticks

EV-39

EV-37

SKETCH "A"

1993
Survey -
SKETCH "A"

V.S.

SKETCH "B"

1993
SKETCH "B"

NO VIS
OIL

EV037

Segment Reference Map
Exxon Coastline
Map Key: PWSEV037



AK State Planning Zone 4
PW037

- ▲ EAGLE NEST
- STREAMS

1993 ADEC RESTORATION PROJECT #930380
SHORELINE SURVEY COMMENT SHEET

LOCATION EVANS IS. SEGMENT EVO37 SUBDIVISION A DATE 8/1/93

AFFILIATION

NAME Gail Ewaldoff Chesapeake Corp. SIGNATURE [Signature]

Another High Priority area for Restoration Project. Oil not breaking down - dispersing. Subsurface oiling - H/O/P & sheening prohibiting H colonization of biota - Have had heavy winter storms - this area even exposed - & Top Armor washed off - oiling persists. This area is a high subsistence use area & provides access to uplands.

AFFILIATION

NAME Kate Harich USDA Forest Service SIGNATURE [Signature]

Surface aspen occurring @ inter - low tidal zones - some shadows amongst boulder fields MOR - MOROP conditions in select areas as well. Silver sheen occurring in several tidal pools & shallow pits. To an untrained on-looker the beach appears free of oil - for conditions.

AFFILIATION

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

The following ③ resource uses are listed as "environmental sensitivities" for Site 37A. The following comments are based on the possible effects of the resource uses in its present condition to determine whether further restoration is necessary.

- ① Eagle nest - Eagle seen in vicinity. Any restoration activity should occur during least disturbing time.
- ② Fish Harvesting Area: This activity would probably not be affected
- ③ Subsistence Harvesting - Subsistence activities and access on uplands may not be severely affected; except deer may feed on oiled biota. Subsistence harvesting in intertidal area is probably not recommended at this time.

AFFILIATION

NAME USCG Bob Traws SIGNATURE [Signature]

AREA "A" MOR/AP IN POCKETS IN BOULDER FIELD. SOME RAINBOW SHEEN IN UPM ITZ IN FINES NEAR EDGE OF BOULDER FIELD. U/SUPRA ITZ - POCKETS OF A/P W/ MOR-MOR-OP UNDER CRUST. AREA "B" A/P SOME MOR IN ANTCHES AND IN CRACKS IN BOULDER FIELD. LEFT SIDE OF BEACH. NO OIL IN CRACK FACE. TARMATS W/ SS MOR/OP UNDERNEATH REST OF BEACH. COAT ON BOULDER ON RIGHT; ISOLATED POCKETS OF MOR/CR/SOR SPORADIC STAIN/COAT ALONG U/SUP ITZ. GENERALLY CONCUR W/ CONDITIONS INDICATED ON MAP(S)

1993 ADEC RESTORATION PROJECT # 930380 SHORELINE OILING SUMMARY

PAGE 1 OF 4

SEGMENT EVO37

TE MEMBERS: ADEC: D. MUMSON, C. CROSBY,
R. KUMBE, ADNR: K. FARLEY,
ES: K. HARRICH, NMPS: SID KORN
USCG: B. TRAVIS, CVC: GAIL EVANOFF
EXXN: S. STOKER, T. KELLEY

SUBDIVISION A

DATE 8/01/93

TIDE 09:05 to 11:45 TIDE LEVEL -1.0 ft. to 7.0 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

L	SURFACE OIL CHARACTER										SURFACE SEDIMENT TYPE	SHORE SLOPE VHML	AREA		ZONE				NOTES
	AP	MS	TB	SOR	CV	CT	ST	FL	DB	NO			WIDTH	LENGTH					
													m	m					
1	P										BCP	M	10	87					Interstitial AP
2	S										BCP	M	2	5					at & above last high tide
3	P										BCP	M	8	10					Interstitial AP
4						T	T				BCP	M	8	10					Protected sides of BCL
5	P			P		P					RBC	MV	6	3					
6	P			S		S	S				BCP	M	22	5					
7	S										BCP	M	12	3					

DISTRIBUTION: C = 81-100%; S = 61-80%; P = 41-60%; B = 21-40%; T = <1%

SLOPE: V = VERTICAL; H = HIGH ANGLE; M = MEDIUM ANGLE; L = LOW ANGLE PHOTO _____

FRAMES _____

F 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	12								1-7	Y							BCP/SPGC	
2	20								-								BCP/SPGC	
3	29								17-23	Y							BCP/MSPGC	medium peat
4	21								14-17	Y							CP/MSPGC	overlies peat
5	16								4-6	Y							CP/MSPGC	overlies peat
6	24								0-16	Y							CP/SPGC	
7	26								-		20						CP/SPGC	
8	23								1-0	U	5	B					CP/SPGC	oil extends below H2O
9	19								3-0	U	10	B					CP/PGSC	oil extends below H2O
10	15								-		7						CP/PGSC	
11	10								4-0	U	7	S					CP/PGS	oil extends below H2O
12	15								-		12						CP/PGC	
13	26								-								CP/PGC	
14	26								-		14	N					CP/PGC	
15	21								-								CP	
16	21								-								CP	
17	14								0-13	Y							BCP/GPCR	surf AP
18	15								0-0	U	11	B					BCP/GPCR	surf AP
19	21								-								BCP/GPCR	
20	5								1-24	Y							BCP/GSPC	surf AP
21	12								1-6	N							BCP/GSPC	
22	9								6-8	N							BCP/GGPC	continuation of 21
23	9								2-0	Y	5-9	B					BCP/PG	

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

PAGE 2 OF 4

SEGMENT EV034

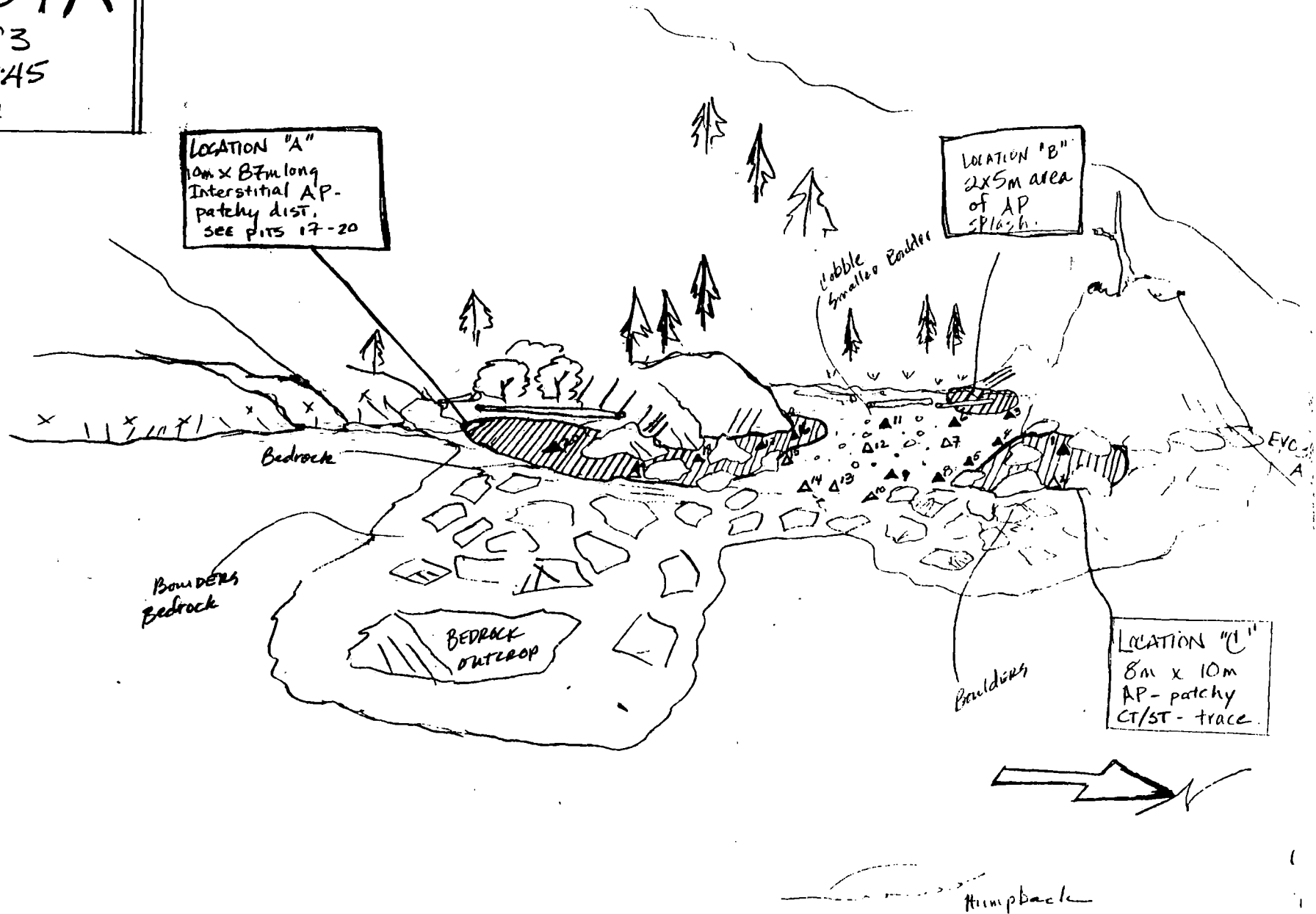
SUBDIVISION A

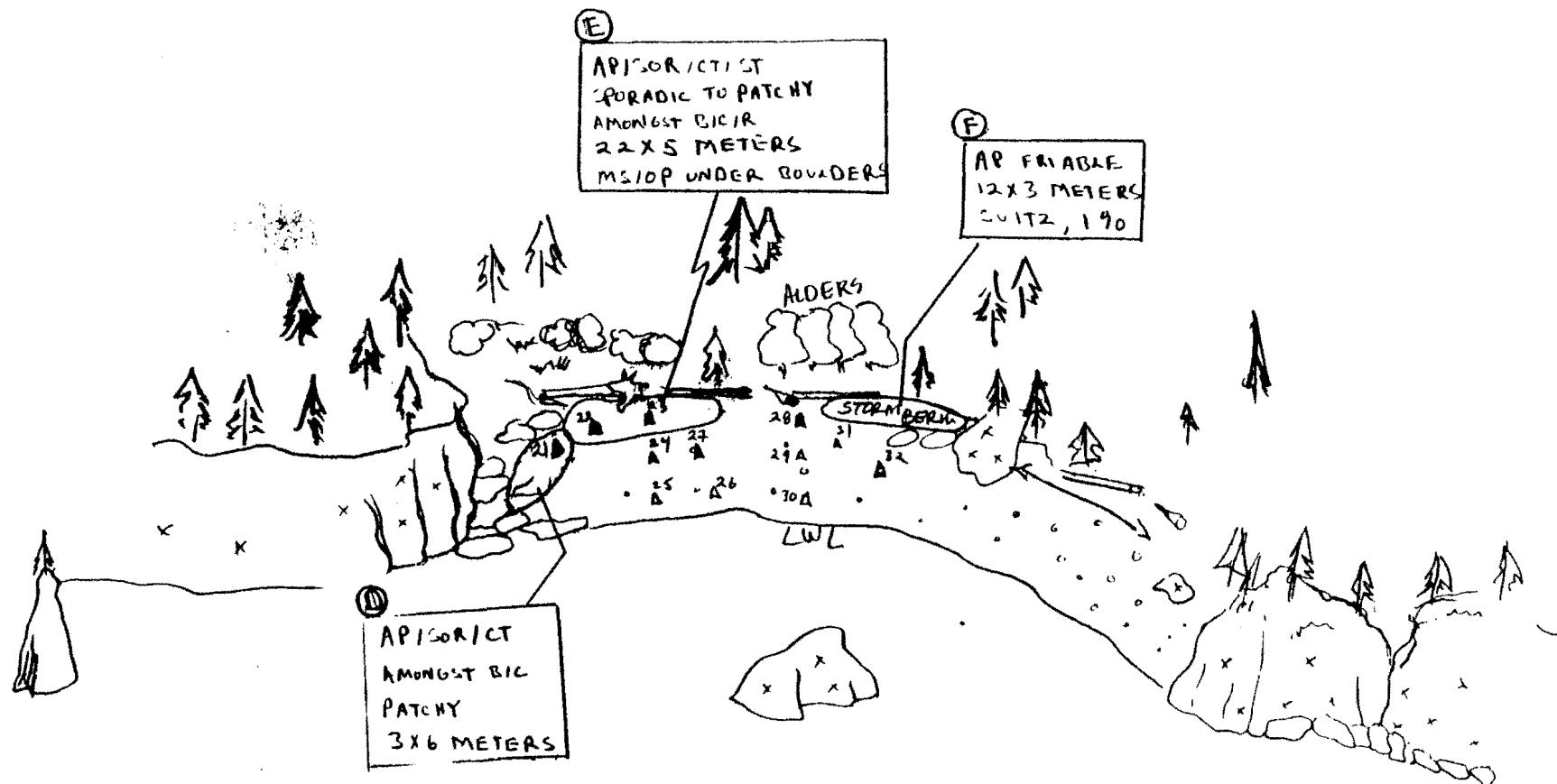
DATE 8/01/98

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

oiling IN SKETCH "A"... at Southern end of Beach, oil persists as PATCHY AP in
BOUNDER "FIELD" 87x10m wide - oiling appears to HAVE permeated ^{smaller} SURFACE SEDIMENT
to underlying peat in area of pits #3-5. oiling then reappears at
northern end as persisting AP interstitially located under Boulders.

SKETCH "A"
EV-37A
8-1-93
9:05-11:45
CROSBY





EV-37A
 SKETCH "B"
 8/1/93
 J. MONSON

1993 Surface Oil Summary
Segment EV037 Subdivision A

Location	Area of Oiling Type in Square Meters				
	AP	MS	SOR	CV	CT
A	261.	0.	0.	0.	0.
B	0.6	0.	0.	0.	0.
C	24.	0.	0.	0.	0.4
D	5.4	0.	5.4	0.	5.4
E	33.	0.	6.6	0.	6.6
F	2.16	0.	0.	0.	0.
TOTALS=	326.16	0.	12.	0.	12.4

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 EV037A

						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.	MOR	1992	1991	OP	HOR	MOR	LOR	OF/TR	OP	HOR	MOR	LOR	OF/TR	OP	HOR	MOR	LOR	OF/TR	1993	1992	1991	92-91	91-90	90-89
ZA	17,18,20	BCP-GSPC	SUM	M		NO	Rs,MR	51.8	0.0	0.0	0.0	0.0	?	?	?	?	?	1.8	1.8	0.4	0.0	0.0	258.8	?	17.5	?	?	1552.7
ZB	3-9,11,12	CPB-MSPGpt	UM	M		Rb,MT	Rs,Rb,MT	0.7	0.3	1.1	0.3	0.0	4.0	0.0	0.0	0.0	0.0	5.6	3.8	0.0	0.0	0.0	8.6	20.0	43.1	-57.1	-53.6	-80.1
ZC	1	BCP-SPGC	U	M		NO	Rs	0.2	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	1.2	0.0	0.0	Inf	0.0	Inf
ZD	21-24,27-29,31,32	BC-PG	UM	M		NO	NO	4.0	1.2	0.0	0.6	1.2	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	26.0	0.2	0.0	16142.3	Inf	Inf
TOTALS=								56.7	1.5	1.1	0.9	1.2	4.0	0.0	0.0	0.1	0.0	7.4	5.6	0.4	0.0	0.0	294.6	20.2	60.6	1361.3	-66.7	386.3

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 - year 1)/(year 1))*100, positive values indicate increases in the amount of oil, negative values indicate decreases, "Inf" (infinite percent increase) indicates newly discovered oil.



1/8 A 580 VE

STOCK # 99V840-000
1-800-282-008-1
2072614 010703J 0705

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93 TIME: 09:05

SEGMENT#: EV037

STATION#: -0-

LOCATION: NE SHORE EVANS IS. N. END OF SUBDIV

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OVERVIEW SERIES STARTING TO THE
NORTH AND MOVING TO THE SOUTH. GOES WITH PHOTOS
93RTK001 #26-#29.

TAKEN BY: RUSSELL KUNIBE

INITIALS: RTK

ROLL #: 93RTK001 FRAME #: 27

EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93 TIME: 09:05

SEGMENT#: EV037

STATION#: -0-

LOCATION: NE SHORE EVANS IS. N. END OF SUBDIV

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OVERVIEW SERIES STARTING TO THE
NORTH AND MOVING TO THE SOUTH. GOES WITH PHOTOS
93RTK001 #26-#29.

TAKEN BY: RUSSELL KUNIBE

INITIALS: RTK

ROLL #: 93RTK001 FRAME #: 26

EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93 TIME: 09:05

SEGMENT#: EV037

STATION#: -0-

LOCATION: NE SHORE EVANS IS. N. END OF SUBDIV

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OVERVIEW SERIES STARTING TO THE
NORTH AND MOVING TO THE SOUTH. GOES WITH PHOTOS
93RTK001 #26-#29.

TAKEN BY: RUSSELL KUNIBE

INITIALS: RTK

ROLL #: 93RTK001 FRAME #: 29

EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93 TIME: 09:05

SEGMENT#: EV037

STATION#: -0-

LOCATION: NE SHORE EVANS IS. N. END OF SUBDIV

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OVERVIEW SERIES STARTING TO THE
NORTH AND MOVING TO THE SOUTH. GOES WITH PHOTOS
93RTK001 #26-#29.

TAKEN BY: RUSSELL KUNIBE

INITIALS: RTK

ROLL #: 93RTK001 FRAME #: 28

EVIDENCE ID#: _____



OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93 TIME: 09:10

SEGMENT#: EV037

STATION#: -0-

LOCATION: NE SHORE EVANS IS. N. END OF SUBDIV

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OVERVIEW LOOKING BACK AT THE
BACK AT THE BEACH FROM NORTH TO SOUTH. GOES WITH
PHOTOS 93RTK001 #30-#33. PITS WERE DUG ALONG B IN
FORGROUND.

TAKEN BY: RUSSELL KUNIBE

INITIALS: RTK

ROLL #: 93RTK001 FRAME #: 31 EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93 TIME: 09:10

SEGMENT#: EV037

STATION#: -0-

LOCATION: NE SHORE EVANS IS. N. END OF SUBDIV

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OVERVIEW LOOKING BACK AT THE
BACK AT THE BEACH FROM NORTH TO SOUTH. GOES WITH
PHOTOS 93RTK001 #30-#33. C. CROSBY, D. MUNSON AND
G. EVANOFF IN LOC. B

TAKEN BY: RUSSELL KUNIBE

INITIALS: RTK

ROLL #: 93RTK001 FRAME #: 30 EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93 TIME: 09:10

SEGMENT#: EV037

STATION#: -0-

LOCATION: NE SHORE EVANS IS. N. END OF SUBDIV

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OVERVIEW LOOKING BACK AT THE
BACK AT THE BEACH FROM NORTH TO SOUTH. GOES WITH
PHOTOS 93RTK001 #30-#33. LOC. A ENDED JUST TO LEFT
OF LOG IN HITZ

TAKEN BY: RUSSELL KUNIBE

INITIALS: RTK

ROLL #: 93RTK001 FRAME #: 33 EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93 TIME: 09:10

SEGMENT#: EV037

STATION#: -0-

LOCATION: NE SHORE EVANS IS. N. END OF SUBDIV

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OVERVIEW LOOKING BACK AT THE
BACK AT THE BEACH FROM NORTH TO SOUTH. GOES WITH
PHOTOS 93RTK001 #30-#33. LOC. A WAS ALONG THE HITZ
IN 31-33

TAKEN BY: RUSSELL KUNIBE

INITIALS: RTK

ROLL #: 93RTK001 FRAME #: 32 EVIDENCE ID#: _____



318

EV037A

STOCK # BV840-000
1-800-381-0111
T550-181-0111

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93 TIME: 09:15

SEGMENT#: EV037 STATION#: -0-
LOCATION: NE SHORE EVANS IS. N. END OF SUBDIV
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO: PHOTO OF PIT #3 WITH HOR OILING FROM
17 TO 23 CM. BELOW THE SURFACE. OVERVIEW IN PHOTO
93RTK001 # 36.

TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK001 FRAME #: 35 EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93 TIME: 09:10

SEGMENT#: EV037 STATION#: -0-
LOCATION: NE SHORE EVANS IS. N. END OF SUBDIV
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO: PHOTO OVERVIEW LOOKING BACK AT THE
BACK AT THE BEACH TO SOUTH. GOES WITH PHOTOS
93RTK001 #30-#33. SHOWS LITZ AND BEDROCK OUTCROP.

TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK001 FRAME #: 34 EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93 TIME: 09:30

SEGMENT#: EV037 STATION#: -0-
LOCATION: NE SHORE EVANS IS. N. END OF SUBDIV
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO: OVERVIEW PHOTO LOOKING TO THE W.
C. CROSBY AND D. MUNSON ARE WORKING ON PIT #8. CLOSE
UP OF PIT #8 IS IN PHOTO 93RTK002 #02. B. TRAVIS &
G. EVANOFF

TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK002 FRAME #: 1 EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93 TIME: 09:15

SEGMENT#: EV037 STATION#: -0-
LOCATION: NE SHORE EVANS IS. N. END OF SUBDIV
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO: OVERVIEW PHOTO LOOKING TO THE N.
C. CROSBY AND D. MUNSON ARE WORKING ON PIT #4. PIT #3
IS NEXT TO THE SHOVEL TO THE LEFT.

TAKEN BY: RUSSELL KUNIBE INITIALS: RTL
ROLL #: 93RTK001 FRAME #: 36 EVIDENCE ID#: _____



8/14 15003

STOCK # 99V840-000
1-800-787-0111
Central Processing

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93 TIME: 09:40

SEGMENT#: EV037 STATION#: -0-
LOCATION: NE SHORE EVANS IS. N. END OF SUBDIV
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO: OVERVIEW PHOTO C. CROSBY AND D. MUNSON
ARE AT PIT #14 WHICH HAD NO OIL. PIT #13 IS BETWEEN
THE MUSTANG COAT AND BLUE BACK PACK ALSO HAD NO OIL.

TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK002 FRAME #: 3 EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93 TIME: 09:40

SEGMENT#: EV037 STATION#: -0-
LOCATION: NE SHORE EVANS IS. N. END OF SUBDIV
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO: PHOTO SHOWING AP ON THE SURFACE. SOME
BOULDERS HAVE BEEN ROLLED BACK. THIS IS A CLOSE UP
OF AREA SHOWN IN PHOTO 93RTK002 #04.

TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK002 FRAME #: 5 EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93 TIME: 09:30

SEGMENT#: EV037 STATION#: -0-
LOCATION: NE SHORE EVANS IS. N. END OF SUBDIV
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO: CLOSE UP OF PIT #8 SHOWING BROWN SHEEN
ON THE WATER IN THE PIT. OVERVIEW OF PIT #8 IS IN
PHOTO 93RTK002 #01.

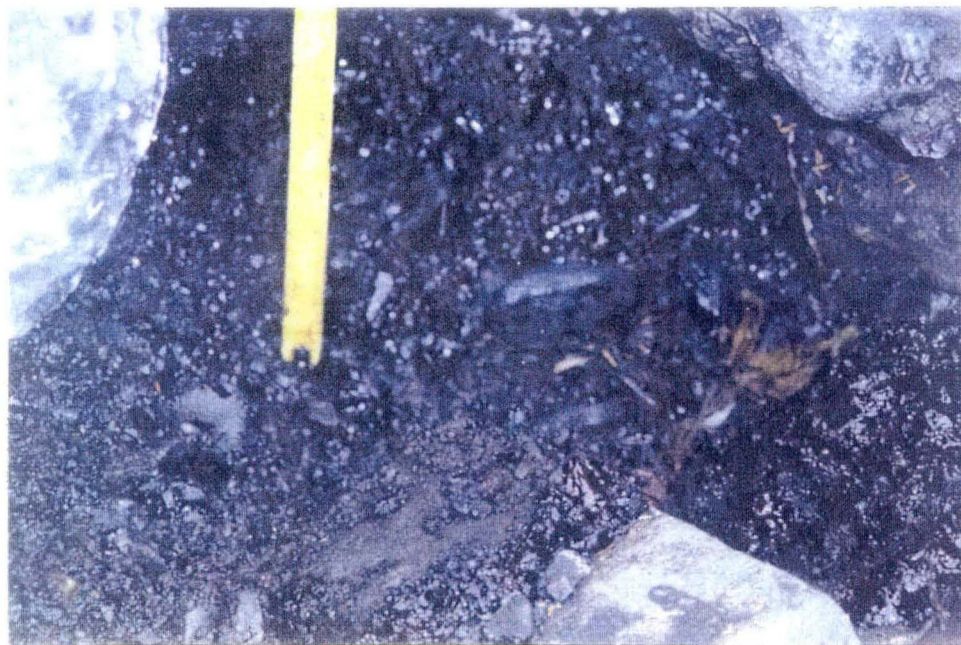
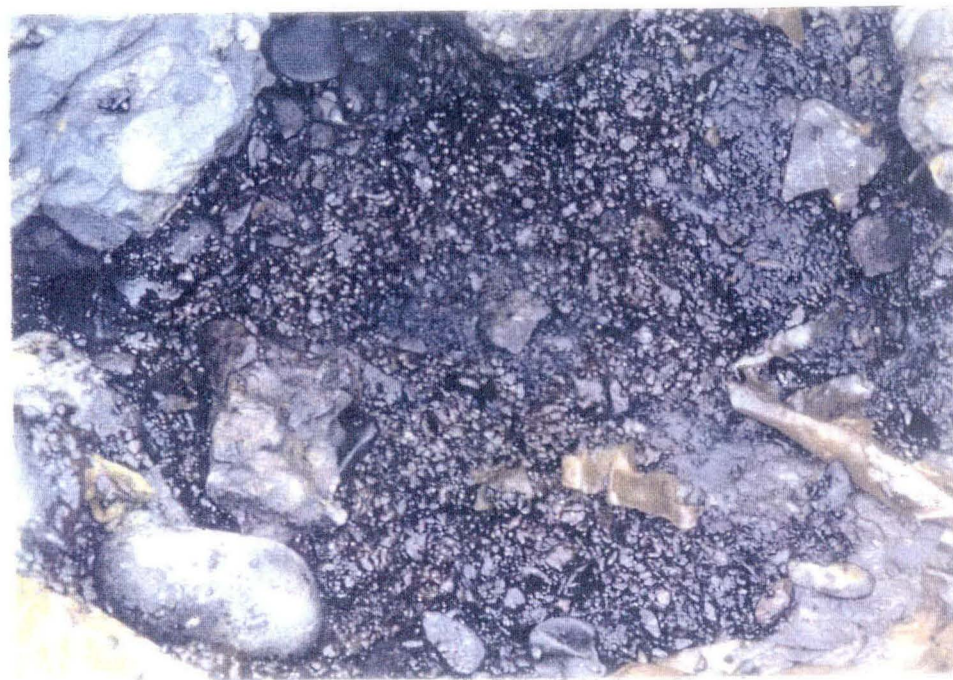
TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK002 FRAME #: 2 EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93 TIME: 09:40

SEGMENT#: EV037 STATION#: -0-
LOCATION: NE SHORE EVANS IS. N. END OF SUBDIV
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO: PHOTO SHOWING AP ON THE SURFACE. SOME
BOULDERS HAVE BEEN ROLLED BACK. PHOTO 93RTK002 #05
IS A CLOSE UP OF THE SAME AP.

TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK002 FRAME #: 4 EVIDENCE ID#: _____



EV037 A 018

0th Century
1-800-787-0777
STOCK # PPV840-000

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93 TIME: 10:00

SEGMENT#: EV037 STATION#: -0-
LOCATION: NE SHORE EVANS IS. N. END OF SUBDIV
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO: PHOTO CLOSE UP OF PIT #20. THERE IS
OP OILING FROM THE SURFACE AP DOWN TO 24 CM.

TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK002 FRAME #: 7 EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93 TIME: 09:40

SEGMENT#: EV037 STATION#: -0-
LOCATION: NE SHORE EVANS IS. N. END OF SUBDIV
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO: PHOTO CLOSE UP OF PIT #18. THERE IS
OP OILING FROM THE SURFACE AP DOWN TO THE WATER
LEVEL. THERE IS A BROWN SHEEN ON THE WATER.

TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK002 FRAME #: 6 EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93 TIME: 10:45

SEGMENT#: EV037 STATION#: -0-
LOCATION: NE CORNER OF EVANS IS. N. END OF SUBDIV
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO: PHOTO OVERVIEW OF THE SURVEYED AREA
FROM THE SKIFF LOOKING BACK TO THE BEACH.

TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK002 FRAME #: 9 EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93 TIME: 10:00

SEGMENT#: EV037 STATION#: -0-
LOCATION: NE SHORE EVANS IS. N. END OF SUBDIV
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO: PHOTO CLOSE UP OF SURFACE AP BETWEEN
THE BOULDERS AND COBBLES IN LOC. A.

TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK002 FRAME #: 8 EVIDENCE ID#: _____



OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93 TIME: 10:45

SEGMENT#: EV037 STATION#: -0-
LOCATION: NE CORNER OF EVANS IS. BEACH B
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO: PHOTO OVERVIEW LOOKING TO THE SOUTH AT
THE BOULDER AREA WHERE THERE IS AP/SOR/CT.

TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK002 FRAME #: 11 EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93 TIME: 10:45

SEGMENT#: EV037 STATION#: -0-
LOCATION: NE CORNER OF EVANS IS. N. END OF SUBDIV
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO: PHOTO OVERVIEW OF THE SURVEYED AREA
FROM THE SKIFF LOOKING BACK TO THE BEACH. THIS
PHOTO IS FURTHER AWAY FROM THE BEACH THEN 93RTK002
#02

TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK002 FRAME #: 10 EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93 TIME: 10:45

SEGMENT#: EV037 STATION#: -0-
LOCATION: NE CORNER OF EVANS IS. BEACH B
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO: CLOSE UP PHOTO OF PIT #21 OP FROM 1 TO
6 CM. AND OF FROM 6 TO 8CM. PHOTO 93RTK002 #12 IS A
WIDER VIEW OF THIS PIT.

TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK002 FRAME #: 13 EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93 TIME: 10:45

SEGMENT#: EV037 STATION#: -0-
LOCATION: NE CORNER OF EVANS IS. BEACH B
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO: PHOTO OF PIT #21 OP FROM 1 TO 6 CM.
AND OF FROM 6 TO 8CM. PHOTO 93RTK002 #13 IS A CLOSE
UP OF THIS PIT.

TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK002 FRAME #: 12 EVIDENCE ID#: _____



OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93 TIME: 11:15

SEGMENT#: EV037 STATION#: -0-
LOCATION: NE CORNER OF EVANS IS. BEACH B
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO: PHOTO OF PIT #28 IN THE HITZ. THIS
PIT HAD LOR FROM 8 TO 11 CM BELOW THE SURFACE.

TAKEN BY: RUSSELL KUNIBE
ROLL #: 93RTK002 FRAME #: 15

INITIALS: RTK
EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93 TIME: 11:00

SEGMENT#: EV037 STATION#: -0-
LOCATION: NE CORNER OF EVANS IS. BEACH B
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO: PHOTO OF SURFACE AP IN THE
BOULDER/COBBLE/BEDROCK AREA.

TAKEN BY: RUSSELL KUNIBE
ROLL #: 93RTK002 FRAME #: 14

INITIALS: RTK
EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93 TIME: 11:15

SEGMENT#: EV037 STATION#: -0-
LOCATION: NE CORNER OF EVANS IS. BEACH B
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO: PHOTO OF SURFACE AP AND AND SOR OILING
IN LOC D BEACH B. PHOTO 93RTK002 #16 IS A CLOSE UP
OF THIS AREA. TOM KELLEY, EXXON IS IN PHOTO

TAKEN BY: RUSSELL KUNIBE
ROLL #: 93RTK002 FRAME #: 17

INITIALS: RTK
EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93 TIME: 11:15

SEGMENT#: EV037 STATION#: -0-
LOCATION: NE CORNER OF EVANS IS. BEACH B
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO: PHOTO OF SURFACE AP AND AND SOR OILING
IN LOC D BEACH B. PHOTO 93RTK002 #17 IS AN OVERVIEW
OF THIS AREA.

TAKEN BY: RUSSELL KUNIBE
ROLL #: 93RTK002 FRAME #: 16

INITIALS: RTK
EVIDENCE ID#: _____



OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93 TIME: 11:15

SEGMENT#: EV037

STATION#: -0-

LOCATION: NE CORNER OF EVANS IS. BEACH 8

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OF SURFACE AP AND AND SOR OILING
IN LOC D BEACH B. ANOTHER VIEW OF THE SAME AREA IN
PHOTO #16 & 17. NOTICE THE MS COATING THE ROLLED
BOULDERS

TAKEN BY: RUSSELL KUNIBE

INITIALS: RSK

ROLL #: 93RTK002 FRAME #: 18 EVIDENCE ID#:



EV 039 A

SEGMENT: EV 039 A

LOCATION: Chenega Island Area Group, northeastern Evans Island.

OTHER STUDIES

PHYSICAL SETTING

Coastal Morphology and Sedimentology

Broad irregularly shaped pocket beach bound by low-lying promontories. Sediments are poorly sorted, subangular to rounded pebbles to boulders with much bedrock outcrop. Freshwater flows across the central part of the beach and is noted as a stream in the 1993 field sketch. The northern part of this site consists of rounded large pebble gravel and high-tide berms in the upper intertidal which grades to cobbles and small boulders in the lower intertidal. The area south of the stream, which is designated in the field sketch, consists of boulders and much bedrock outcrop.

Environmental Sensitivity Index (ESI)

Type 1; exposed rocky.

Type 7; gravel beach.

Fetches and Directions (kilometers)

NE= 37

Energy Level

Overall high with some moderate areas.

GENERAL BIOLOGICAL SETTING

Eagle nest.

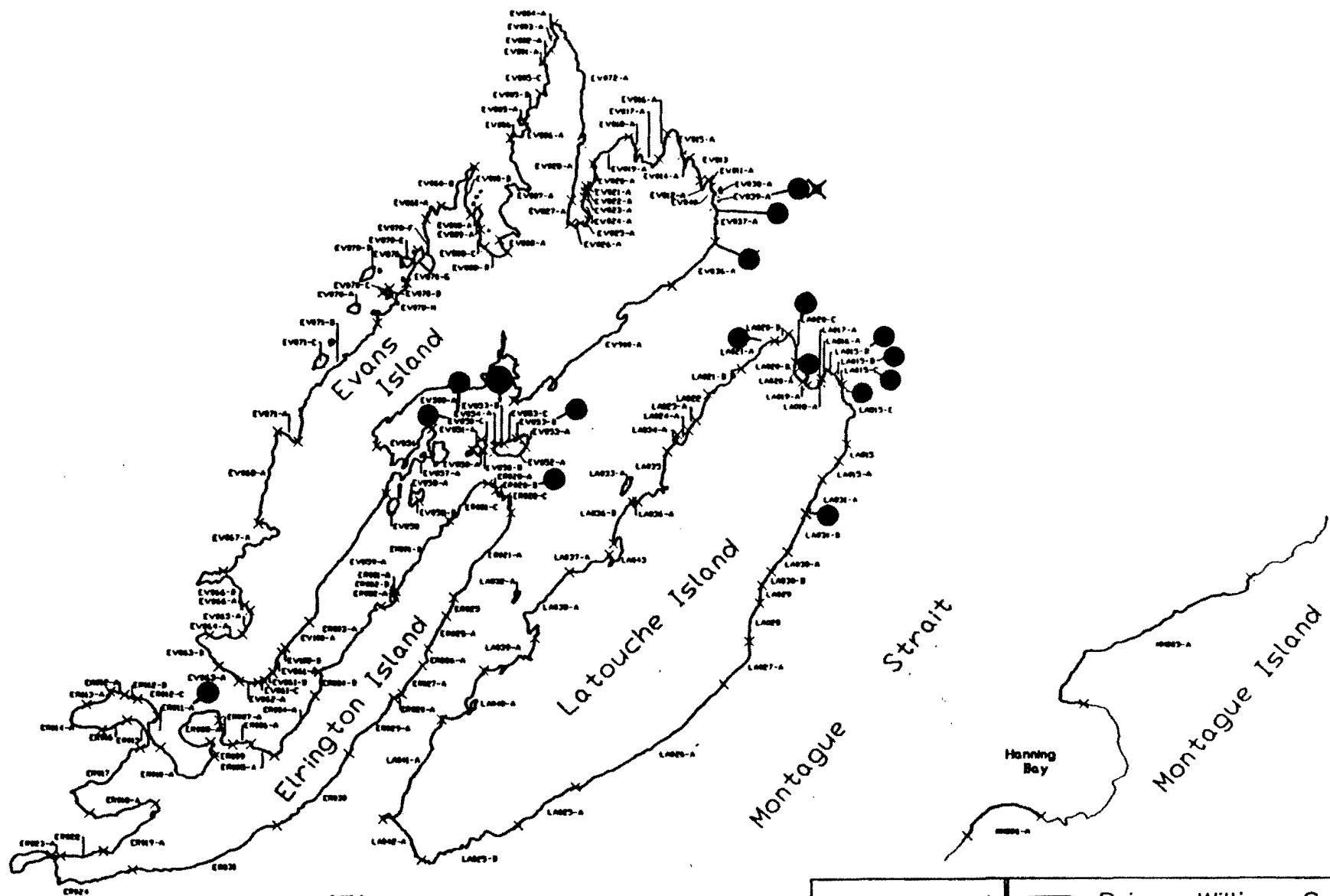
Fish harvesting.

Deer harvesting.

OILING SUMMARY

A large area of soft and friable AP is present on the south part of this site (surface location 'A'). The AP is as much as 25 cm thick and thus, by definition, is associated with subsurface oil. The oil is among boulders and in bedrock fractures. Two other smaller and less concentrated areas of AP and SOR also are present in boulder and bedrock settings. There has been no measurable improvement in the amount of surface oil since 1991.

The only significant subsurface oil remaining at this site coincides with AP in surface location 'A' as described above. There have been significant decreases in subsurface oil at several locations at this site. Much of the decrease can be attributed to aggressive treatment in 1991 that included mechanical tilling and oiled-sediment removal.



Danger Island

0 2 4 KILOMETERS		— Beach Segments X Subdivision Endticks
Date:	1/15/92	
File Name:	SWISEGS	Prince William Sound Southwest area #1 Beach Sub-Segment Map Map Projection: UTM, Zone 6

**1993 ADEC RESTORATION PROJECT #930380
SHORELINE SURVEY COMMENT SHEET**

CATION EVANS IS SEGMENT EVO39 SUBDIVISION A DATE 8/1/93

AFFILIATION

NAME Katie Harich USDA Forest Service SIGNATURE Katie Harich

of the small section of beach sampled, kermat occurred at d.d. wave shadows on & around boulder fields. Oil sheen apparent in select tidal pools as well. Recommend no chemical intervention w/ regard to dispersal.

AFFILIATION

DNR

NAME KATIE FARLEY DU OF LAND SIGNATURE Kathleen M. Farley

Source uses are listed as "Environmental Sensitivities".

- ① Eagle nest: Eagle seen in vicinity. Any restoration activity should occur during least disturbing time.
- ② Fish Harvesting Area: This activity probably not affected by site in its present condition unless nets and fish are within OP, HOR, MOR zones identified within attached sketch.
- ③ Subsistence (Deer harvesting): Subsistence harvesting is adversely affected in the intertidal zone of this site. Deer harvesting and access to the Chenega uplands would not be affected - except deer may feed on oiled biota and be carried through the food web.

AFFILIATION

NAME Chenega Corp.

SIGNATURE [Signature]

Highly Restoration area. Oil not breaking down-dispersing. Surface oiling H/OP + Sheering persists. High Subsistence use area. Chenega Bay residents consider July 00 of Bishop Rock area as 1/3 for proposed Seining sites.

AFFILIATION

NAME USCG BOB TRAVIS

SIGNATURE [Signature]

Small pockets of HOR/OP on boulders on left side of beach. Boulders on right - Coat, AP, or TARMATS. Beach area is predominantly clean. Generally conform w/ conditions indicated on map.

PAGE 1 OF 3

SUBDIVISION A

DATE 8/1/93

TIME 17:15 to 18:45

TIDE LEVEL 5.8 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

DISTRIBUTION: C = 61-100%; B = 51-60%; F = 11-50%; S = 1-10%; T = <1%

SLOPE: V = VERTICAL: H = HIGH ANGLE: M = MEDIUM ANGLE: L = LOW ANGLE **PHOTO ROLL #**

FRAMES

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

PAGE 2 OF 3

SEGMENT EVO39

SUBDIVISION A

DATE 8, 01, 1958

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

OG COMMENTS:
pits #10 & 15- oil (LOR) & sediments are of a consistency of friable
AR

pit #21 - Sulfur smell associated w/ Blk mud at Bottom 1cm
of pit also has a oil film - considered Anaerobic -

pit #24. Anaerobic mud also observed in this pit - trace amounts of oil were observed in pit - silver sheen also observed in pit H₂O but source was not determined - possible iron oxide -

1993 Surface Oil Summary
Segment EV039 Subdivision A

Location	Area of Oiling Type in Square Meters				
	AP	MS	SOR	CV	CT
A	0.	0.	9.	9.	9.
B	108.	0.	0.	0.	0.
C	3.	0.	3.	3.	3.
TOTALS=	111.	0.	12.	12.	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 EV039A

Loc.	1993 PIT #	Gr. Sz.	Zn.	En.	Note	TREATMENT		1993 OILED SED. VOL. (m3)					1992 OILED SED. VOL. (m3)					1991 OILED SED. VOL. (m3)					WT.'ed OIL VOL.			CHANGE WT.'ed VOL.		
						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	7,10,11,15	CPG-PGS	U	H	FRIABLE OR IN '92	NO	ET, Rs, Rb, MR	0.0	0.0	2.8	1.8	0.0	0.0	4.0	2.0	0.0	0.0	24.0	16.0	0.0	0.0	0.0	11.9	22.0	184.0	-45.9	-88.0	-93.5
ZB	20-23	BCP-GPCM	U	H	H2S SMELL	MR	MR, Rs, Rb	5.9	0.0	2.9	1.3	0.0	0.0	0.2	0.6	0.2	0.0	0.0	0.0	0.0	0.0	0.0	40.9	3.0	0.0	1270.2	Inf	Inf
ZC		PGB-PGBR	U	H		NO	MR, Rs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.2	0.0	0.0	0.0	0.0	0.0	0.0	36.0	0.0	-100.0	-100.0
ZD		BPG-BPG	U	H		NO	MR, Rs, Rb	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	15.0	0.0	0.0	0.0	0.0	0.0	1.2	75.0	-100.0	-98.4	-100.0
ZE		BP-BPR	U	H		NO	MR, Rs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	60.0	0.0	0.0	0.0	0.0	0.0	0.0	300.0	0.0	-100.0	-100.0
TOTALS=								5.9	0.0	5.7	3.0	0.0	0.0	4.2	2.6	0.8	0.0	106.2	16.0	0.0	0.0	0.0	52.8	26.2	595.0	101.5	-95.6	-91.1

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 - year 1)/(year 1))*100, positive values indicate increases in the amount of oil, negative values indicate decreases, "Inf" (infinite percent increase) indicates newly discovered oil.

10 11 20 0 1 3

1110-181-008-1
000-008V999-0002

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93 TIME: 17:15

SEGMENT#: EV039 STATION#: -0-
LOCATION: NE CORNER OF EVANS IS. JUST N. OF EV037A
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO: PHOTO OVERVIEW OF THE BEACH B LOOKING
TO THE NORTH FROM THE SITZ IN THE MIDDLE OF THE
BEACH. PHOTO 93RTK002 #19 IS A VIEW LOOKING TO THE
SOUTH.
TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK002 FRAME #: 20 EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93 TIME: 17:25

SEGMENT#: EV039 STATION#: -0-
LOCATION: N.E. CORNER OF EVANS IS. JUST N. OF EV037A
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO: PHOTO OF AP SOFT IN THE HITZ. ON THE
UNDERSIDE OF THE COBBLES THE OILING IS A STICKY
MOOSE. PHOTO 93RTK002 #21 IS A WIDE ANGLE OF THIS
PHOTO
TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK002 FRAME #: 22 EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

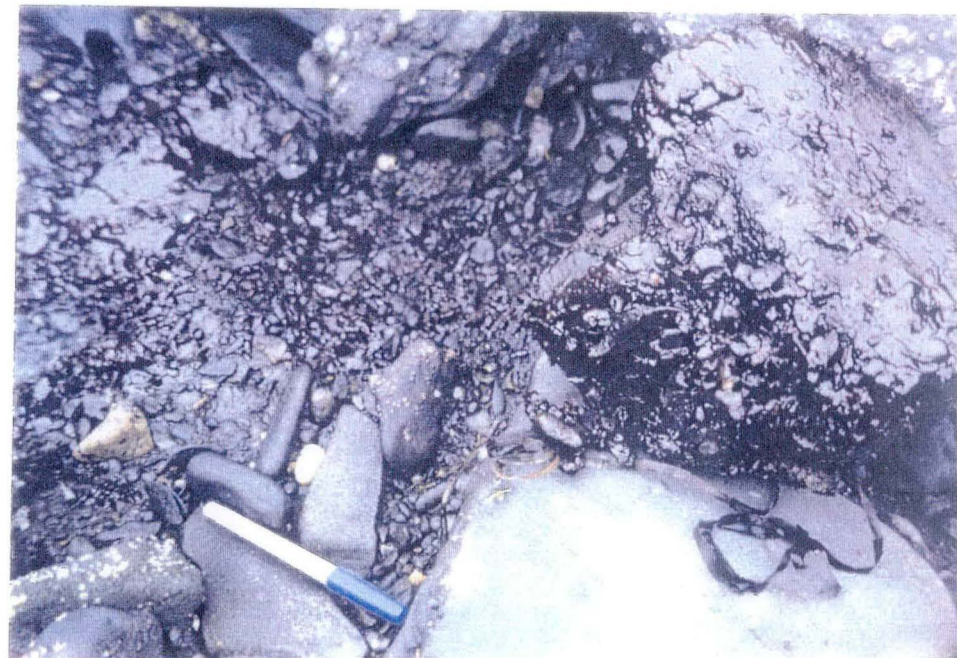
OFFICE: ANCHORAGE DATE: 08/01/93 TIME: 17:15

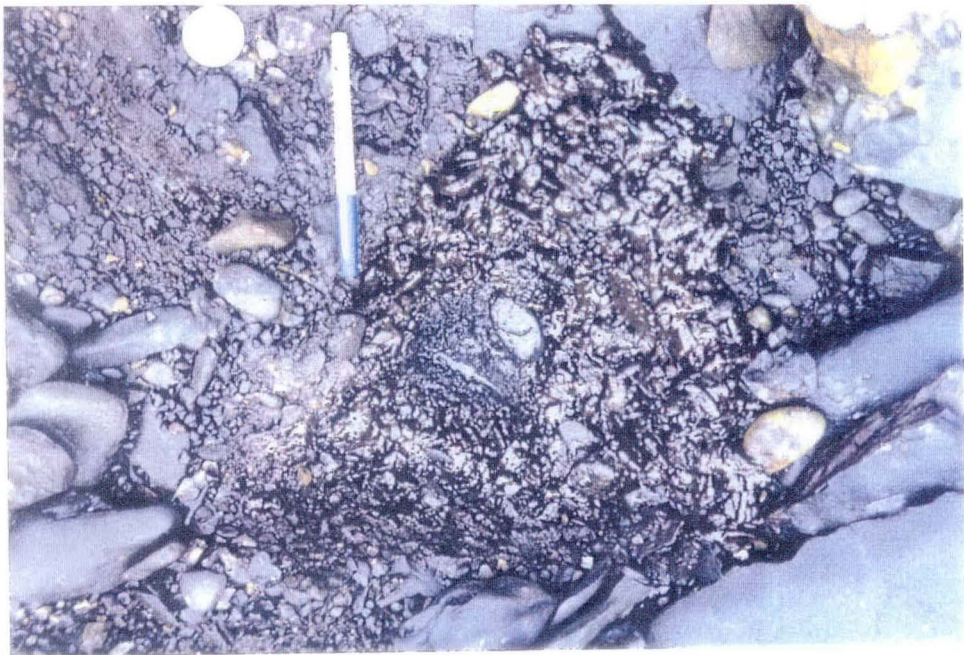
SEGMENT#: EV039 STATION#: -0-
LOCATION: NE CORNER OF EVANS IS. JUST N. OF EV037A
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO: PHOTO OVERVIEW OF THE BEACH B LOOKING
TO THE SOUTH FROM THE SITZ IN THE MIDDLE OF THE
BEACH. PHOTO 93RTK002 #20 IS A VIEW LOOKING TO THE
NORTH.
TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK002 FRAME #: 19 EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93 TIME: 17:25

SEGMENT#: EV039 STATION#: -0-
LOCATION: N.E. CORNER OF EVANS IS. JUST N. OF EV037A
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO: PHOTO OF AP SOFT IN THE HITZ. ON THE
UNDERSIDE OF THE COBBLES THE OILING IS A STICKY
MOOSE. PHOTO 93RTK002 #22 IS A CLOSE UP OF THIS
PHOTO
TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK002 FRAME #: 21 EVIDENCE ID#: _____





012 A 15017

STOCK # BP4840-000
1-800-787-0777

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93 TIME: 18:00

SEGMENT#: EV039

STATION#: -0-

LOCATION: N.E. CORNER OF EVANS IS JUST N. OF EV037

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OF AP BETWEEN THE COBBLES AND GRAVEL. THE SMALL YELLOW GRANULARS IN THE PHOTO MAY BE CUSTOM BLEND FERTILIZER USED DURING THE SPILL CLEAN UP.

TAKEN BY: RUSSELL KUNIBE

INITIALS: RTK

ROLL #: 93RTK002 FRAME #: 24 EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93 TIME: 18:00

SEGMENT#: EV039

STATION#: -0-

LOCATION: N.E. CORNER OF EVANS IS JUST N. OF EV037

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OF OILING IN THE FRACTURES OF THE BEDROCK AND BETWEEN THE COBBLES AND BOULDERS.

TAKEN BY: RUSSELL KUNIBE

INITIALS: RTK

ROLL #: 93RTK002 FRAME #: 23 EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93 TIME: 18:00

SEGMENT#: EV039

STATION#: -0-

LOCATION: N.E. CORNER OF EVANS IS JUST N. OF EV037

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OF AP BETWEEN THE COBBLES AND GRAVEL. A ROCKS HAS BEEN ROLLED BACK TO EXPOSED A MOOSE SATURATED LAYER. PHOTO #25 IS A CLOSE-UP WIDE VIEW.

TAKEN BY: RUSSELL KUNIBE

INITIALS: RTK

ROLL #: 93RTK002 FRAME #: 26 EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93 TIME: 18:00

SEGMENT#: EV039

STATION#: -0-

LOCATION: N.E. CORNER OF EVANS IS JUST N. OF EV037

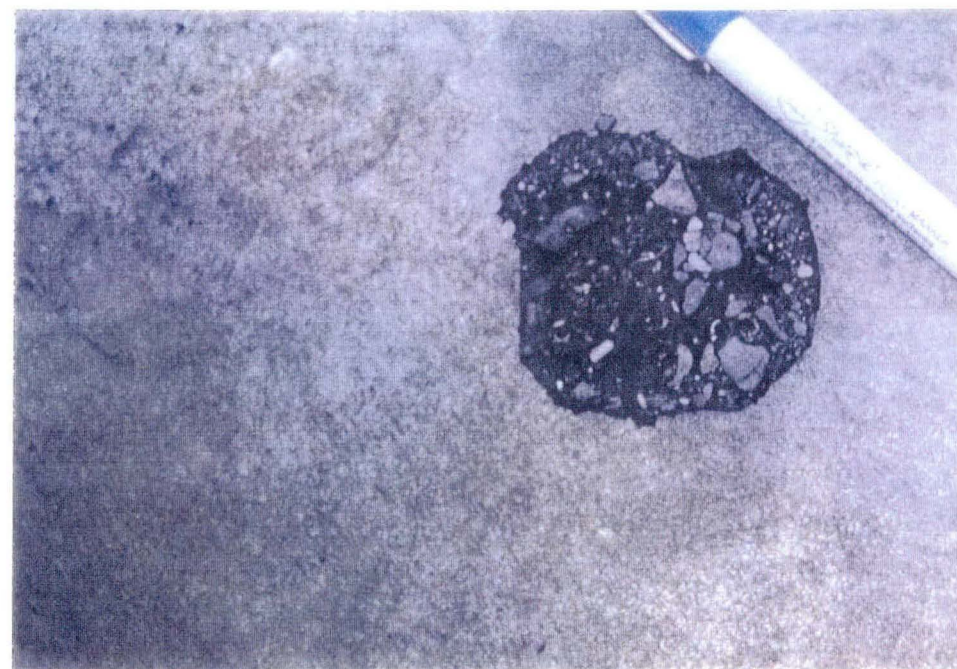
KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OF AP BETWEEN THE COBBLES AND GRAVEL. A COUPLE OF ROCKS HAVE BEEN ROLLED BACK TO EXPOSED A MOOSE SATURATED LAYER. PHOTO #26 IS A CLOSE-UP

TAKEN BY: RUSSELL KUNIBE

INITIALS: RTK

ROLL #: 93RTK002 FRAME #: 25 EVIDENCE ID#: _____



OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93 TIME: 18:00

SEGMENT#: EV039 STATION#: -0-
LOCATION: N.E. CORNER OF EVANS IS JUST N. OF EV037
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO: PHOTO OF PIT # 15 WHICH HAD LOR FROM
6 TO 9 CM BELOW THE SURFACE. THE PIT WAS LOCATED
JUST BELOW THE LAST HIGH TIDE LINE.

TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK002 FRAME #: 28 EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93 TIME: 18:00

SEGMENT#: EV039 STATION#: -0-
LOCATION: N.E. CORNER OF EVANS IS JUST N. OF EV037
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO: OVERVIEW PHOTO FROM LOCATION B TOWARD
THE N. AT THE CENTER OF THE BEACH. TO THE LT. IS
THE OIL DRUM AND TO THE RT. IS LOCATION A AT BASE OF
BEDROCK

TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK002 FRAME #: 27 EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93 TIME: 18:00

SEGMENT#: EV039 STATION#: -0-
LOCATION: N.E. CORNER OF EVANS IS JUST N. OF EV037
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO: PHOTO OF A SMALL TAR SPLATTER ON A
BOULDER IN THE HITZ. NOTICE THAT THE TAR IS HOLDING
GRAINS OF SAND AND GRAVEL.

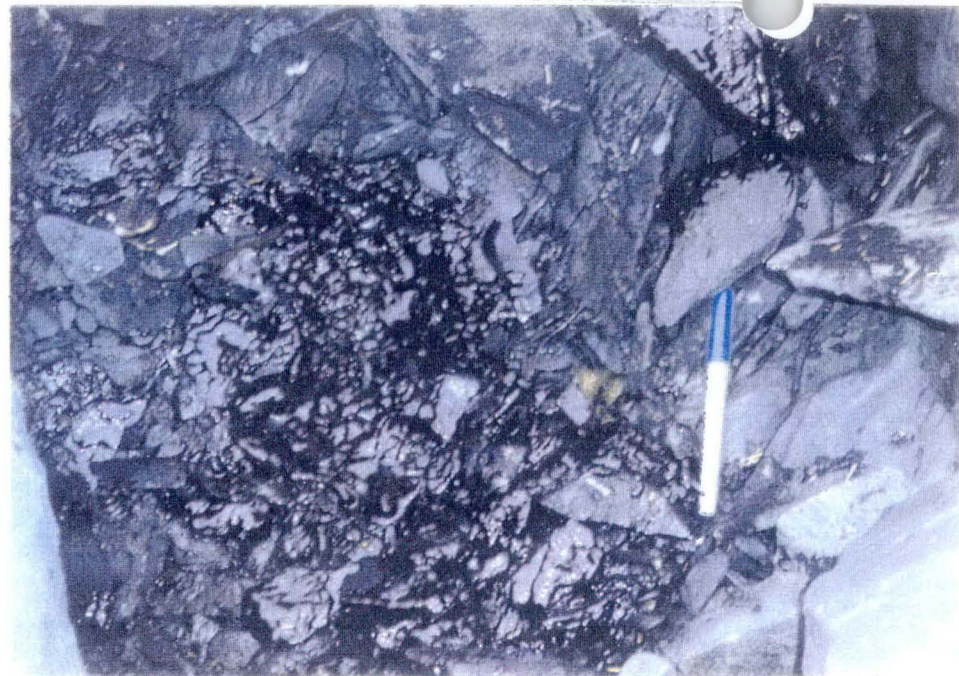
TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK002 FRAME #: 30 EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93 TIME: 18:00

SEGMENT#: EV039 STATION#: -0-
LOCATION: N.E. CORNER OF EVANS IS JUST N. OF EV037
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO: PHOTO OF PIT # 15 (OVERVIEW) C CROSBY
AND D. MUNSON ARE KNEELED OVER THE PIT. THE PIT WAS
LOCATED JUST BELOW THE LAST HIGH TIDE LINE.

TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK002 FRAME #: 29 EVIDENCE ID#: _____



OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93 TIME: 18:00

SEGMENT#: EV039

STATION#: -0-

LOCATION: N.E. CORNER OF EVANS IS JUST N. OF EV037

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OF AP WHICH HAS FORMED BETWEEN THE GRAVEL AND COBBLES BEHIND A BOULDER. THE COBBLES HERE HAVE BEEN TURNED OVER EXPOSING THE MOOSE BELOW.

TAKEN BY: RUSSELL KUNIBE

ROLL #: 93RTK002 FRAME #: 32

INITIALS: RTK
EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93 TIME: 18:00

SEGMENT#: EV039

STATION#: -0-

LOCATION: N.E. CORNER OF EVANS IS JUST N. OF EV037

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OVERVIEW OF THE BEACH LOOKING TO THE SOUTH. THIS PHOTO COULD GO WITH 93RTK002 #33 AND 35 TO SHOW THE WHOLE BEACH.

TAKEN BY: RUSSELL KUNIBE

ROLL #: 93RTK002 FRAME #: 34

INITIALS: RTK
EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93 TIME: 18:00

SEGMENT#: EV039

STATION#: -0-

LOCATION: N.E. CORNER OF EVANS IS JUST N. OF EV037

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OF AP WHICH HAS FORMED BETWEEN THE GRAVEL AND COBBLES BEHIND A BOULDER. THE PEN CAP IS RESTING ON AP.

TAKEN BY: RUSSELL KUNIBE

ROLL #: 93RTK002 FRAME #: 31

INITIALS: LTJ
EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93 TIME: 18:00

SEGMENT#: EV039

STATION#: -0-

LOCATION: N.E. CORNER OF EVANS IS JUST N. OF EV037

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OF THE BOULDER IN LOCATION A LOOKING TO THE SOUTH ALONG THE BEACH. THIS AREA IS WHERE PHOTOS # 30, 31 AND 32 WERE TAKEN.

TAKEN BY: RUSSELL KUNIBE

ROLL #: 93RTK002 FRAME #: 33

INITIALS: RTK
EVIDENCE ID#: _____



OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/02/93 TIME: 07:00

SEGMENT#: EV053

STATION#: -0-

LOCATION: N SHOR OF BETTLES ISLAND.

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OVERVIEW OF THE BEACH LOOKING TO
THE NORTH. THIS BEACH IS COMPOSED OF MAINLY LARGE
ANGULAR BOULDERS.

TAKEN BY: RUSSELL KUNIBE

INITIALS: RTK

ROLL #: 93RTK002 FRAME #: 36

EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/01/93 TIME: 18:00

SEGMENT#: EV039

STATION#: -0-

LOCATION: N.E. CORNER OF EVANS IS JUST N. OF EV037

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OVERVIEW OF THE BEACH LOOKING TO
THE SOUTH. THIS PHOTO COULD GO WITH 93RTK002 #33
AND 34 TO SHOW THE WHOLE BEACH.

TAKEN BY: RUSSELL KUNIBE

INITIALS: RTK

ROLL #: 93RTK002 FRAME #: 35

EVIDENCE ID#: _____

EV 050 C

SEGMENT: EV 050 C

LOCATION: Chenega Island Area Group; Bettles Island.

OTHER STUDIES

PHYSICAL SETTING

Coastal Morphology and Sedimentology

Convex shoreline with cliffs and small indentations. Sediments in small pockets include very poorly sorted surface boulders and cobbles with a subsurface sandy matrix. Beaches have steep slopes.

Environmental Sensitivity Index (ESI)

Type 7; gravel beach.

Type 8; sheltered rocky.

Fetches and Directions (kilometers)

NE= 2

Energy Level

Low overall with some very low areas.

GENERAL BIOLOGICAL SETTING

Eagle nest.

Fry release.

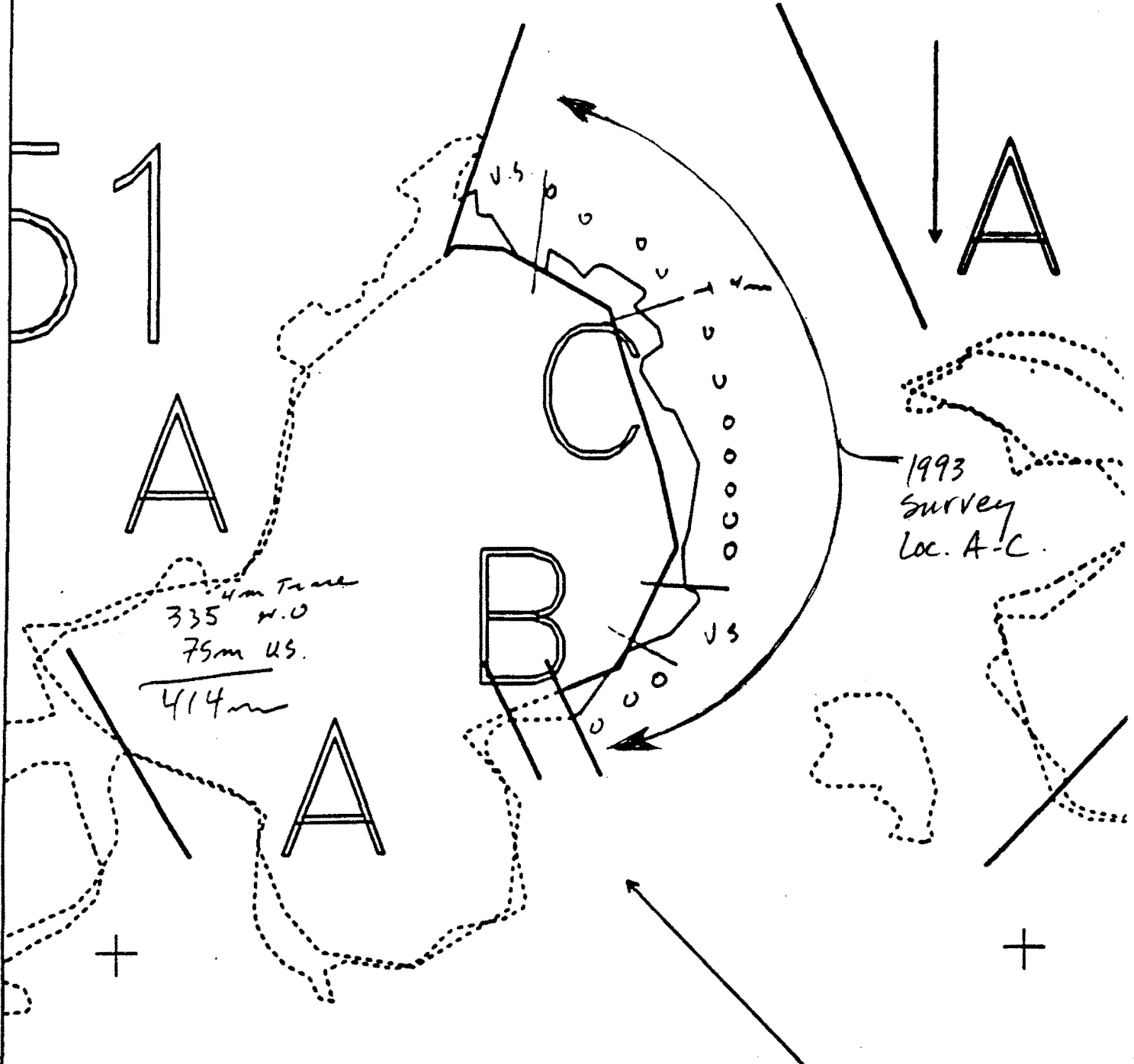
Fish harvest area.

Deer harvesting.

OILING SUMMARY

Very small amounts of AP and even smaller amounts of SOR were discovered in three locations in 1993. Significant reduction of AP has occurred at these sites largely due to AP removal in 1991 and 1992.

Surveyors found no subsurface oil in 1993, and very little was recorded in 1991 and 1992.

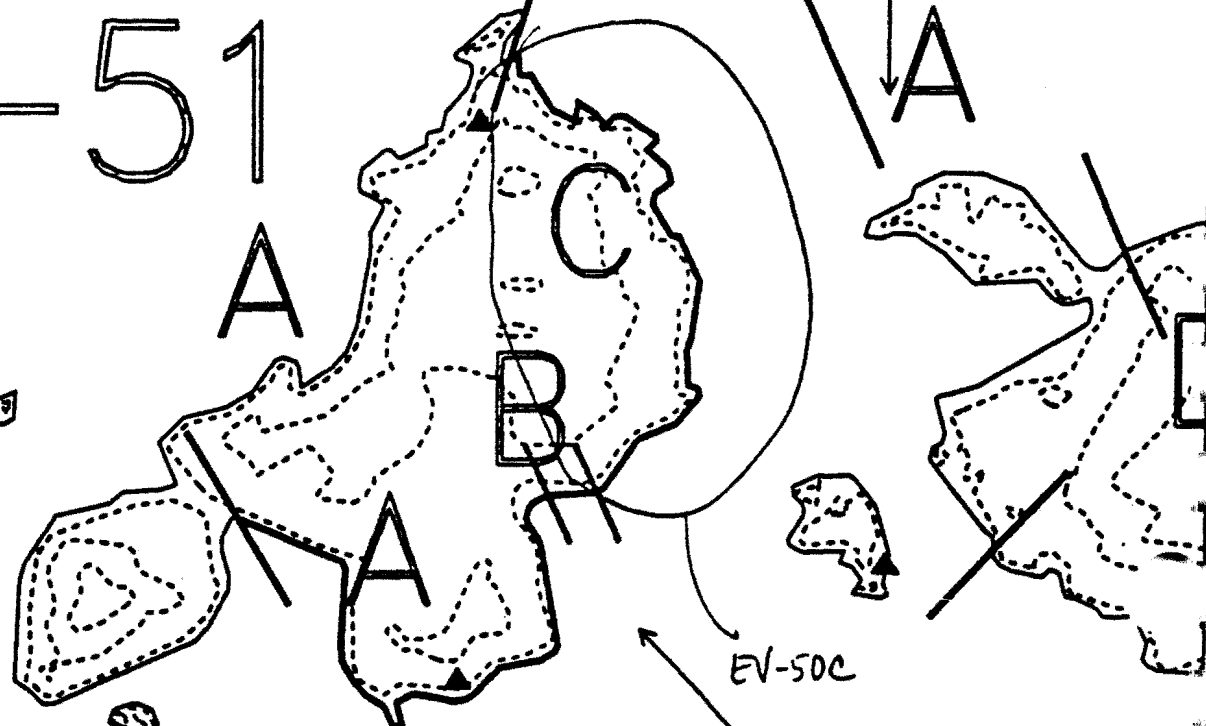


XXXX	Wide	EV050 C ADEC Subsegment Length: 414m METERS 0 100 200 AK State Plane Zone 4 prv050c	Subdivision Field Map
////	Medium		Map Key: PWSEV050C
----	Narrow		Name: <u>HARPER</u>
TTTT	Very Light		Date: <u>22 MAY 92</u>
0000	No Oil		Date Entered:



EV-

V-51

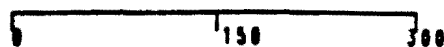


EV-50



EV050

METERS



AK State Plane Zone 4
90050

Segment Reference Map
Exxon Coastline

Map Key: PWSEV050

▲ EAGLE NEST

— STREAMS

1993 ADEC RESTORATION PROJECT #930380
SHORELINE SURVEY COMMENT SHEET

LOCATION ELANS IS. SEGMENT E1053 SUBDIVISION C DATE 8/2/93

AFFILIATION

NAME Chenega Corp. SIGNATURE [Signature]

tacky oil concentrations. AP could be removed. Supports marine mammal populations. Beates Is. impst. area to Chenega for subsistence users. All presence of oil must be removed.

AFFILIATION

NAME DSCC - BOB TRAVIS SIGNATURE [Signature]

FIRST BEACH — VERY SMALL POCKET BEACH. SMALL SPOTS OF AP.

SECOND BEACH — SIGNIFICANT SPLASH/LOAT; AP UNDER/BEHIND BIVULBERS IN U12; ONE 4" PATCH OF MAR.

GENERALLY CONCUR W/ COMMENTS
AND CONDITIONS INDICATED IN MAP &
PIT LOG.

AFFILIATION

NAME KATIE FARLEY DNR
DIV. OF LAND

SIGNATURE Kathleen M. Farley

last year's report apparently did not record the finding of any oil. ~~concur~~ I concur with this year's finding as detailed in the '93 Shoreline Oiling Summary & Diagram.

AFFILIATION

NAME _____ SIGNATURE _____

PAGE 1 OF 2

SUBDIVISION C

DATE 8 / 2 / 93

TEAM MEMBERS: D. MUNSON, C. ROSEY, R. KHANBE: JDFC
K. FARLEY: ADNR, K. HARCH: USFS
B. TRAVIS: USCG, S. KORN: NMFS
S. STOKER; EXXON, T. KELLEY;
EXXON

TIME 17:20 to 18:20 TIDE LEVEL 5.0 ft. to 4.0 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

[illegible]

DISTRIBUTION: C = 61-100%; B = 51-60%; P = 11-50%; S = 1-10%; T = <1%

SLOPE: V = VERTICAL: H = HIGH ANGLE: M = MEDIUM ANGLE: L = LOW ANGLE PHOTO ROLL #

FRAMES

[illegible]

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

EV050C
8/2/93

SAWMILL
BAY

LOCATION A
8 X 15M WIDE
TAR SPLATTERS
AP/CT/ST
TRACE

LOCATION B
TAR SPLATTERS
LARGE BOULDERS
AP/CT/ST-T
TRACE. DIST
12 X 13M
@ LI TO SU

TREE LINE

TREE LINE

LOCATION C
1 X 18M WIDE BEACH
VERY LIGHT COVERAGE
OF AP/SOR < 1%
AT LI TO SU

EV 50 B

EV50C

EV51A

1993 Surface Oil Summary
Segment EV050 Subdivision C

Location	Area of Oiling Type in Square Meters				
	AP	MS	SOR	CV	CT
A	0.6	0.	0.	0.	0.6
B	0.13	0.	0.	0.	0.13
C	0.09	0.	0.09	0.	0.
TOTALS=	0.82	0.	0.09	0.	0.73

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 EV050C

Loc.	1993 PIT #	Gr. Sz.	Zn.	En.	Note	TREATMENT		1993 OILED SED. VOL. (m3)					1992 OILED SED. VOL. (m3)					1991 OILED SED. VOL. (m3)					WT. 'ed OIL VOL.			% CHANGE WT. 'ed VOL.		
						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		BC-SGR	U	L		Rs, MT, Rb	NO	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.0		-100.0	Inf	0.0
ZB		BC-BCG	U	L		NO	Rs, MR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.8	0.0	-100.0	-100.0	
ZC		PC-PH	U	VL		NO	MR, Rs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.4	0.0	-100.0	-100.0	
						TOTALS=		0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.1	0.0	0.4	0.0	0.0	1.6	1.2	-100.0	33.3	-100.0

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.

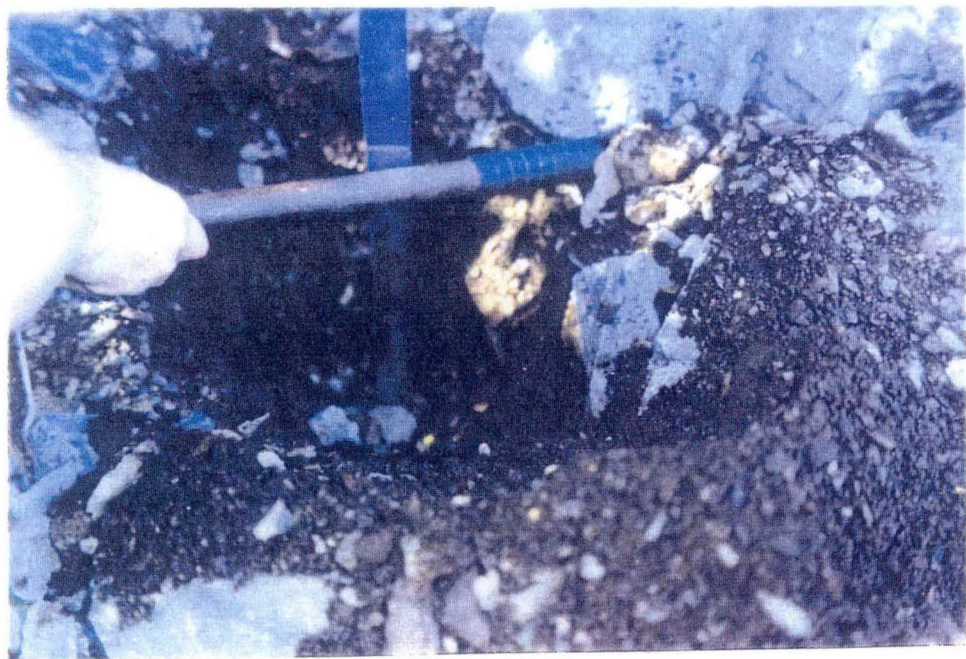
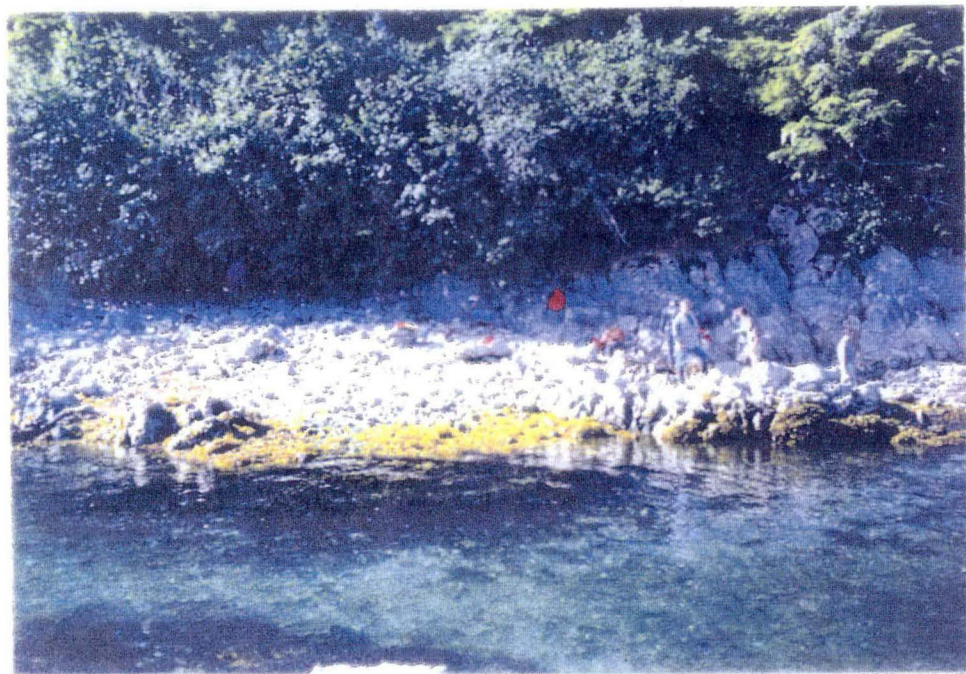
En.= wave-energy level, H= high, M= moderate, L= low, VL= very low.

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.



OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/02/93 TIME: 17:20

SEGMENT#: EV050 STATION#: -0-
LOCATION: EAST END OF BETTLES ISLAND
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO: OVERVIEW PHOTO OF THE STEEP ROCK
SHORLINE TO THE W. OF LOCATION C.

TAKEN BY: RUSSELL KUNIBE
ROLL #: 93RTK003 FRAME #: 25

INITIALS: RTK
EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/02/93 TIME: 18:00

SEGMENT#: EV050 STATION#: -0-
LOCATION: EAST END OF BETTLES ISLAND
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO: PHOTO OVERVIEW OF LOCATION A BEING
MEASURED.

TAKEN BY: RUSSELL KUNIBE
ROLL #: 93RTK003 FRAME #: 27

INITIALS: RTK
EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/02/93 TIME: 17:20

SEGMENT#: EV050 STATION#: -0-
LOCATION: EAST END OF BETTLES ISLAND
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO: OVERVIEW PHOTO OF LOCATION C FROM THE
ROCK IN FRONT OF THE BEACH.

TAKEN BY: RUSSELL KUNIBE
ROLL #: 93RTK003 FRAME #: 24

INITIALS: RTK
EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/02/93 TIME: 17:20

SEGMENT#: EV050 STATION#: -0-
LOCATION: EAST END OF BETTLES ISLAND
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO: CLOSE UP PHOTO OF PIT #2. NO OIL.

TAKEN BY: RUSSELL KUNIBE
ROLL #: 93RTK003 FRAME #: 26

INITIALS: RTK
EVIDENCE ID#: _____



OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/02/93 TIME: 18:00

SEGMENT#: EV050

STATION#: -0-

LOCATION: EAST END OF BETTLES ISLAND

KEYWORDS: SHORELINE EVALUATION-SRVY

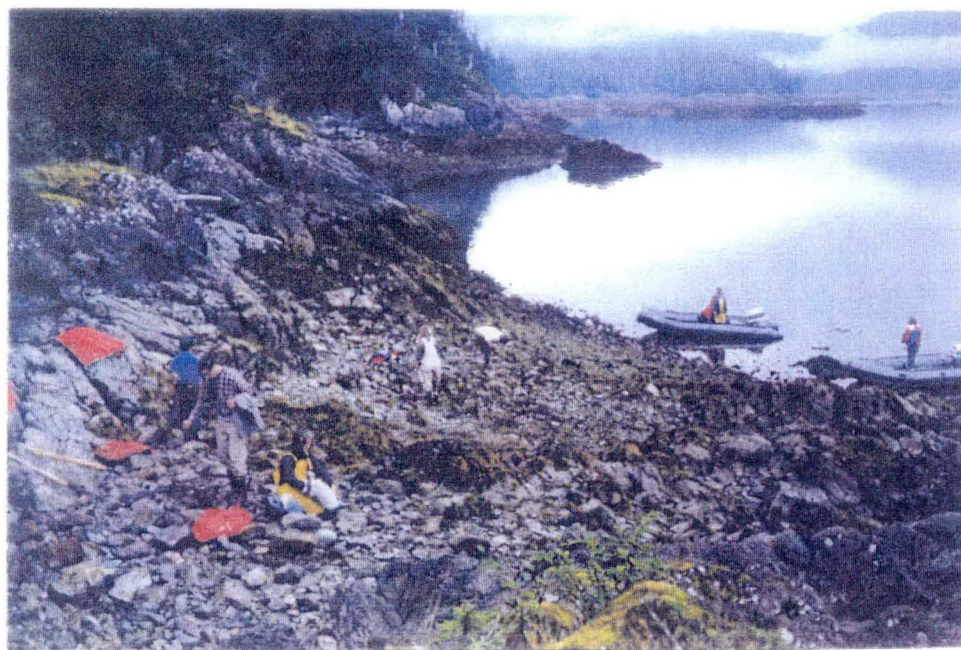
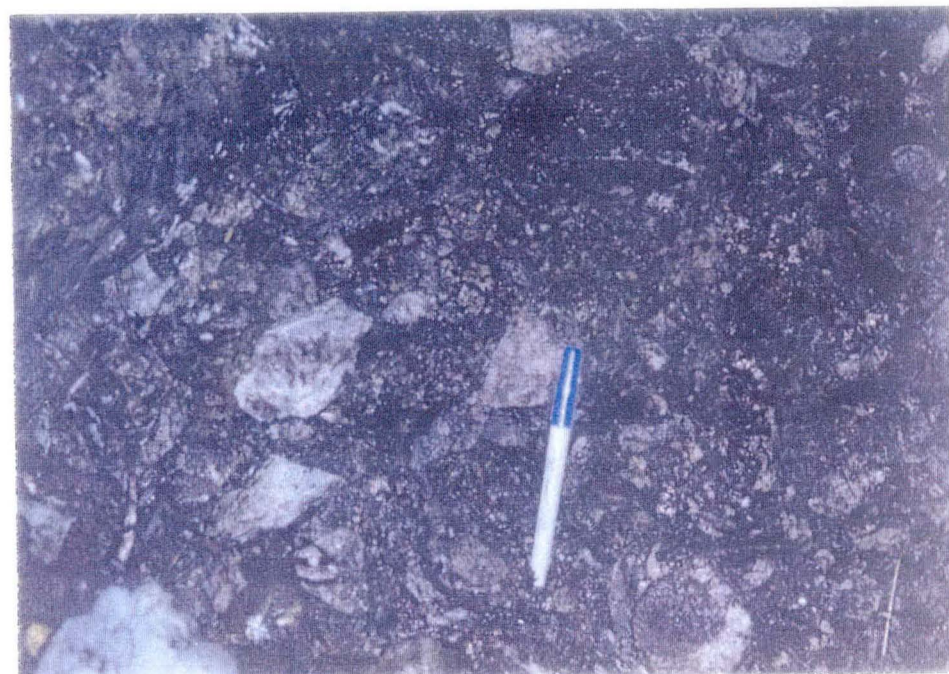
REASON FOR TAKING PHOTO: PHOTO OVEVIEW OF LOCATION A BEING
MEASURED.

TAKEN BY: RUSSELL KUNIBE

INITIALS: RTK

ROLL #: 93RTK003 FRAME #: 28

EVIDENCE ID#: _____



OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL
OFFICE: ANCHORAGE DATE: 08/02/93 TIME: 07:30

SEGMENT#: EV053 STATION#: -0-
LOCATION: THE NORTH SHORE OF BETTLES ISLAND
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO: PHOTO CLOSE UP OF BROKEN AP IN THE
HITZ. IN LOCATION F.

TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK003 FRAME #: 1 EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/02/93 TIME: 07:00

SEGMENT#: EV053 STATION#: -0-
LOCATION: N SHOR OF BETTLES ISLAND.
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO: CLOSE UP OF AP BETWEEN THE BOULDERS
WHICH IS ACTING TO HOLD COBBLES AND GRAVEL TOGETHER.

TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK002 FRAME #: 37 EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL
OFFICE: ANCHORAGE DATE: 08/02/93 TIME: 07:30

SEGMENT#: EV053 STATION#: -0-
LOCATION: THE NORTH SHORE OF BETTLES ISLAND
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO: PHOTO OVERVIEW OF LOCATION E. THIS
PHOTO GOES WITH PHOTO 93RTK003 #02.

TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK003 FRAME #: 3 EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/02/93 TIME: 07:30

SEGMENT#: EV053 STATION#: -0-
LOCATION: THE NORTH SHORE OF BETTLES ISLAND
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO: PHOTO OVERVIEW OF LOCATION E. THIS
PHOTO GOES WITH PHOTO 93RTK003 #03.

TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK003 FRAME #: 2 EVIDENCE ID#: _____

EV 053 B

SEGMENT: EV 053 B

LOCATION: Chenega Area, near north end of Bettles Island.

OTHER STUDIES

PHYSICAL SETTING

Coastal Morphology and Sedimentology

Rocky shoreline with several small pocket beaches. Pocket beaches consist of steeply sloping angular boulder and cobble sediments. Cliffs separate pockets and protective intertidal outcrops occur just off shore.

Environmental Sensitivity Index (ESI)

Type 7; gravel beach.

Type 8; sheltered rocky.

Fetches and Directions (kilometers)

NE= 2

Energy Level

Low with some very low areas.

GENERAL BIOLOGICAL SETTING

Eagle nest.

Fry release.

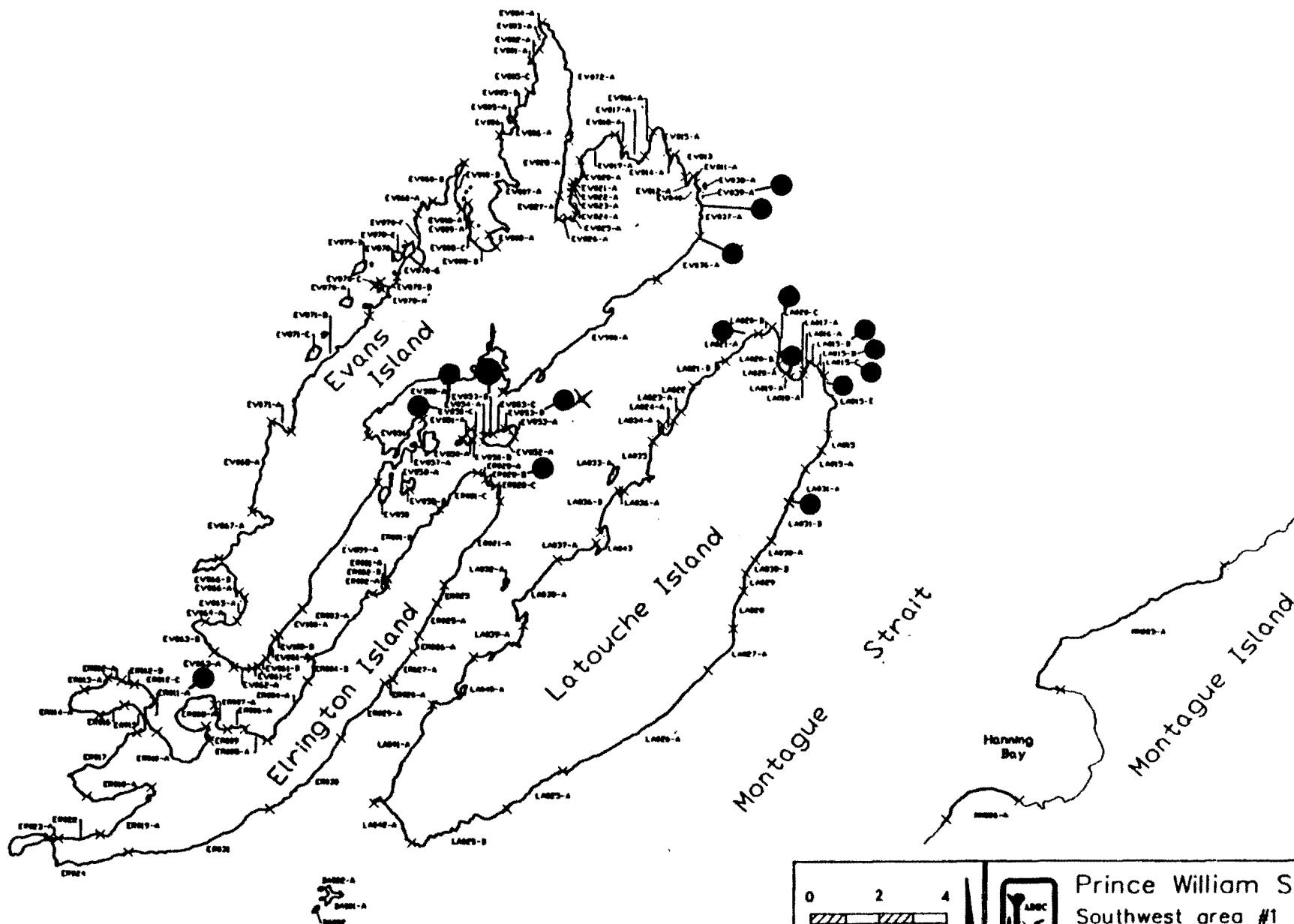
Fish harvest area.

Anadromous stream.

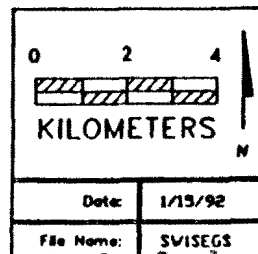
OILING SUMMARY

Only minor amounts of AP and SOR were discovered in 1993. On the western end of the site, however, significant CT and CV exist on a cliff face and on boulders. There does appear to be a significant decrease in the amount of CV since 1991.

Minor amounts of OP and HOR were discovered in 1993 in one area on the eastern side of the site. Only very small amounts of subsurface oil were reported in 1991.



Danger Island



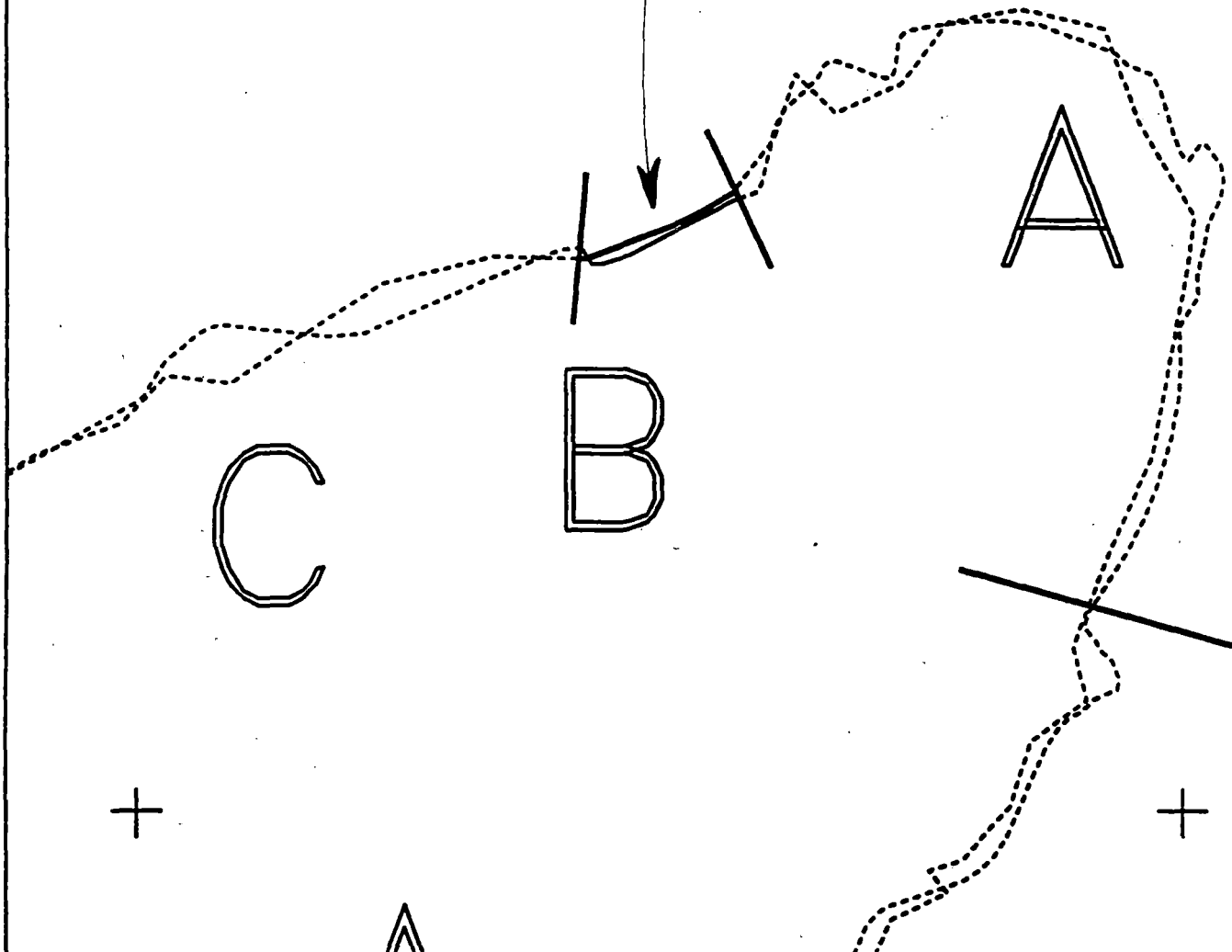
Prince William Sound
Southwest area #1
Beach Sub-Segment Map
Map Projection: UTM, Zone 6

Beach Segments
X Subdivision Endpoints

EV

SITES A-G
02 Aug '93

4



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

EV053 B
ADEC Subsegment Length: 95m
METERS
AK State Plane Zone 4
pov053b

Subdivision Field Map
Map Key: PWSEV053B
Name: Ch
Date: 02 Aug '93
Date Entered:



1993 ADEC RESTORATION PROJECT # 930380

SHORELINE OILING SUMMARY

PAGE 1 OF 2

SEGMENT EVO53

SUBDIVISION B

DATE 8/2/93

MEMBERS: D. MINSON, C. CROSBY, R. KUNIBE, ADEL
K. FARLEY, ADNR, K. HARICH, USFS
B. TRAVIS, USCG, S. KORN, NMPS
S. STOKER, T. KELLEY, EXXON
GAIL EVANGOFF (CYC)

TIME 06:50 to 09:00

TIDE LEVEL 0.0 ft. to -1.8 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

O	SURFACE OIL CHARACTER										SURFACE SEDIMENT TYPE	SHORE SLOPE V H M L	AREA		ZONE				NOTES
	AP	MS	TB	SC	CV	CT	ST	FL	DB	NO			WIDTH m	LENGTH m	S	UI	MI	LI	
1					P	P					RB	H	3	10					
2	S			S		S					RB	H	2	5					
3					B	B					R	V	1	5					
4						T	T				RB	H	2	40					
5	T			T		T					RB	H	3	10					
6	S			S							RB	H	5	12					
7						S					RB	H	2	10					

DISTRIBUTION: C = 61-100%; B = 51-60%; P = 11-50%; S = 1-10%; T = <1%

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

FRAMES

PIT O. 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								-								BC/PG	
2 15								1-4	Y							BC/PG	UNDER CORREL
3 16								-								BC/PG	
4 10								-								BC/PG	CT UNDER BOULDER
5 10								6-10	N							BC/PG	UNDER CORREL
6 10								-		6-10	N					BC/PG	
7 19								-								BC/PG	
8 22								-								BC/PG	
9 22								-								BC/PG	
10 14								12-14	N							BC/PG	
11 20								-								BC/PG	
12 16								-		14-16	N					BC/PG	
13 16								-								BC/PG	UNDER FULUS
14 11								-								BC/PG	UNDER FULUS
15 10								-								BC/PG	AT BASE OF BEDROCK
16 13								0-10	V							BC/PG	SILVER SHEEN ON SED
17 15								-								BC/PG	

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

EV 53B

8-2-93

0650 - 0800

D. MUNSON



BETTLES ISLAND.

FOREST

EV 53B

G

CT 140
AMONGST BLD
ON ROCK
2 X 10 METERS

A

CT/CV 20%
ON BLD/ROCK.
IN CRACKS
3 X 10 METERS

B

API/SOR 29%
CT 5%
INTERSTITIAL
AND IN CRACKS
BLD/ROCK
2 X 5 METERS

BETTLES ISLAND

C

CTIST 4%
ROCK/BLD
2 X 40 M

STEEL ROCK

STEEL BLD

ANGULAR
BLD
BEACH

STEEL ROCK

17 STEEL-BLD

STEEL
BOULDERS

E

CT 4%
API/SOR 4%
TE 4%
ROCK/BLD
3 X 10 M

C

CT/CV 80%
W/SPRUE NEEDLES
ON VERTICAL ROCK
1 X 5 METERS

F

API/SOR 4%
INTERSTITIAL AMONGST
BOULDER/CUBBLE, IN
CRACKS & AMONG
SOR/MS 1% ON UNDERSIDES
OF BOULDERS
5 X 12 METERS

1993 Surface Oil Summary
Segment EV053 Subdivision B

Location	Area of Oiling Type in Square Meters				
	AP	MS	SOR	CV	CT
A	0.	0.	0.	9.	9.
B	0.6	0.	0.6	0.	0.6
C	0.	0.	0.	3.5	3.5
D	0.	0.	0.	0.	0.4
E	0.15	0.	0.15	0.	0.15
F	0.	3.6	3.6	0.	0.
G	0.	0.	0.	0.	1.2
TOTALS=	0.75	3.6	4.35	12.5	14.85

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 EV053B

Loc.	1993 PIT #	Gr. Sz.	Zn.	En.	Note	TREATMENT		1993 OILED SED. VOL. (m3)					1992 OILED SED. VOL. (m3)					1991 OILED SED. VOL. (m3)					WT.'ed OIL VOL.			CHANGE WT.'ed VOL.		
						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	2,5	BC-PGCB	U	L		MR, Rs	MR, Rs, Rb	0.3	0.2	0.0	0.0	0.0	?	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	2.2	?	0.2	?	?	1094.7
ZB	10	BCP-PG	U	L		MR, Rs	NO	0.0	0.1	0.0	0.0	0.0	?	?	?	?	?	0.0	0.0	0.0	0.0	0.0	0.3	?	0.0	?	?	Inf
ZC	16	BC-PBCG	U	L		MR, Rs	MR, Rs, Rb	0.0	0.0	0.0	0.0	0.0	?	?	?	?	?	0.1	0.0	0.0	0.3	0.0	0.0	?	1.0	?	?	-100.0
						TOTALS=		0.3	0.3	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.1	0.0	0.0	0.3	0.1	2.6	0.0	1.2	Inf	-100.0	108.6

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.

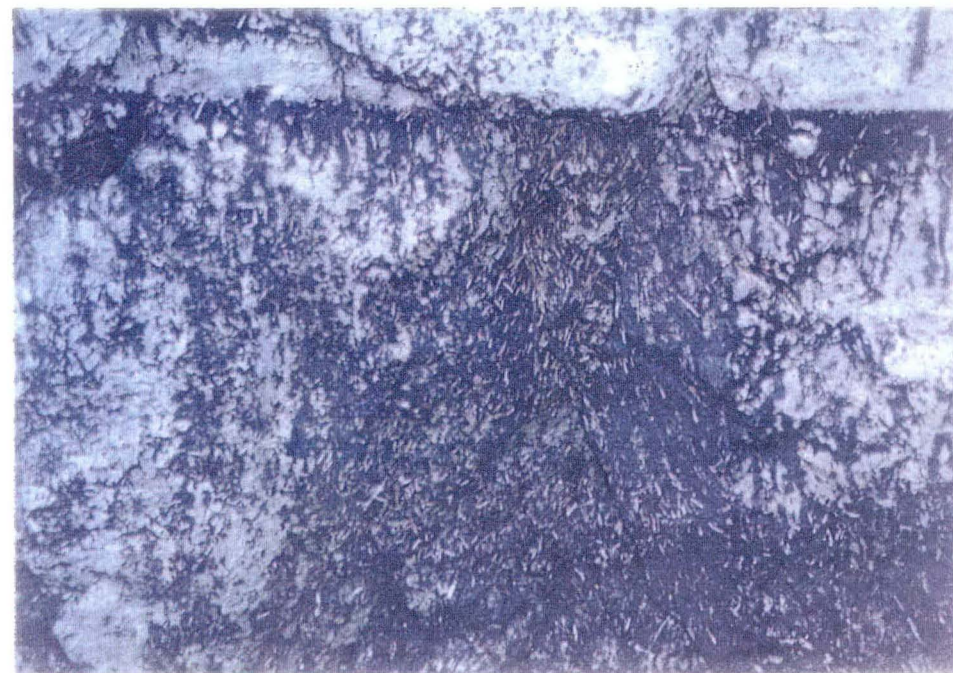
En.= wave-energy level, H= high, M= moderate, L= low, VL= very low.

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 - year 1)/(year 1))*100, positive values indicate increases in the amount of oil, negative values indicate decreases, "Inf" (infinite percent increase) indicates newly discovered oil.



FN 02 2 13 24

1-800-008-1111
000-04840-000

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/02/93 TIME: 07:30

SEGMENT#: EV053

STATION#: -0-

LOCATION: THE NORTH SHORE OF BETTLES ISLAND

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OVERVIEW OF LOCATION C. CLOSE UP OF THE DISTINCTIVE "BATH TUB RING" OF CT/CV WITH SPRUCE NEEDLES ON VERTICAL ROCK. PHOTO 93RTK003 #4 IS OVERVIEW

TAKEN BY: RUSSELL KUNIBE

INITIALS: RTK

ROLL #: 93RTK003 FRAME #: 5

EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/02/93 TIME: 07:30

SEGMENT#: EV053

STATION#: -0-

LOCATION: THE NORTH SHORE OF BETTLES ISLAND

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OVERVIEW OF LOCATION C. PHOTO SHOWS THE DISTINCTIVE "BATH TUB RING" OF CT/CV WITH SPRUCE NEEDLES ON VERTICAL ROCK. PHOTO 93RTK003 #5 IS CLOSE UP

TAKEN BY: RUSSELL KUNIBE

INITIALS: RTK

ROLL #: 93RTK003

FRAME #: 4

EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/02/93 TIME: 08:15

SEGMENT#: EV053

STATION#: -0-

LOCATION: NORTH SHORE OF BETTLES ISLAND

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: OVERVIEW PHOTO LOOKING TO THE EAST. GOES WITH PHOT 93RTK003 # 06. SHOWS THE EXPOSED ROCKS AT LOW TIDE.

TAKEN BY: RUSSELL KUNIBE

INITIALS: RTK

ROLL #: 93RTK003 FRAME #: 7

EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/02/93 TIME: 08:15

SEGMENT#: EV053

STATION#: -0-

LOCATION: NORTH SHORE OF BETTLES ISLAND

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: OVERVIEW PHOTO TO THE SOUTH. GOES WITH 93RTK003 #07 TO SHOW THE ROCK WHICH ARE INFRONT OF THIS BEACH DURING LOW TIDE.

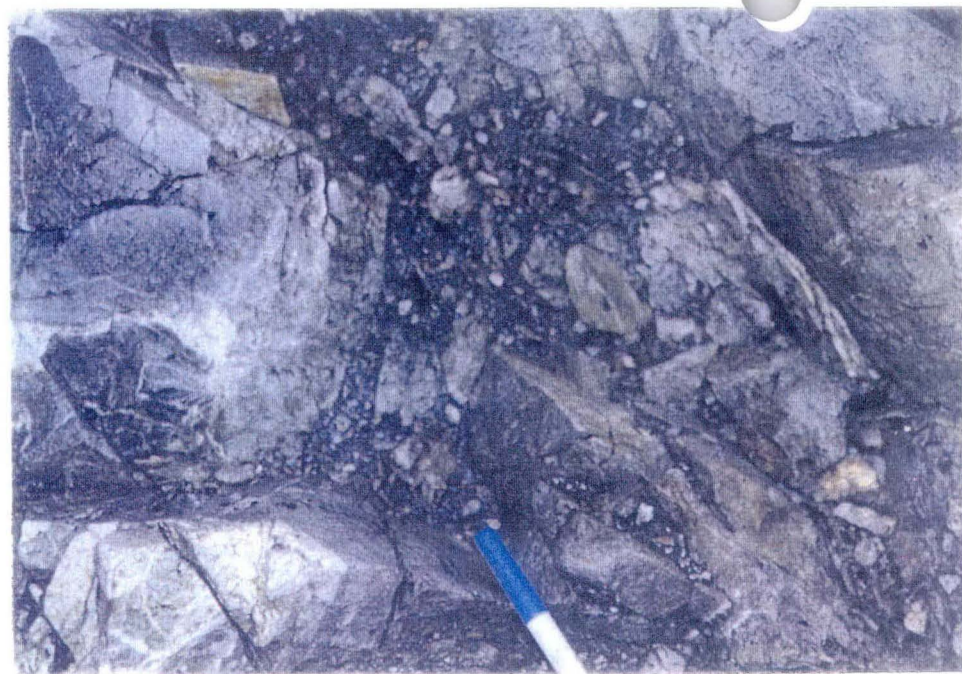
TAKEN BY: RUSSELL KUNIBE

INITIALS: RTK

ROLL #: 93RTK003

FRAME #: 6

EVIDENCE ID#: _____



OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/02/93 TIME: 08:20

SEGMENT#: EV053

STATION#: -0-

LOCATION: NORTH SHORE OF BETTLES ISLAND

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: CLOSE UP PHOTO OF AP IN THE ROCK
FRACTURES IN LOCATION B.

TAKEN BY: RUSSELL KUNIBE

INITIALS: RTK

ROLL #: 93RTK003

FRAME #: 9

EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/02/93 TIME: 08:20

SEGMENT#: EV053

STATION#: -0-

LOCATION: NORTH SHORE OF BETTLES ISLAND

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: CLOSE UP PHOTO OF PIT #1 IN LOCATION
B. THIS PIT CONTAINED OIL FROM 7 TO 20 CM.
BELOW THE SURFACE.

TAKEN BY: RUSSELL KUNIBE

INITIALS: RTK

ROLL #: 93RTK003

FRAME #: 8

EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/02/93 TIME: 08:20

SEGMENT#: EV053

STATION#: -0-

LOCATION: NORTH SHORE OF BETTLES ISLAND

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: OVERVIEW PHOTO LOOKING TO THE WEST AT
THE LOW IRREGULAR ROCK SHELF (BETWEEN PHOTOGRAPHER
AND SKIFF). THIS IS LOCATION B AND PHOTOS 08 AND 09

TAKEN BY: RUSSELL KUNIBE

INITIALS: RTK

ROLL #: 93RTK003

FRAME #: 10

EVIDENCE ID#: _____

EV 053 D

SEGMENT: EV 053 D

LOCATION: Chenega Area, southwestern Bettles Island.

OTHER STUDIES

PHYSICAL SETTING

Coastal Morphology and Sedimentology

Irregular rocky shoreline with small indentations of angular boulders, cobbles, and pebbles, stretches of boulder beaches and prominent irregular bedrock outcrops. Protective rocks are present just offshore.

Environmental Sensitivity Index (ESI)

Type 7; gravel beach.

Type 8; sheltered rocky.

Fetches and Directions (kilometers)

N= 1

Energy Level

Overall low with some very low areas.

GENERAL BIOLOGICAL SETTING

Fry release.

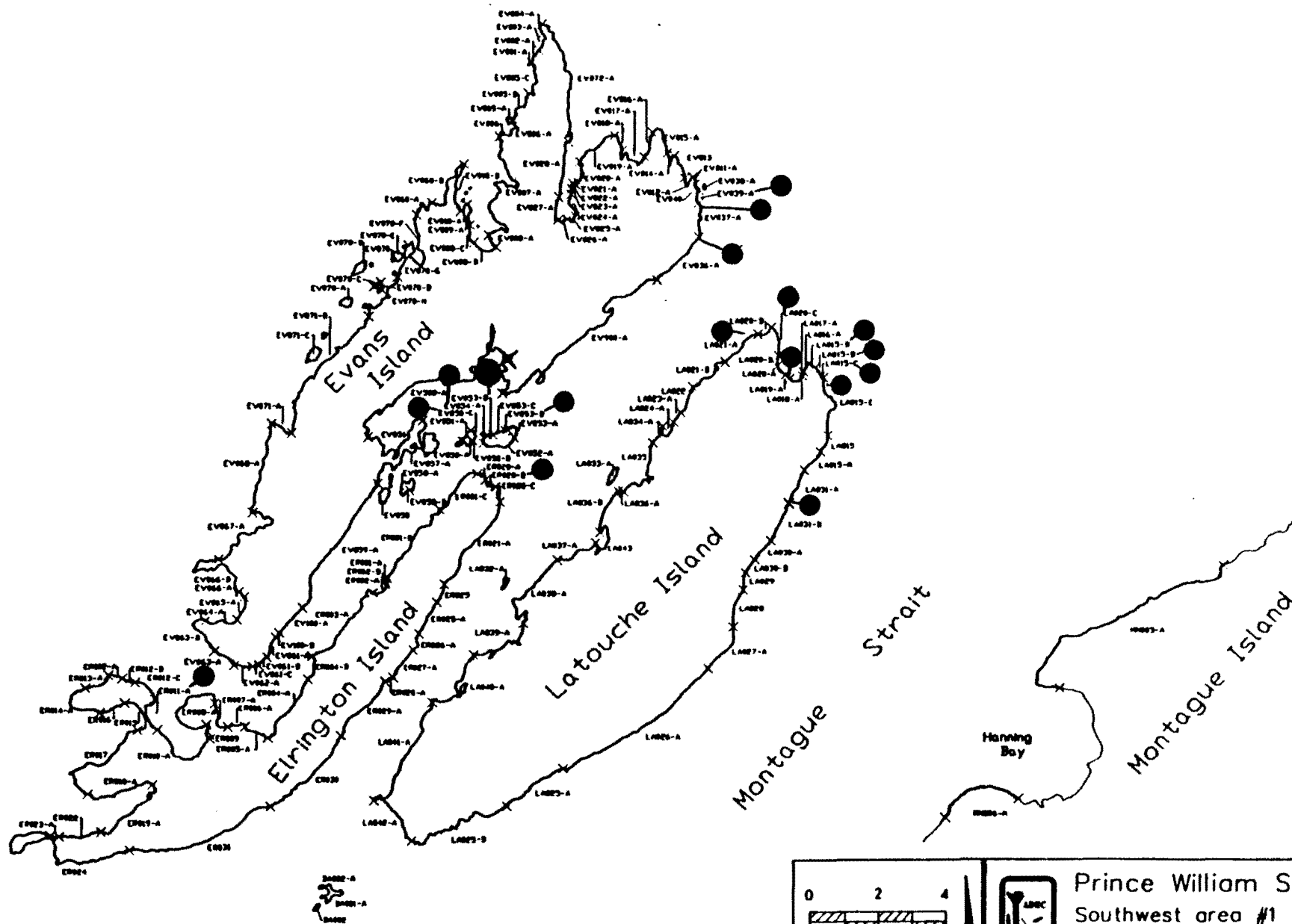
Fish harvesting.

Deer harvesting.

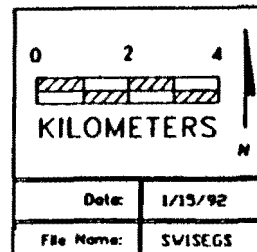
OILING SUMMARY

Two areas of about 100 m² each have moderate concentrations of SOR. The oil in these areas is among boulders and in bedrock fractures. AP concentrations have decreased in these two locations ('B' and 'D') mostly due to removal in 1991 and 1992. Another location with SOR, location 'B', has shown no measurable improvement since 1991. Location 'B' was not treated in previous years, and AP, SOR, and MS persist in rock fractures and under boulders.

Small amounts of OP and HOR associated with the surface oil in location 'B' was the only subsurface oil detected. This subsurface oil has significantly decreased and another small OP/HOR site completely cleaned up since 1991, although amounts were small to begin with in 1991.

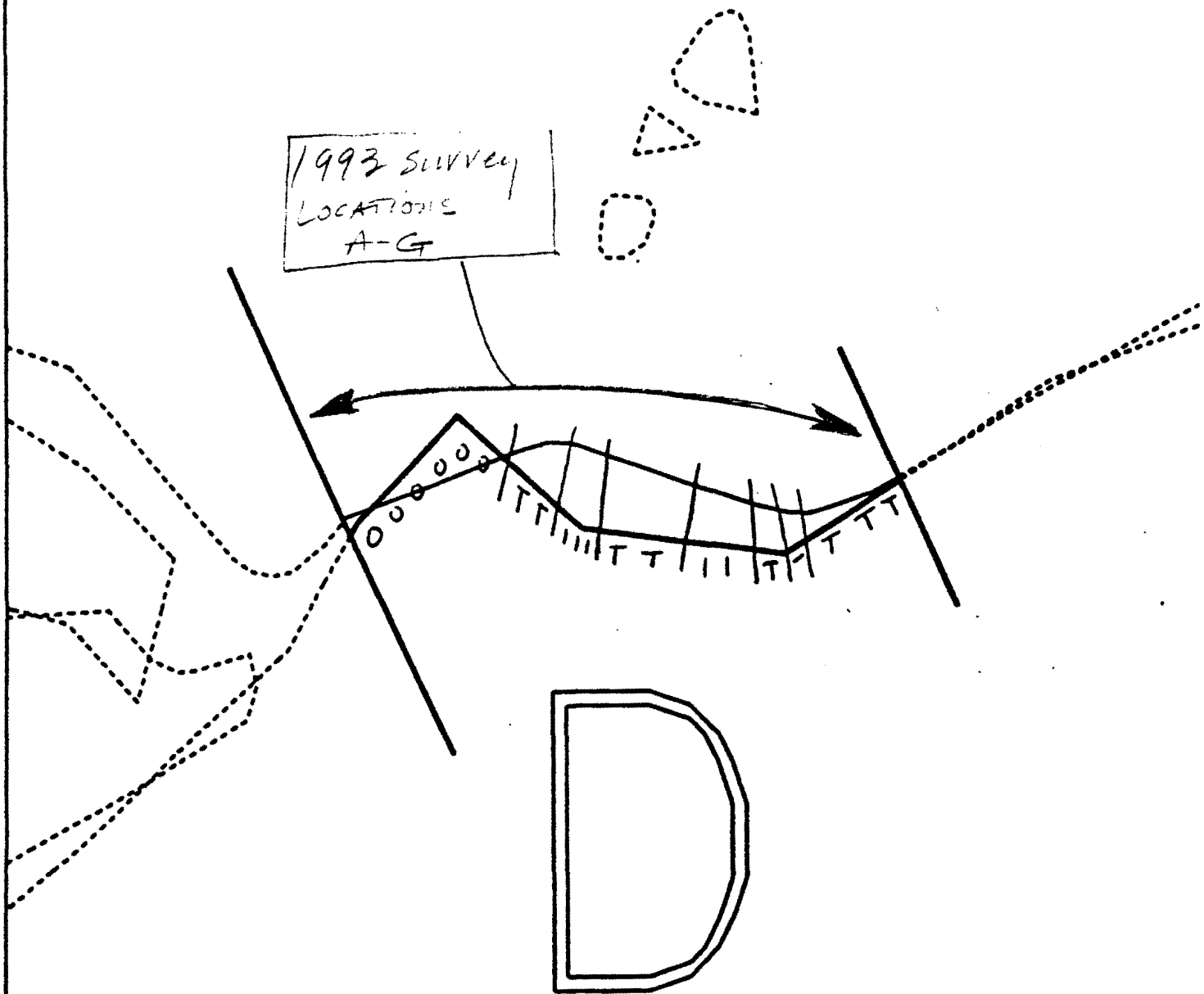


Danger Island



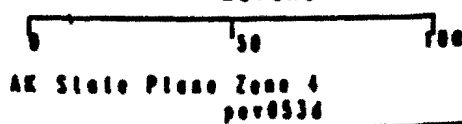
Prince William Sound
Southwest area #1
Beach Sub-Segment Map
Map Projection: UTM, Zone 6

— Beach Segments
X Subdivision Endticks

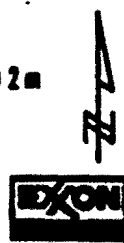


XXXX Wide
 //// Medium
 --- Narrow
 TTTT Very Light
 0000 No Oil

EV053 D
 ADEC Subsegment Length: 202m
 METERS



AK State Plane Zone 4
 pr053d



Subdivision Field Map
 Map Key: PWSEV053D
 Name: Reimer
 Date: 5/22/92
 Date Entered:

**1993 ADEC RESTORATION PROJECT #930380
SHORELINE SURVEY COMMENT SHEET**

LOCATION ENTRANCE SEGMENT EVIDENCE SUBDIVISION C DATE 9/12/93

AFFILIATION

NAME Chenega Corp. SIGNATURE [Signature]

oil concentrations should be removed before it affects area. Area supports marine mammal population. Any/all types of oiling in proximity of Chenega Bay village & harbor be removed.

AFFILIATION

NAME Kate Hamel Forest Service SIGNATURE [Signature]

HOR occurring in boulder fields near upland area. - Borderline OP. OF test sites surveyed. little or no presence found in the intertidal area/zone. (C)

AFFILIATION

NAME USCG BOB TRAVIS SIGNATURE [Signature]

DIL IN UPPER/SUPRA ITZ. HEAVY COAT-STAIN. MOR, HOR, OP, MOUSSE UNDER LARGER LOBBLE/BOULDERS. CONSISTENT LINE OR STAIN OF MOUSSE, MOR, TAR ALONG BASE OF CLIFF FACE, UNDER SMALL ROCKS, BOULDERS ON THE BEDROCK. CONCLUDE w/ CONDITIONS INDICATED ON MAPS - PIT LOG.

AFFILIATION

NAME KATIE FARLEY DNR Div 1 SIGNATURE [Signature]

Due to proximity of Bettles Island to Chenega and its significance for commercial fishing, recreation and subsistence, the OP-HOR areas should be restored. The mode of restoration should minimize disturbance to the intertidal area and adjacent uplands.

PAGE _____ OF 2

SUBDIVISION D

DATE 8/2 / 93

MEMBERS: D. MUNFON, C. CROSBY, R. KUNIBF;
ADFC - K. FARLEY; ADNR
K. HARICH; USFS - S. KORN; NMPS
S. STOKER, T KELLEY; EXXON
P. TRAVIS; USCGT 12A16E; ANOFF; CVC

WE 08:15 to 09:20

TIDE LEVEL -2.0 ft. to -0.5 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

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

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

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

EV 53 D
EVANS ISLAND
8:15-9:20
2 AUGUST 1993

LOCATION "A"
2 x 20 m
TAR Splatters
&
CT/CV 21%
Traces

LOCATION "C"
3 x 25 m
CT, ST - S -
along ROCK FACE
w/ SPRUCE NEEDLES
IN SURFACE SEDS

LOCATION "D"
BEDROCK/BLOS/CB
CT-S, MS-T
HSOR-S TAR
SPATTERS
4 x 20 m

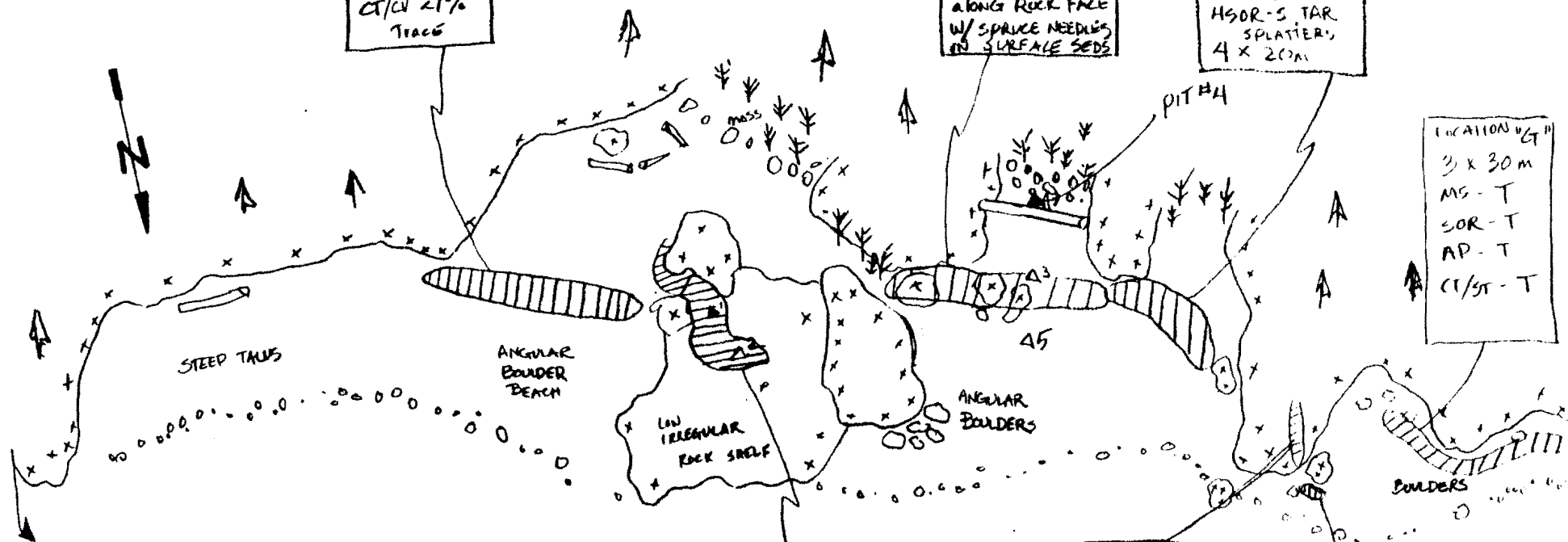
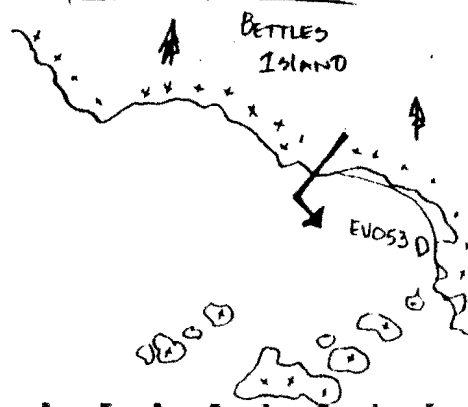
LOCATION "G"
3 x 30 m
MS-T
SOR-T
AP-T
CT/ST-T

LOCATION "B"
BEDROCK/BLOS
5 x 20 m
at base of rock
& under blds
also persists
in rock fractures
AP-T,
CT, ST, CV-S
L-HSOR-S
MS-T

LOCATION "E"
1 x 8 m
CT & ST -
patchy
coverage

LOCATION "F"
1 x 2 m MS-T
SOR-T
Below BLOS & Rk.
interstitial

LOCATION MAP



1993 Surface Oil Summary
Segment EV053 Subdivision D

Location	Area of Oiling Type in Square Meters				
	AP	MS	SOR	CV	CT
A	0.	0.	0.	0.2	0.2
B	0.5	0.5	6.	6.	6.
C	0.	0.	0.375	0.	0.375
D	0.	0.4	4.8	0.	4.8
E	0.	0.	0.	0.	2.4
F	0.	0.01	0.01	0.	0.
G	0.45	0.45	0.45	0.	0.45
TOTALS=	0.95	1.36	11.635	6.2	14.225

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 EV053D

						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	BR-CPG	U	VL	WITH SOR,AP,MS IN 93 & 92	MR, Rs	MR, Rs, Rb	0.5	0.2	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	3.6	0.8	7.5	339.5	-89.2	-52.5
ZB		B-CPGB	U	L		NO	MR, Rs, Rb	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.2	0.0	0.0	0.0	0.0	0.0	2.8	0.0	-100.0	-100.0
TOTALS=								0.5	0.2	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	1.9	0.2	0.0	0.0	0.0	3.6	0.8	10.3	339.5	-92.1	-65.4

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 - year 1)/(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: EV 054 A

LOCATION: Chenega Area Group, west end of Bettles Island.

OTHER STUDIES

PHYSICAL SETTING

Coastal Morphology and Sedimentology

Irregular shoreline with gently sloping pebble beaches intermixed with steeply sloping boulder beaches and small rocky promontories. Sediments are generally angular, and peat underlies some areas. Bedrock is fractured.

Environmental Sensitivity Index (ESI)

Type 7; gravel beach.

Type 8; sheltered rocky.

Fetches and Directions (kilometers)

N= 1

Energy Level

Low with very low locations.

GENERAL BIOLOGICAL SETTING

Eagle nest.

Fry release.

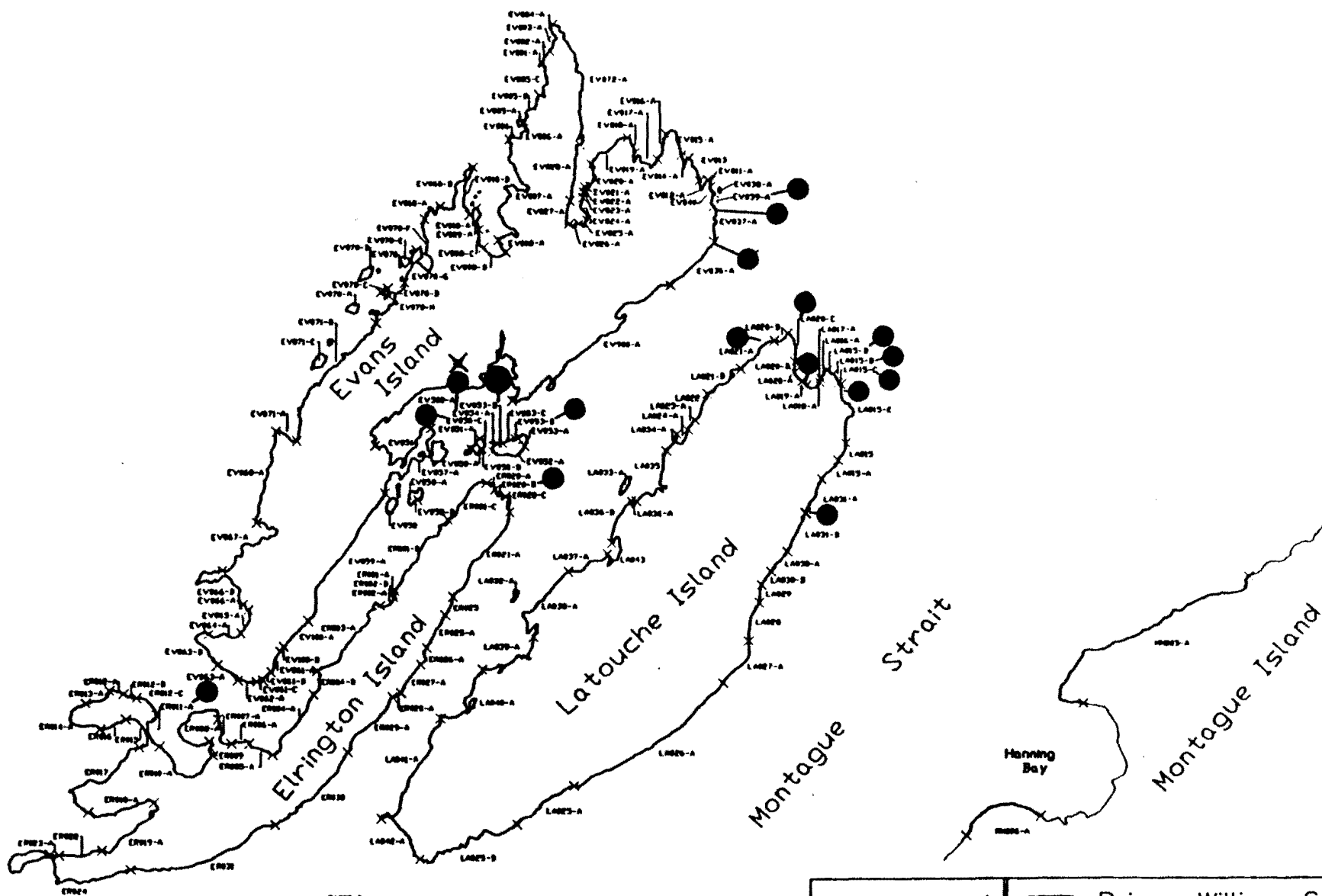
Fish harvesting.

Deer harvesting.

OILING SUMMARY

At least seven locations contain AP, SOR, CV or various combinations of these types of surface oil. The largest area containing AP, SOR, and CV is location 'G'. The CV is concentrated to about 40% and occurs in bedrock fractures; the AP and SOR occur interstitially between boulders at location 'G'. Manual pick up did occur at 'G' in 1991, but there has been no measurable improvement since 1991. Location 'E' also contains significant amounts of SOR that is mixed with pebbles. No improvement has occurred at 'E' since 1991, and in fact, more SOR was measured in 1993 than in 1991. Locations 'C' and 'B' apparently greatly improved since 1991 with the reduction of AP and SOR. AP in area 'B' was picked up in 1991.

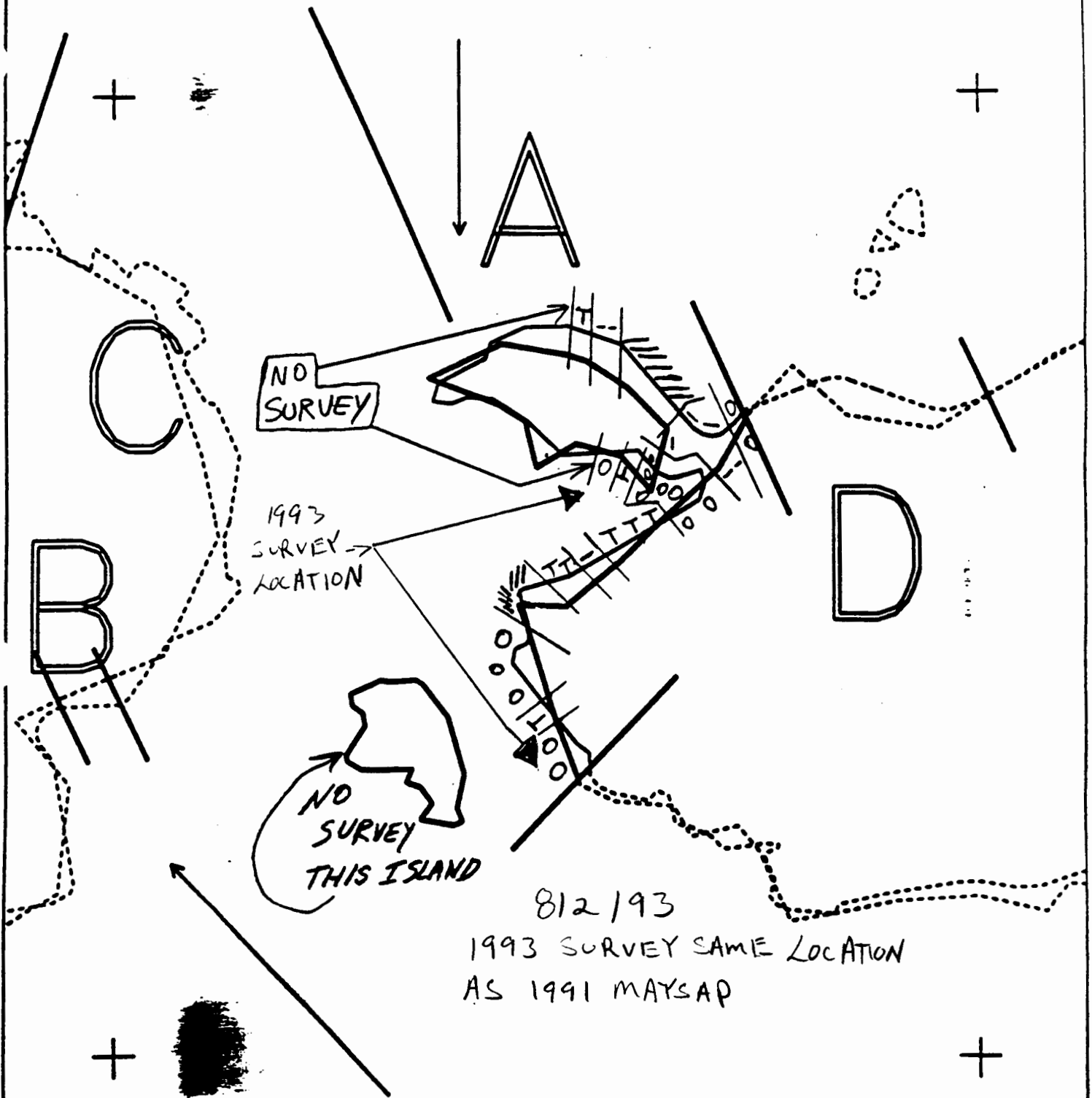
Only small amounts of light subsurface oil were discovered in 1993. The oil was discovered in surface location 'C' and showed significant decreases since 1991, even though the amounts in 1991 were relatively small. The decrease coincides with the significant decrease in SOR at this location.



Danger Island

0 2 4 KILOMETERS		Beach Segments
Date: 1/15/92		
File Name: SWISEGS		Subdivision Endpoint

Prince William Sound
 Southwest area #1
 Beach Sub-Segment Map
 Map Projection: UTM, Zone 6



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

EV054 A
 ADEC Subsegment Length: 1108m
 METERS
 0 100 200
 AK State Plane Zone 4
 pv054a

Subdivision Field Map
 Map Key: PVSEV054A
 Name: CHANEY
 Date: MAY 19 1991
 Date Entered:

1993 ADEC RESTORATION PROJECT #930380
SHORELINE SURVEY COMMENT SHEET

CATION BETHES ISLAND SEGMENT EV 054 SUBDIVISION A DATE 8/2/93

AFFILIATION

NAME Chenequa Corp. SIGNATURE [Signature]

Small pockets of aromatic oiling in VITZ be removed.
Area supports marine mammal populations - A & B. Bottle
Island group is to be Seal haul out area, nesting, birthing
Crab habitat area. Very imp. resource use area.

AFFILIATION

NAME Kate Harich USDA Forest Service SIGNATURE [Signature]

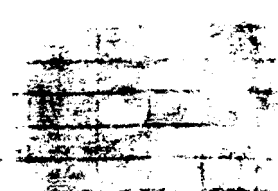
Coating occurred in boulder fields as did HOR-HOR concentrations
asphalt) aggregation occurred in these areas also - Little to no oil
remained in test pits in mid to low intertidal zone.

(K)

AFFILIATION

NAME USCG-BODTRAVIS SIGNATURE [Signature]

SOME AP/TARMAITS IN ROCKS; some splash. CONCUR w/ CONDITIONS INDICATED
ON MAP/PIT LOG.



AFFILIATION DNR. DIV. OF LAND

NAME KATIE FARLEY SIGNATURE [Signature]

EV054 A

AUGUST 2, 1993

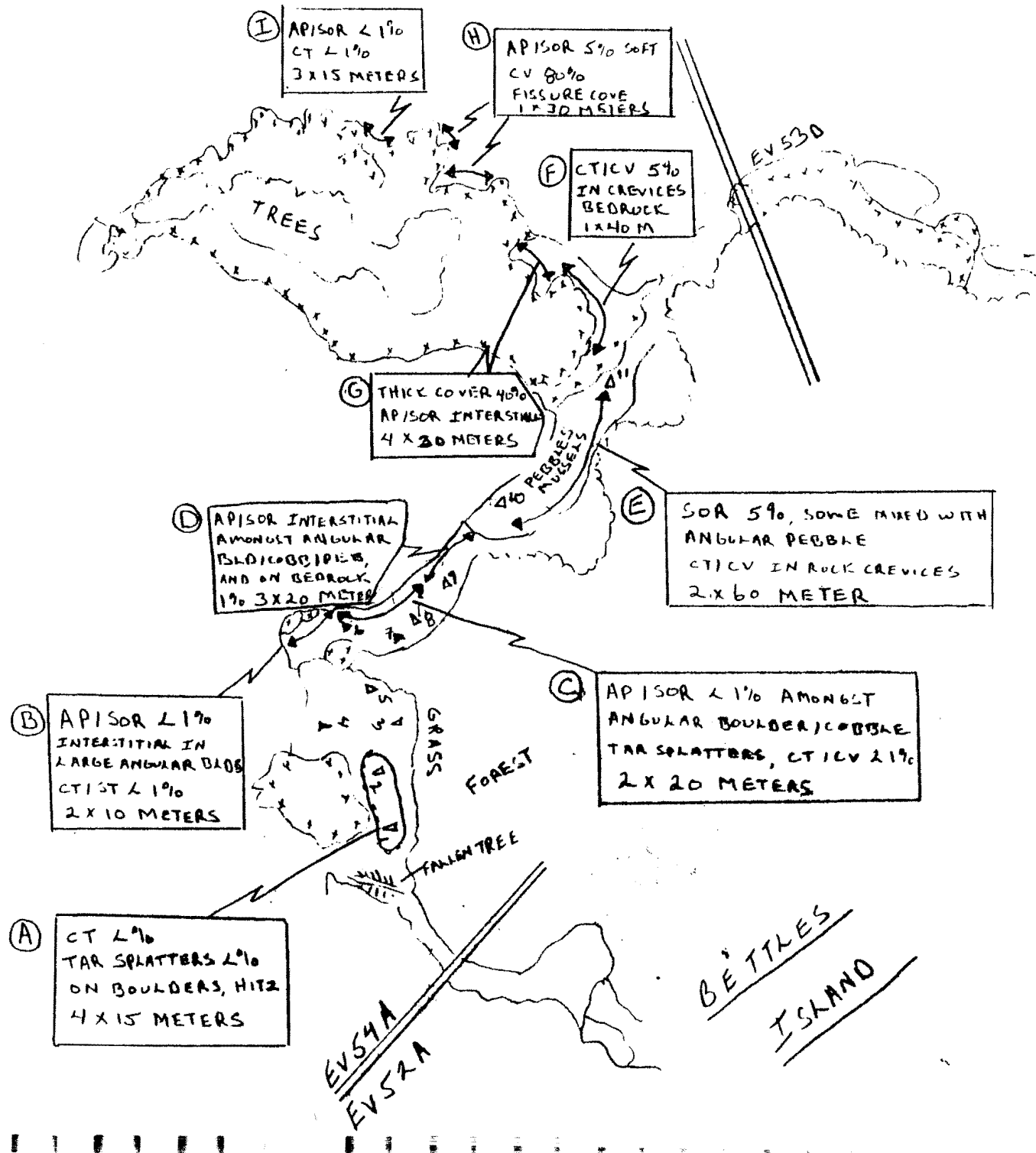
0920 - 1100

-1.5 to 3.2

D MUNSON



SAWMILL
BAY



1993 Surface Oil Summary
Segment EV054 Subdivision A

Location	Area of Oiling Type in Square Meters				
	AP	MS	SOR	CV	CT
A	0.	0.	0.	0.	0.3
B	0.1	0.	0.1	0.	0.1
C	0.2	0.	0.2	0.2	0.2
D	3.6	0.	3.6	0.	0.
E	0.	0.	7.2	0.6	0.6
F	0.	0.	0.	2.4	2.4
G	7.2	0.	7.2	36.	0.
H	1.8	0.	1.8	21.	0.
I	0.225	0.	0.225	0.	0.
TOTALS=	13.125	0.	20.325	60.2	3.6

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 EV054A

Loc.	1993 PIT #	Gr. Sz.	Zn.	En.	Note	TREATMENT		1993 OILED SED. VOL. (m3)					1992 OILED SED. VOL. (m3)					1991 OILED SED. VOL. (m3)					WT.'ed OIL VOL.			% CHANGE WT.'ed VOL.		
						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	6,7	BCPR-CPG	U	L	AP ON SURFACE IN '93	MR	NO	0.0	0.0	0.1	0.2	0.0	?	?	?	?	?	0.0	0.0	3.0	0.0	0.0	0.8	?	9.0	?	?	-90.7
ZB		P-PGM	U	L		MR	Rs	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	-100.0	Inf	Inf
TOTALS=								0.0	0.0	0.1	0.2	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.8	1.1	9.0	-25.0	-87.6	-90.7

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) and "Inf" (newly discovered oil).



OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/02/93 TIME: 09:25

SEGMENT#: EV054 STATION#: -0-
LOCATION: WEST END OF BETTLES ISLAND
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO: OVERVIEW PAN PHOTO WHICH GOES WITH
93RTK003 #11-15. THIS IS A VIEW OF THE BEACH AT THE
S. END OF THE SEGMENT. IN #13 BOB TRAVIS HAS DUG
PIT #1
TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK003 FRAME #: 12 EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/02/93 TIME: 09:25

SEGMENT#: EV054 STATION#: -0-
LOCATION: WEST END OF BETTLES ISLAND
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO: OVERVIEW PAN PHOTO WHICH GOES WITH
93RTK003 #11-15. THIS IS A VIEW OF THE BEACH AT THE
S. END OF THE SEGMENT. IN #13 BOB TRAVIS HAS DUG
PIT #1
TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK003 FRAME #: 11 EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/02/93 TIME: 09:25

SEGMENT#: EV054 STATION#: -0-
LOCATION: WEST END OF BETTLES ISLAND
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO: OVERVIEW PAN PHOTO WHICH GOES WITH
93RTK003 #11-15. THIS IS A VIEW OF THE BEACH AT THE
S. END OF THE SEGMENT. IN #13 BOB TRAVIS HAS DUG
PIT #1
TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK003 FRAME #: 14 EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/02/93 TIME: 09:25

SEGMENT#: EV054 STATION#: -0-
LOCATION: WEST END OF BETTLES ISLAND
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO: OVERVIEW PAN PHOTO WHICH GOES WITH
93RTK003 #11-15. THIS IS A VIEW OF THE BEACH AT THE
S. END OF THE SEGMENT. IN #13 BOB TRAVIS HAS DUG
PIT #1
TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK003 FRAME #: 13 EVIDENCE ID#: _____



OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/02/93 TIME: 09:35

SEGMENT#: EV054

STATION#: -0-

LOCATION: WEST END OF BETTLES ISLAND

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: PHOTO OF AP IN THE BOULDERS, COBBLES (LOCATION B). NOTE THE TARING ON THE BOULDER IN THE FOREGROUND AND AP TO THE RT. AND ABOVE. GAIL EVANOFF, CVC

TAKEN BY: RUSSELL KUNIBE

INITIALS: RTK

ROLL #: 93RTK003 FRAME #: 16 EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/02/93 TIME: 09:25

SEGMENT#: EV054

STATION#: -0-

LOCATION: WEST END OF BETTLES ISLAND

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: OVERVIEW PAN PHOTO WHICH GOES WITH 93RTK003 #11-15. THIS IS A VIEW OF THE BEACH AT THE S. END OF THE SEGMENT. IN #13 BOB TRAVIS HAS DUG PIT #1

TAKEN BY: RUSSELL KUNIBE

INITIALS: RTK

ROLL #: 93RTK003 FRAME #: 15 EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/02/93 TIME: 09:35

SEGMENT#: EV054

STATION#: -0-

LOCATION: WEST END OF BETTLES ISLAND

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: OVERVIEW PHOTO WHICH GOES WITH 93RTK003 #18. PHOTO 17 LOOKING TO THE E. ALONG LOCATION C. LOCATION D AND E ARE IN PHOTO #18.

TAKEN BY: RUSSELL KUNIBE

INITIALS: RTK

ROLL #: 93RTK003 FRAME #: 18 EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/02/93 TIME: 09:35

SEGMENT#: EV054

STATION#: -0-

LOCATION: WEST END OF BETTLES ISLAND

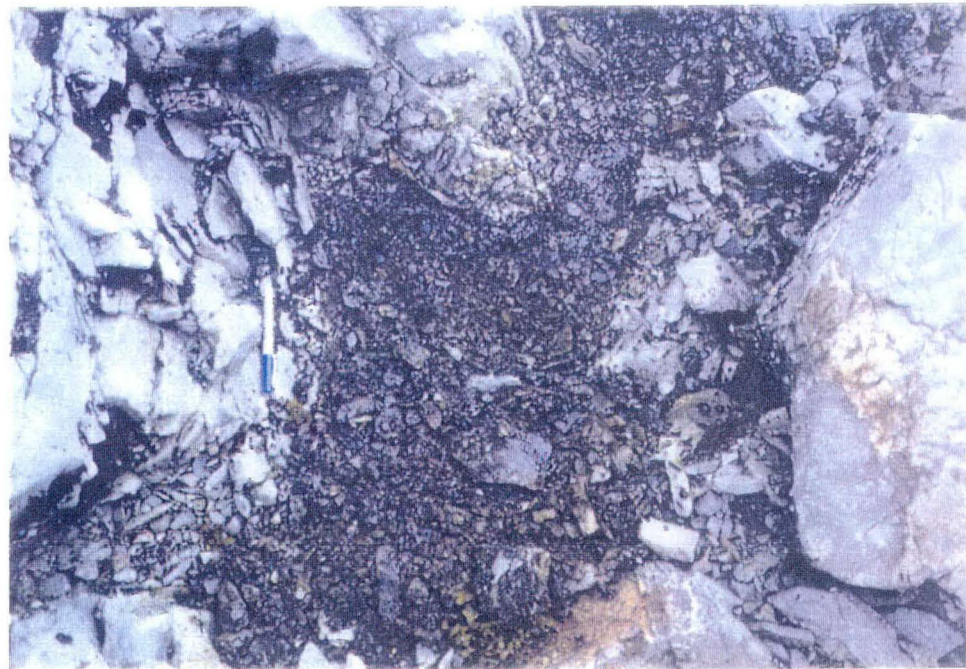
KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: OVERVIEW PHOTO WHICH GOES WITH 93RTK003 #18. PHOTO 17 LOOKING TO THE E. ALONG LOCATION C. LOCATION D AND E ARE IN PHOTO #18.

TAKEN BY: RUSSELL KUNIBE

INITIALS: RTK

ROLL #: 93RTK003 FRAME #: 17 EVIDENCE ID#: _____



OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/02/93 TIME: 10:15

SEGMENT#: EV054 STATION#: -0-
LOCATION: WEST END OF BETTLES ISLAND
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO: CLOSE UP PHOTO OF SPURCE NEEDLES IN CV
AND CT ON BEDROCK. PHOTO #21 IS AN OVERVIEW OF THE
AREA. LOCATION G ON THE N. SIDE OF THE ISTHMUS

TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK003 FRAME #: 20 EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/02/93 TIME: 10:30

SEGMENT#: EV054 STATION#: -0-
LOCATION: WEST END OF BETTLES ISLAND
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO: CLOSE UP OF SURFACE AP AND OP OILING
BELOW. THIS PHOTO WAS IN LOCATION I.

TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK003 FRAME #: 22 EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/02/93 TIME: 09:40

SEGMENT#: EV054 STATION#: -0-
LOCATION: WEST END OF BETTLES ISLAND
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO: OVERVIEW PHOTO WHICH IS LOOKING TO THE
SW. TOWARD LOCATION C.

TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK003 FRAME #: 19 EVIDENCE ID#: _____

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/02/93 TIME: 10:15

SEGMENT#: EV054 STATION#: -0-
LOCATION: WEST END OF BETTLES ISLAND
KEYWORDS: SHORELINE EVALUATION-SRVY
REASON FOR TAKING PHOTO: OVERVIEW PHOTO OF SPURCE NEEDLES IN CV
AND CT ON BEDROCK. PHOTO #20 IS AN CLOSE UP.
LOCATION G ON THE N. SIDE OF THE ISTHMUS. CLARA
CROSBY, SID KORN

TAKEN BY: RUSSELL KUNIBE INITIALS: RTK
ROLL #: 93RTK003 FRAME #: 21 EVIDENCE ID#: _____



OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 08/02/93 TIME: 10:30

SEGMENT#: EV054

STATION#: -0-

LOCATION: WEST END OF BETTLES ISLAND

KEYWORDS: SHORELINE EVALUATION-SRVY

REASON FOR TAKING PHOTO: OVERVIEW PHOTO OF THE NORTH SIDE OF
THE ISTHMUS IN EV054A LOOKING TO THE EAST.

TAKEN BY: RUSSELL KUNIBE

INITIALS: RTK

ROLL #: 93RTK003 FRAME #: 23

EVIDENCE ID#: _____

SEGMENT: GR 101 B

LOCATION: Outer Islands Group, on the north side of a detached island north of Green Island.

OTHER STUDIES

ADEC transect station #146.

PHYSICAL SETTING

Coastal Morphology and Sedimentology

Wave-cut platform with boulder and cobble veneer containing a sandy, pebbly, granular matrix in the subsurface. Boulder and cobble armor is on the surface with some bedrock outcrops.

Environmental Sensitivity Index (ESI)

Type 2; exposed wave-cut rock platform.

Type 7; gravel beach.

Fetches and Directions (kilometers)

NNE= 75

Energy Level

High.

GENERAL BIOLOGICAL SETTING

Seabird colony.

Pinniped haulout.

Herring spawning.

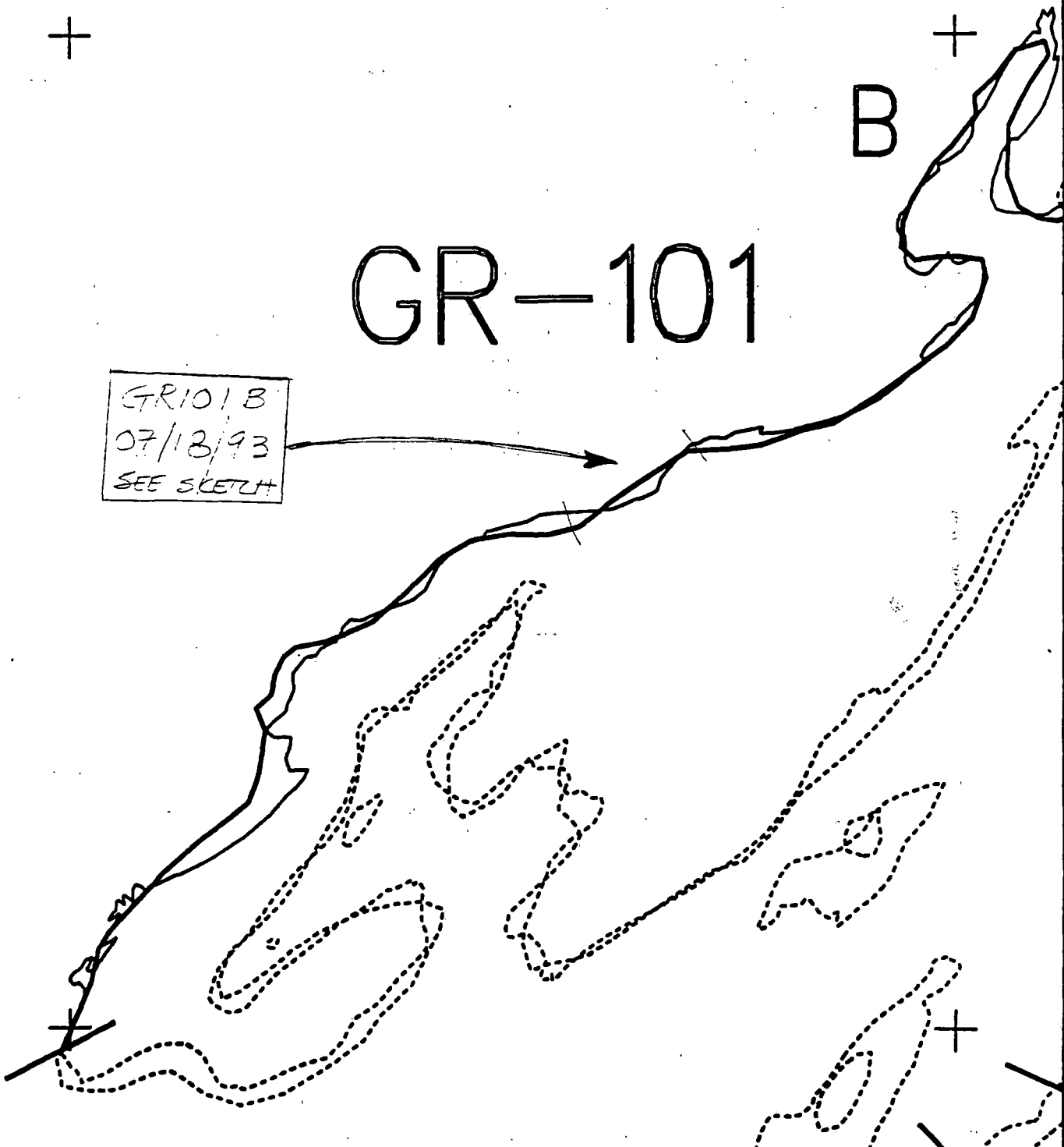
Deer harvesting.

OILING SUMMARY

No surface oil was recorded in 1993 or 1993. It is not clear if the site was surveyed in 1991.

Subsurface oil occurs as an MOR area encompassed by a LOR area. of considerable extent. This same location had HOR oil in 1992 and thus has probably experienced significant improvement since 1992. The actual amount of oil measured is greater in 1993 than in 1992, but this is due to an under estimation of the size of the affected area by surveyors in 1992.

Branch Segments
Subdivision Endlinks



XXXX	Wide	GR101 B ADEC Subsegment Length: 2786m METERS AK State Plane Zone 4 pgr101ba	 EXON	Subdivision Field Map
////	Medium			Map Key: PWSGR101Ba
----	Narrow			Name: <u>CSC</u>
TTTT	Very Light			Date: <u>18 July 1993</u>
0000	No Oil			Date Entered:

1993 ADEC RESTORATION PROJECT #930380
SHORELINE SURVEY COMMENT SHEET

ACTION GREEN ISL SEGMENT GR101 SUBDIVISION B DATE 07/18/93

AFFILIATION DNR, DIV. of Land

NAME Katie Farley SIGNATURE Kathleen A. Farley

This site seems to be exposed enough to enable natural flushing and cleansing. There is a pocket of MCR (201-10M) that should be monitored during any future surveys. Both Sam Stoker (Emory consultant) as a result of previous visits and Jim Gibeault (Justices consultant) through interpretation of previous survey summary notes, thought that the site was in better condition this year than in the past.

AFFILIATION

NAME SIGNATURE

AFFILIATION

NAME SIGNATURE

AFFILIATION

NAME SIGNATURE

PAGE 1 OF 3

SUBDIVISION B

DATE 7/1/8 1993

MEMBERS: Dick Manson - K. Farley - ADNR
Ernie Piper - P. Means - USCG
Joni Mathews - E. Owens - Exxon
Jim Gibbent - S. Stoker - Exxon
L. J. Evans -

TIME 07:00 to 10:30 TIDE LEVEL -1.8 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

E.T. OIL CATEGORY LENGTH: H____m M____m L____m VL____m N____m NS____m

[illegible]

DISTRIBUTION: C = 91-100%; S = 61-80%; F = 11-50%; B = 1-10%; T = <1%

SLOPE: V = VERTICAL; H = HIGH ANGLE; M = MEDIUM ANGLE; L = LOW ANGLE PHOTO ROLL # LJE-001 FRAMES 14-18

P NO	PIT DEPTH (cm)	SUBSURFACE OIL CHARACTER						OILED ZONE cm-cm	CLEAN BELOW Y/N	H ₂ O LEVEL (cm)	SHEEN COLOR B R S N	PIT ZONE				SURFACE- SUBSURFACE SEDIMENTS	NOTES
		OP	HOR	MOR	LOR	OF	TR					S	UI	MI	LI		
1	26							-							B.C./P.G.S		
2	23							-							B.C./P.G.S		
3	22							-							B.C./P.G.S		
4	25							0-4	Y	-	-				B.C./P.G.S		
5	28							0-5	Y						B.C./P.G.S		
6	29							0-3	Y						B.C./P.S		
7	23							0-2	Y						B.C./P.G.S		
8								0-4							B.C./P.G.S		
9	3							0-3	Y	-					B.C./P.G.S	Fragile AP bottomed in bedrock	
1A	10							0-3	Y	3					B.C./P.G.S	brown droplets on surface	
1	14							0-12	Y	12					B.C./P.G.S		
12	25							0-15	N	23	B				B.C./G.S	black droplets	
12								15-17	Y						B.C./G.S	second layer in pit 12	
1	15							2-4	F	12	B				B.C./P.G.S		
1 up	28							0-20	Y	24					B.C./PG		
15	15							0-10	Y						B.C./PG		
14	20							-							B.C./P		
1	20							0-16	N						B.C./P		
PT	0							16-18	Y		B				B.C./P.G.S		
16	2							-							B.C./P.G.S		
								-									
								-									
								-									

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

PAGE 2 OF 3

SEGMENT GK101

SUBDIVISION B

DATE 07/18/93

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

OG COMMENTS: Location A sporadic Twp Specter, CT, ST on Gould/Cobb #1T2 primarily.

72 x 4 Friable - AP

PROFILE Station 146 LOCATION GR 101 B DATE 7-18-93
 RECORDERS J. Gibeart PHOTOGRAPHS _____ TIME 10:15 am
 TIDE STAGE low WEATHER overcast WIND SPEED 0 WIND DIRECTION _____
 PROFILE ANGLE ↑ ~~more~~ WAVE HT. 0 SAMPLES TAKEN: BIO _____ CHEM _____ SED _____
 SEDIMENT TYPE boulder rubble w/ sand/s. pebble + granular matrix below armor
exposed bedrock - boulder/cobble platform.



Oil occurs in shallow subsurface to maximum depth of 20 cm - below a clean rounded boulder and cobble armor. Oiled sediments are small pebble, granular, and sandy matrix within cobble + boulder frameworks. A few cobbles below the armor are stained as observed in the pits. Heaviest oiling is thin black MOR lens. Sheering occurs in pits w/ MOR and LOR. MOR area measures 20 x 40 m and is encompassed by LOR area.

1993 Surface Oil Summary
Segment GR101 Subdivision B

Location	Area of Oiling Type in Square Meters
	AP MS SOR CV CT

No surface oil.

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 GR101B

						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	9-17	BC-PGS	UM	H		NO	NO	0.0	0.0	5.9	47.5	32.7	0.0	4.2	3.0	1.5	0.0	?	?	?	?	?	112.9	28.8	?	291.9	?	?
						TOTALS=		0.0	0.0	5.9	47.5	32.7	0.0	4.2	3.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	112.9	28.8	0.0	291.9	Inf	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.

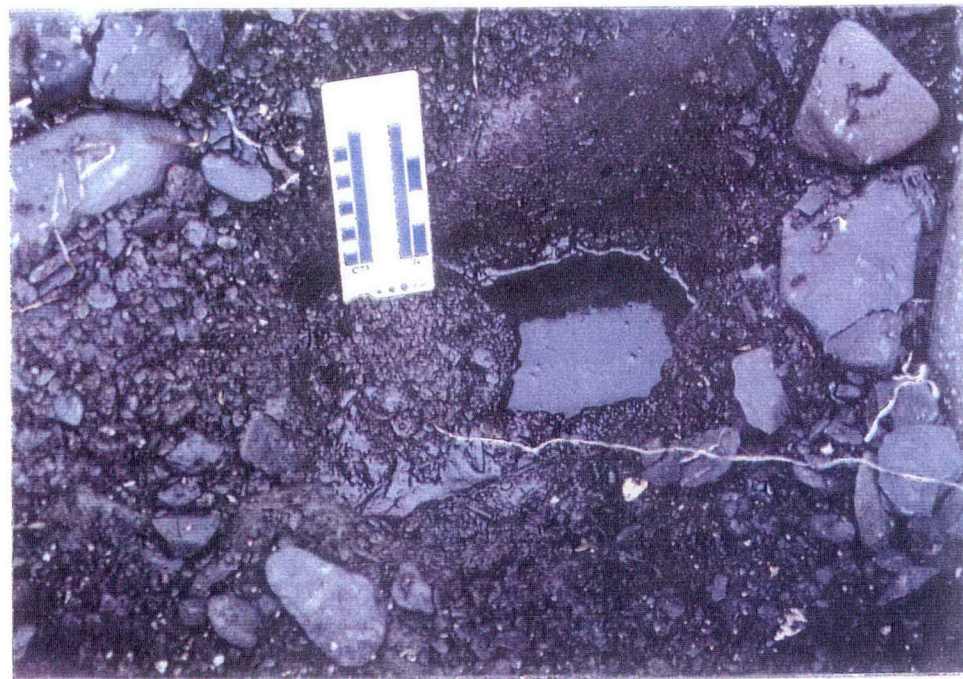
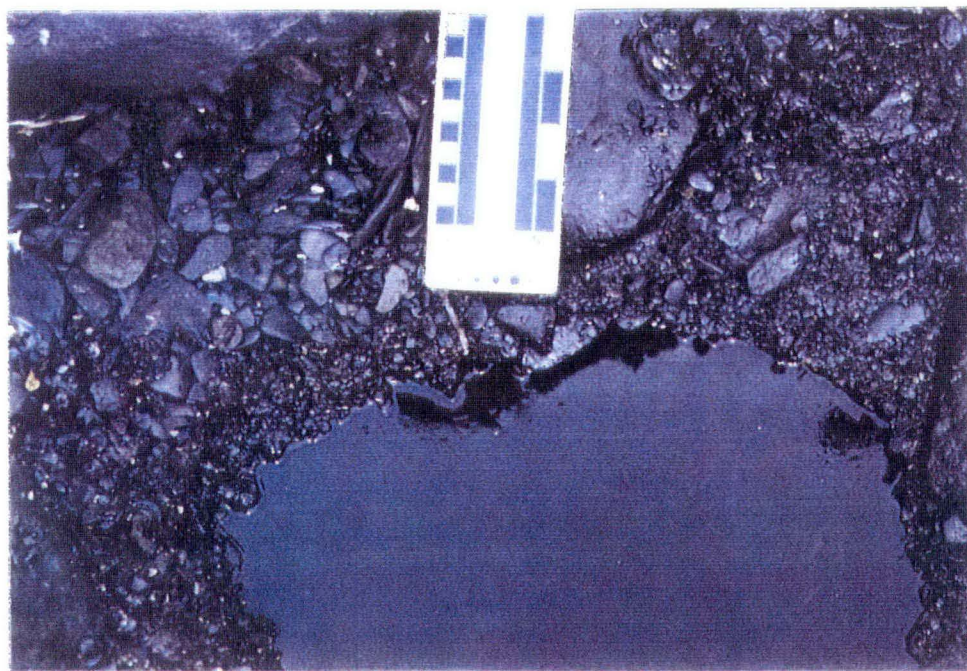
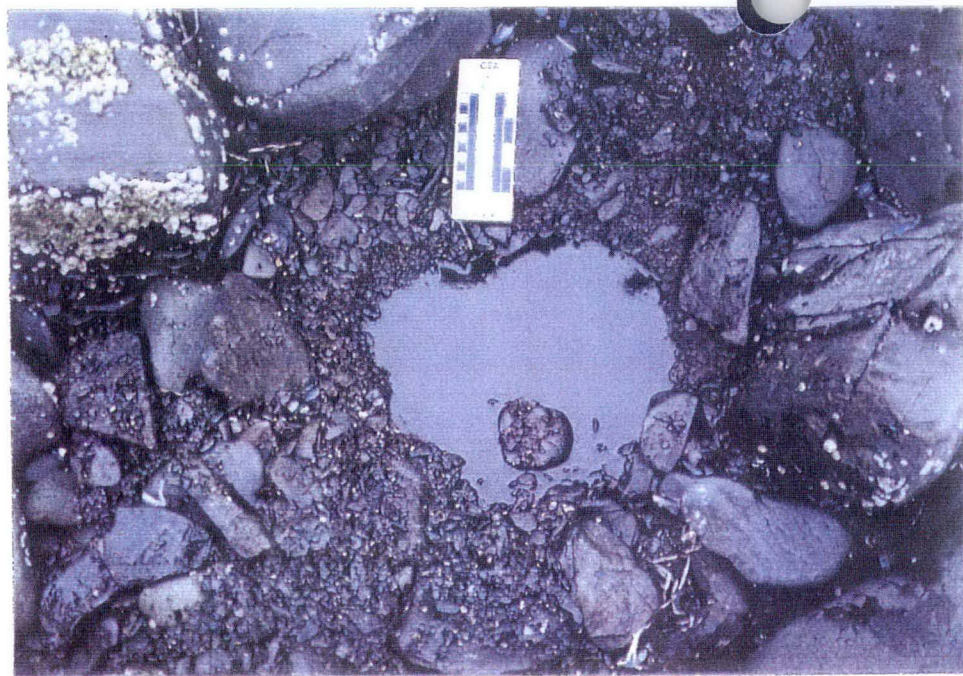
En.= wave-energy level, H= high, M= moderate, L= low, VL= very low.

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 - year 1)/(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: ^{ye} July 18, 1993 Time: 10:15

Location (segment #): GR101B

Reason for taking photo: Pit 13

Taken by: L.J. Evans

Roll #: LJE001 Frame #: 015

QE

OFFICIAL PHOTOGRAPH ADEC

Date: ^{ye} July 18, 1993 Time: 10:05

Location (segment #): GR101B

Reason for taking photo: Overview of segment

In frame: Jim Gibeaut (ADEC), Sam Stoker
(Exxon), Katie Farley (DNR)

Taken by: L.J. Evans

Roll #: LJE001 Frame #: 014

QE

OFFICIAL PHOTOGRAPH ADEC

Date: ^{ye} July 18, 1993 Time: 10:20

Location (segment #): GR101B

Reason for taking photo: Pit 17

Taken by: L.J. Evans

Roll #: LJE001 Frame #: 017

QE

OFFICIAL PHOTOGRAPH ADEC

Date: ^{ye} July 18, 1993 Time: 10:15

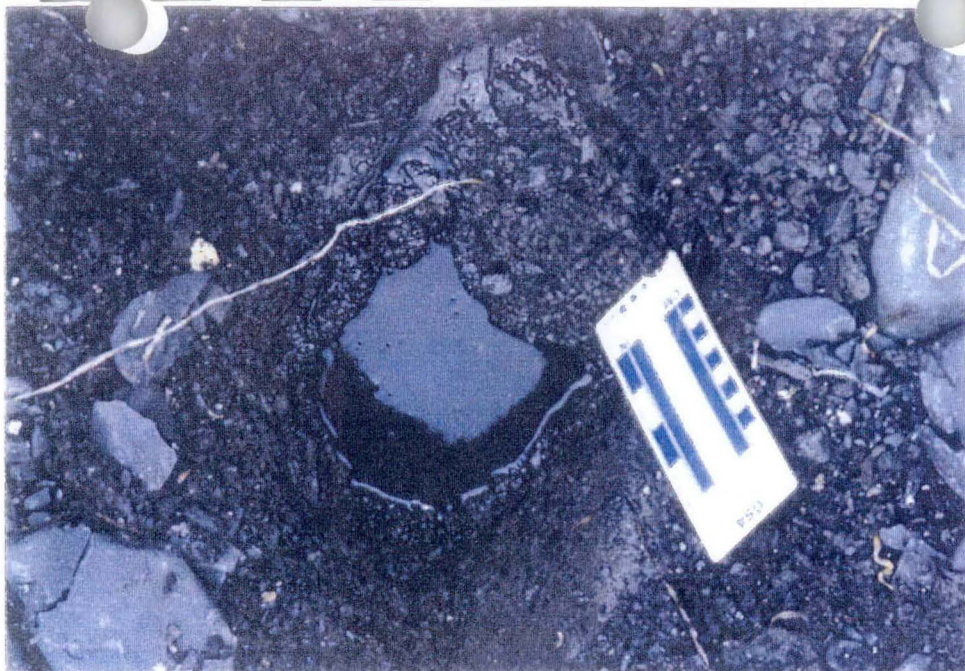
Location (segment #): GR101B

Reason for taking photo: Pit 13

Taken by: L.J. Evans

Roll #: LJE001 Frame #: 016

QE



OFFICIAL PHOTOGRAPH ADEC

Date: July 19th, 1993 Time: 10:20

Location (segment #): GR101B

Reason for taking photo: Pit 17

Taken by: L.J. Evans 199

Roll #: LJE001 Frame #: 018

Printed on film

GR 103 C

SEGMENT: GR 103 C

LOCATION: Outer Islands Group, northeastern end of Green Island.

OTHER STUDIES

PHYSICAL SETTING

Coastal Morphology and Sedimentology

Irregular shoreline with boulder and cobble beaches and wave-cut platforms.

Environmental Sensitivity Index (ESI)

Type 2; exposed wave-cut platform.

Type 7; gravel beaches.

Fetches and Directions (kilometers)

NNE= 75

Energy Level

High.

GENERAL BIOLOGICAL SETTING

Eagle nest.

Herring spawning.

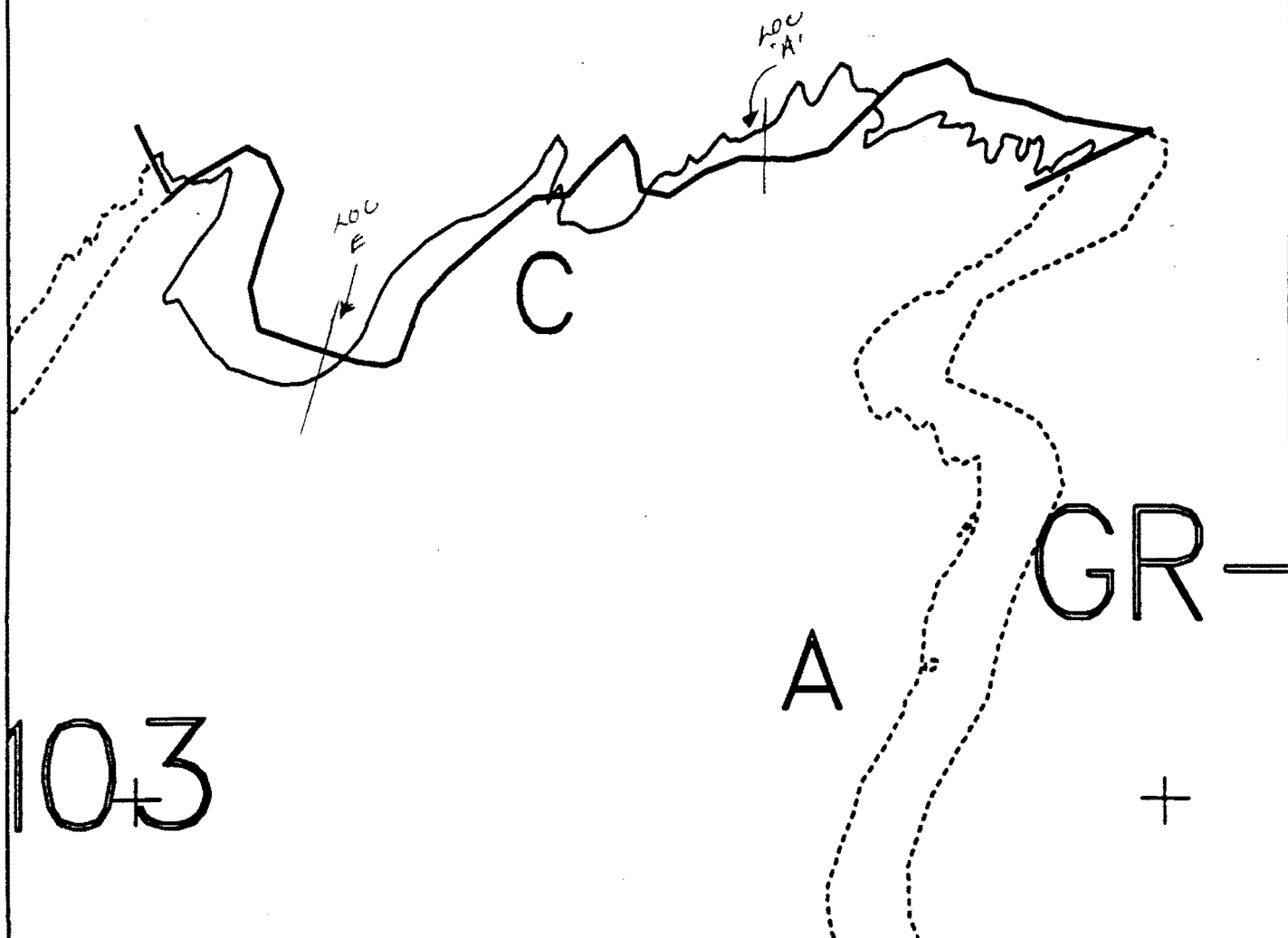
Deer harvesting.

Salmon harvesting.

OILING SUMMARY

The greatest amount of AP and SOR at one location was found at this site. Location 'C' is a 20 m by 100 m area with over 50% coverage of AP and SOR trapped in vertical fractures of the vertically dipping shale bedrock. This location was not discovered in 1992 or 1991. Location 'E' is another area with relatively high concentrations of AP and SOR occurring interstitially in a boulder field. This area also was not discovered in previous years. Overall there is no evidence of improvement; in fact the 1993 survey shows the inadequacy of previous surveys for these locations.

No subsurface oil was noted in 1993, and only very small amounts were recorded in 1991.



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

GR103 C
 ADEC Subsegment Length: 1810m
 METERS
 0 200 400
 AK State Plane Zone 4
 pgr103a



Subdivision Field Map
 Map Key: PWSGR103C
 Name: Dm.
 Date: 7/18/93
 Data Entered:

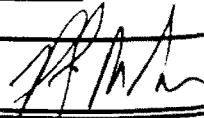
1993 ADEC RESTORATION PROJECT #930380
SHORELINE SURVEY COMMENT SHEET

LOCATION GREEN ISL. SEGMENT GR103 SUBDIVISION C DATE 07/18/93

AFFILIATION

NAME Phil Means / USCG

SIGNATURE

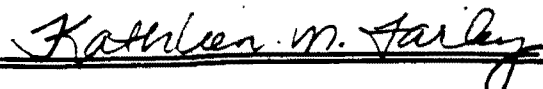


Surface oiling present in the form of patches asphalt.
Marine broken up in granite weathering.

AFFILIATION DNR, Division of Land

NAME KATIE FARLEY

SIGNATURE



I didn't survey this particular segment. I
continued surveying a section of Segment GR101B
with Jim Gibault's group.

AFFILIATION

NAME

SIGNATURE

AFFILIATION

NAME

SIGNATURE

PAGE 1 OF 3

SUBDIVISION C

MEMBERS: E. P. PIER, D. MUNSEN, J. MATTHEWS - ADEC
P. MEANS - USGCT
E. OWENS - Exxon
K. FARLEY - ADNR
L. J. EVANS - ADEC

TIDE LEVEL 10.5 ft. to 15.5 ft.

ENERGY LEVEL: ☐ H ☒ M ☐ L

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

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

[illegible]

VIEW: SLOPE: V = VERTICAL: H = HIGH ANGLE: M = MEDIUM ANGLE: L = LOW ANGLE PHOTO ROLL #

~~LS-001~~ FRAMES ~~4-18~~

[illegible]

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

PAGE 2 OF 3

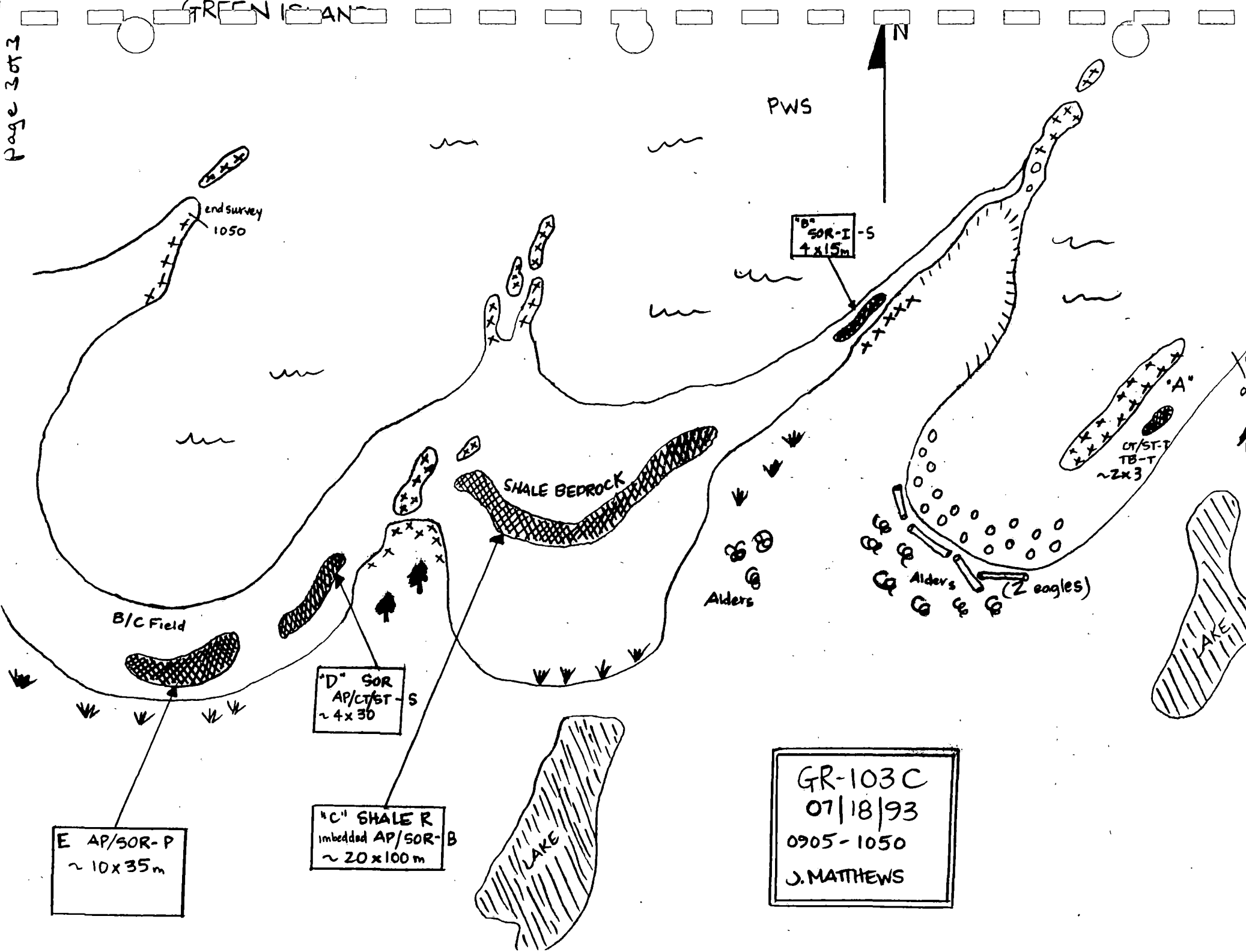
SEGMENT GR103

SUBDIVISION C

DATE 07, 18, 1943

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

- 2 eagles @ east end of segment
- Harbor Seal on Haulout



GR-103C
07/18/93
0905-1050
J. MATTHEWS

1993 Surface Oil Summary
Segment GR103 Subdivision C

Location	Area of Oiling Type in Square Meters				
	AP	MS	SOR	CV	CT
A	0.	0.	0.	0.	0.
B	0.	0.	3.6	0.	0.3
C	1400.	0.	1400.	0.	0.
D	7.2	0.	7.2	0.	0.
E	105.	0.	105.	0.	0.
TOTALS=	1512.2	0.	1515.8	0.	0.3

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 GR103C

Loc.	1993 PIT #	Gr. Sz.	Zn.	En.	Note	TREATMENT		1993 OILED SED. VOL. (m3)					1992 OILED SED. VOL. (m3)					1991 OILED SED. VOL. (m3)					WT.'ed OIL VOL.			CHANGE WT.'ed VOL.		
						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
2A		B-SG	M	M		MR	NO	0.0	0.0	0.0	0.0	0.0	?	?	?	?	?	0.0	0.1	0.0	0.0	0.0	0.0	?	0.4	?	?	-100.0
2B		BC-SG	M	M		MR	NO	0.0	0.0	0.0	0.0	0.0	?	?	?	?	?	0.8	0.0	0.0	0.0	0.0	0.0	?	3.8	?	?	-100.0
TOTALS=								0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.1	0.0	0.0	0.0	0.0	0.0	4.2	0.0	-100.0	-100.0

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 - year 1)/(year 1))*100, positive values indicate increases in the amount of oil, negative values indicate decreases, "Inf" (infinite percent increase) indicates newly discovered oil.

IN 031 B

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SEGMENT: IN 031 B

LOCATION: Knight Island North Group, west side of Ingot Island in narrow passage between Ingot and Disk Islands.

OTHER STUDIES

PHYSICAL SETTING

Coastal Morphology and Sedimentology

Tombolo attached by an intertidal pebble beach and coarse-grained tidal flat. A relatively low-sloping, boulder and cobble beach grades westward to a cobbly, pebble gravel beach with pebble high-tide berms directly behind the tombolo. Sediments are subangular to angular and include a sandy, granular subsurface matrix.

Environmental Sensitivity Index (ESI)

Type 7; gravel beach.

Type 8; sheltered rocky.

Fetches and Directions (kilometers)

SE= 35

Energy Level

Overall moderate with some low areas.

GENERAL BIOLOGICAL SETTING

Mussel bed and clam bed adjacent to oiled locations.

Eagle nest.

OILING SUMMARY

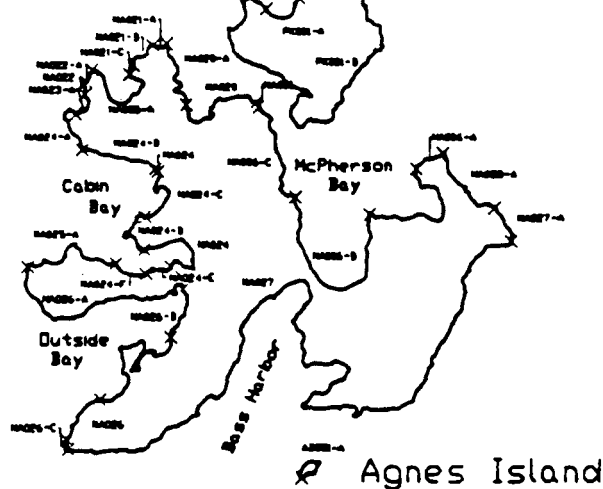
One 5 m by 49 m area (location 'A') of AP with a relatively high concentration remains at this site. The AP occurs interstitially between boulders and extends to the subsurface as HOR. MS and OP are present around large boulders. Areas 'A', 'B', and 'C' were all treated in 1991, 1992, and 1993 and have shown significant improvement although heavy oil persists in location 'A'.

HOR and OP Subsurface oil is associated with the AP and SOR in surface oil location 'A'. In 1991 only HOR was noted but it was estimated to have occurred over an area more than twice the size as surveyors measured in 1993. It is possible that the area was overestimated in 1991 and that no significant decrease in subsurface oil has occurred.

Storey Island

Peak Island

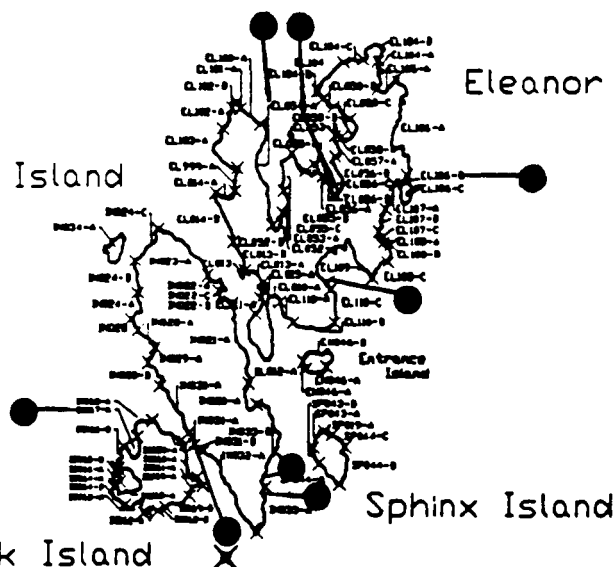
Naked Island



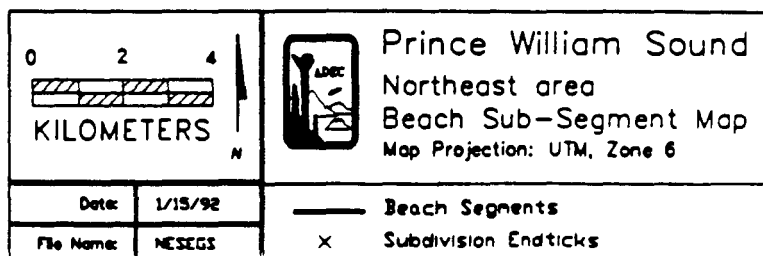
Ingot Island

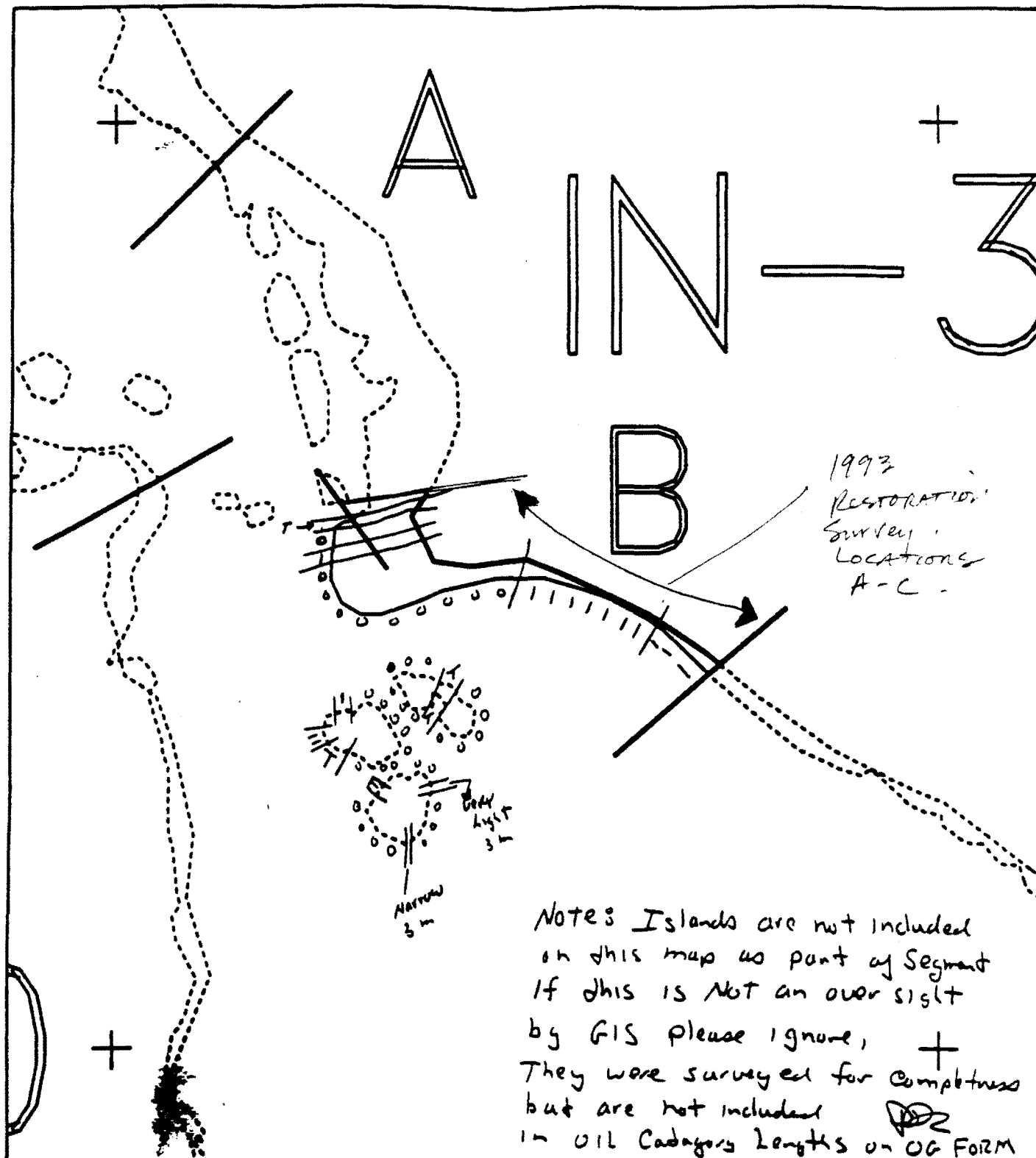
Eleanor Island

Smith Island



Little Smith Island





XXXX
////

TTTT
0000

Wide
Medium
Narrow
Very Light
No Oil

IN031 B

ABEC Subsegment Length: 203m

METERS

0 100 200

AK State Plane Zone 4
1140310



Subdivision Field Map
Map Key: KHIIN0310
Name: Reima
Date: 5/17/91
Date Entered:

Reviewed 5.21.94
Reviewed: F.W. 5/22/91

1993 ADEC RESTORATION PROJECT #930380
SHORELINE SURVEY COMMENT SHEET

LOCATION ING - SEGMENT IN 031 SUBDIVISION B DATE 6/24/93

AFFILIATION DNR
NAME Wyn Menefer SIGNATURE Wyn Menefer

Concur with Findings.

Biota in oiled area is minimal compared to other nearby areas. Could be result of wave action or of past treatment.

The beach berm could be potential camping location. We broke up asphalt.

No further treatment recommended.

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

Small amounts of surface tar and asphalt present. Asphalt was treated by breaking up and spreading. No additional treatment necessary.

AFFILIATION _____
NAME _____ SIGNATURE _____

AFFILIATION _____
NAME _____ SIGNATURE _____

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

DATE 6 1 24 1993

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

- 4 Eagles on beach upon arrival in vicinity of pit 6.
- 1 seal ~~off~~ shore
- 1 whale breaching

61/193
M. PROFITA

N

(A)
PATCHY AP-EXTENDS
SUBSURFACE TO HOR
MS/OP AROUND LARGE
BOULDERS 5X49M WITZ

(B)
TRACE TAR SPLATTERS
TRACE AP/SOR
INTERSTICIAL AMONG BOULDERS
CT. SPRUCE NEEDLES PROTECTED SIDE
OF BOULDERS 3X60 WITZ

A6
NO

GRASS

A5
NO

A4
NO

PEBBLE BEACH

BOULDER
COBBLE

TIDAL
FLATS

SEAL UPON
ARRIVAL

(C)

SPORADIC AP/SOR/I
AMONG BOULDERS
3X130 WITZ

(D)
CT, ST BEDROCK
BAND OF SPRUCE
NEEDLES- 1X23

TRACE TB

(E)
TRACE CT. ST
ON BEDROCK

WHALE SIGHTING

1993 Surface Oil Summary
Segment IN031 Subdivision B

Location	Area of Oiling Type in Square Meters				
	AP	MS	SOR	CV	CT
A	73.5	0.	0.	0.	1.225
B	0.9	0.	0.	0.	0.9
C	0.	0.	0.	0.	1.95
TOTALS=	74.4	0.	0.	0.	4.075

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 IN031B

						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	1-3	BCP-PG	U	M	AP/SOR ON SURFACE	MR	MR, Rs	5.1	5.0	0.0	0.0	0.0	5.3	3.0	1.8	0.0	0.0	0.0	22.5	0.0	0.0	0.0	45.5	43.7	90.0	4.2	-51.5	-49.5
TOTALS=								5.1	5.0	0.0	0.0	0.0	5.3	3.0	1.8	0.0	0.0	0.0	22.5	0.0	0.0	0.0	45.5	43.7	90.0	4.2	-51.5	-49.5

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.



OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 06/24/93 TIME: -0-

SEGMENT#: IN031

STATION#: -0-

LOCATION: INGOT ISLAND

KEYWORDS: -0-

REASON FOR TAKING PHOTO: HOR UNDER BOULDER COBBLE.

TAKEN BY: MARIANNE PROFITA INITIALS: _____
ROLL #: 93MSP003 FRAME #: 33 EVIDENCE ID#: _____

Taken by: M. Profita

Roll #: 93MSP003 Frame #: 33

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 06/24/93 TIME: -0-

SEGMENT#: IN031

STATION#: -0-

LOCATION: INGOT ISLAND

KEYWORDS: -0-

REASON FOR TAKING PHOTO: PATCHY ASPHALT EXTENDS SUBSURFACE TO
HOR WITH MS/OP AROUND LARGE BOULDER IN A 5 x 49
METER AREA.

TAKEN BY: MARIANNE PROFITA INITIALS: _____
ROLL #: 93MSP003 FRAME #: 35 EVIDENCE ID#: _____

Taken by: M. Profita - 5x49M

Roll #: 93MSP003 Frame #: 35

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 06/24/93 TIME: -0-

SEGMENT#: IN031

STATION#: -0-

LOCATION: INGOT ISLAND

KEYWORDS: -0-

REASON FOR TAKING PHOTO: OVERVIEW OF SURVEY CREW BREAKING UP
AP.

TAKEN BY: MARIANNE PROFITA INITIALS: _____
ROLL #: 93MSP003 FRAME #: 32 EVIDENCE ID#: _____

Taken by: M. Profita

Roll #: 93MSP003 Frame #: 32

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 06/24/93 TIME: -0-

SEGMENT#: IN031

STATION#: -0-

LOCATION: INGOT ISLAND

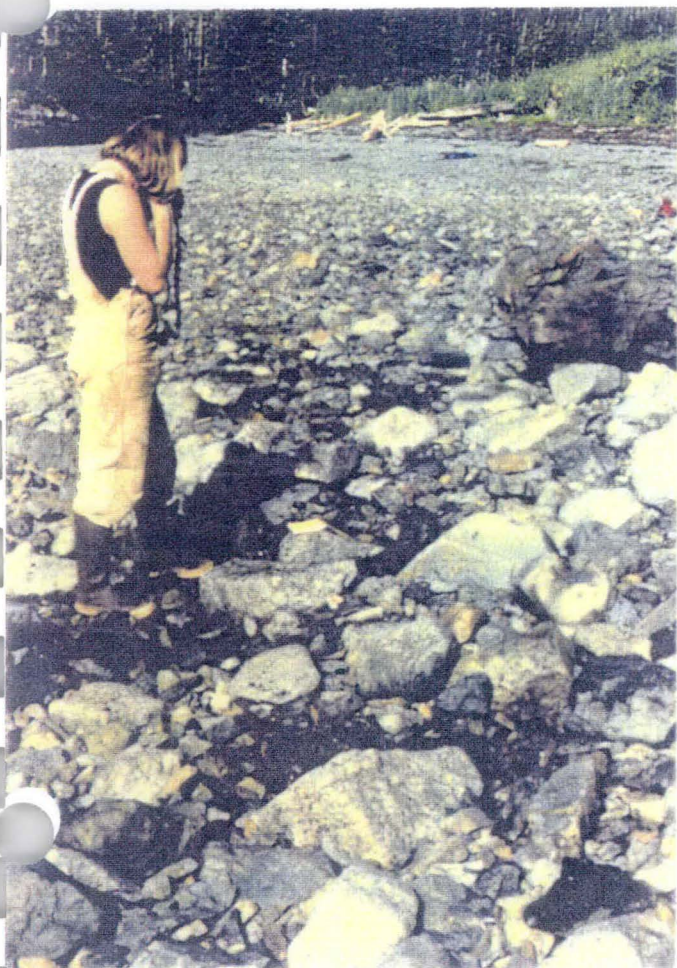
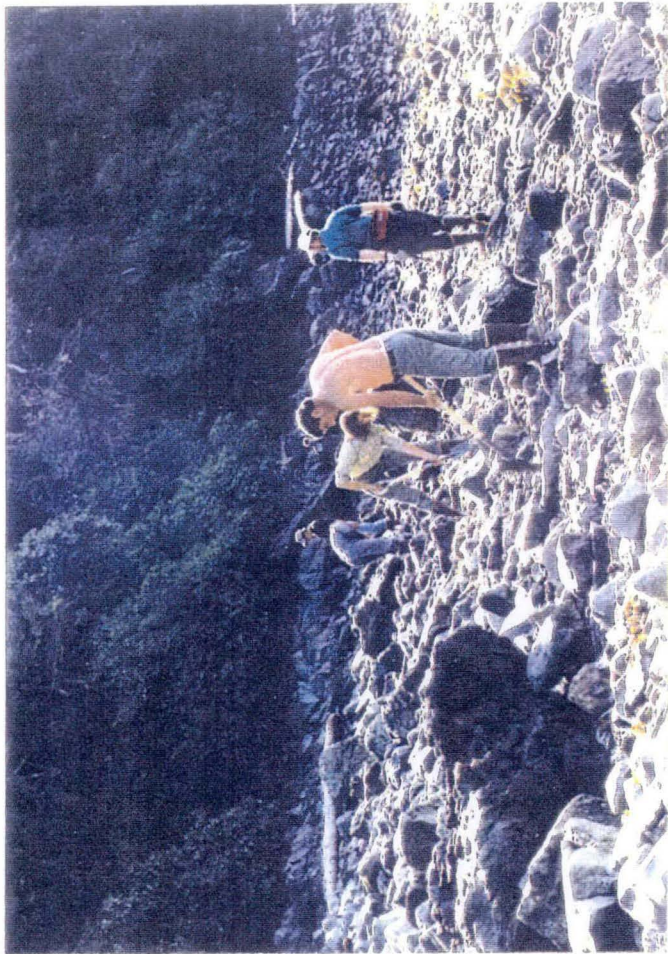
KEYWORDS: -0-

REASON FOR TAKING PHOTO: SURVEY CREW MOVING BOULDER COBBLE TO
EXPOSE HOR.

TAKEN BY: MARIANNE PROFITA INITIALS: _____
ROLL #: 93MSP003 FRAME #: 34 EVIDENCE ID#: _____

Taken by: M. Profita

Roll #: 93MSP003 Frame #: 34



OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 06/24/93 TIME: -0-

SEGMENT#: IN031

STATION#: -0-

LOCATION: INGOT ISLAND

KEYWORDS: -0-

REASON FOR TAKING PHOTO: OVERVIEW OF BOULDER FIELD AREA-SURVEY CREW BREAKING UP ASPHALT.

TAKEN BY: MARIANNE PROFITA

INITIALS: _____

ROLL #: 93MSP003 FRAME #: 37 EVIDENCE ID#: _____

Taken by: M. Profita

Roll #: 93MSP003 Frame #: 37

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 06/24/93 TIME: -0-

SEGMENT: IN031

STATION: -0-

LOCATION: INGOT ISLAND

KEYWORD: -0-

REASON FOR TAKING PHOTO: SURVEY CREW BREAKING UP ASPHALT IN LOCATION B-BOULDER FIELD.

TAKEN BY: MARIANNE PROFITA

INITIALS: _____

ROLL #: 93MSP004 FRAME #: 3 EVIDENCE ID#: _____

Taken by: M. Profita

Roll #: 93MSP004 Frame #: 3

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 06/24/93 TIME: -0-

SEGMENT: IN031

STATION: -0-

LOCATION: INGOT ISLAND

KEYWORD: -0-

REASON FOR TAKING PHOTO: ASPHALT PATCHES BETWEEN BOULDER/COBBLE AND SUBSURFACE HOR IN 5 x 4 METER AREA.

TAKEN BY: MARIANNE PROFITA

INITIALS: _____

ROLL #: 93MSP003 FRAME #: 36 EVIDENCE ID#: _____

Taken by: M. Profita

Roll #: 93MSP003 Frame #: 36

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 06/24/93 TIME: -0-

SEGMENT: IN031

STATION: -0-

LOCATION: INGOT ISLAND

KEYWORD: -0-

REASON FOR TAKING PHOTO: SURVEY CREW BREAKING UP ASPHALT IN LOCATION B-BOULDER FIELD.

TAKEN BY: MARIANNE PROFITA

INITIALS: _____

ROLL #: 93MSP004 FRAME #: 2 EVIDENCE ID#: _____

Taken by: M. Profita

Roll #: 93MSP004 Frame #: 2



OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 06/24/93 TIME: -0-

SEGMENT: IN031 STATION: -0-
LOCATION: INGOT ISLAND
KEYWORD: -0-
REASON FOR TAKING PHOTO: SURVEY CREW LOCATION B-BOULDER FIELD
WITH ASPHALT AND SUBSURFACE HOR.

TAKEN BY: MARIANNE PROFITA INITIALS: _____
ROLL #: 93MSP004 FRAME #: 5 EVIDENCE ID#: _____

Taken by: M. Profita
Roll #: 93MSP004 Frame #: 5

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 06/24/93 TIME: -0-

SEGMENT: IN031 STATION: -0-
LOCATION: INGOT ISLAND
KEYWORD: -0-
REASON FOR TAKING PHOTO: HOR UNDER BOULDER COBBLE.

TAKEN BY: MARIANNE PROFITA INITIALS: _____
ROLL #: 93MSP004 FRAME #: 7 EVIDENCE ID#: _____

Taken by: M. Profita
Roll #: 93MSP004 Frame #: 7

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 06/24/93 TIME: -0-

SEGMENT: IN031 STATION: -0-
LOCATION: INGOT ISLAND
KEYWORD: -0-
REASON FOR TAKING PHOTO: SURVEY CREW LOCATION B-BOULDER
FIELD.

TAKEN BY: MARIANNE PROFITA INITIALS: _____
ROLL #: 93MSP004 FRAME #: 4 EVIDENCE ID#: _____

Taken by: M. Profita
Roll #: 93MSP004 Frame #: 4

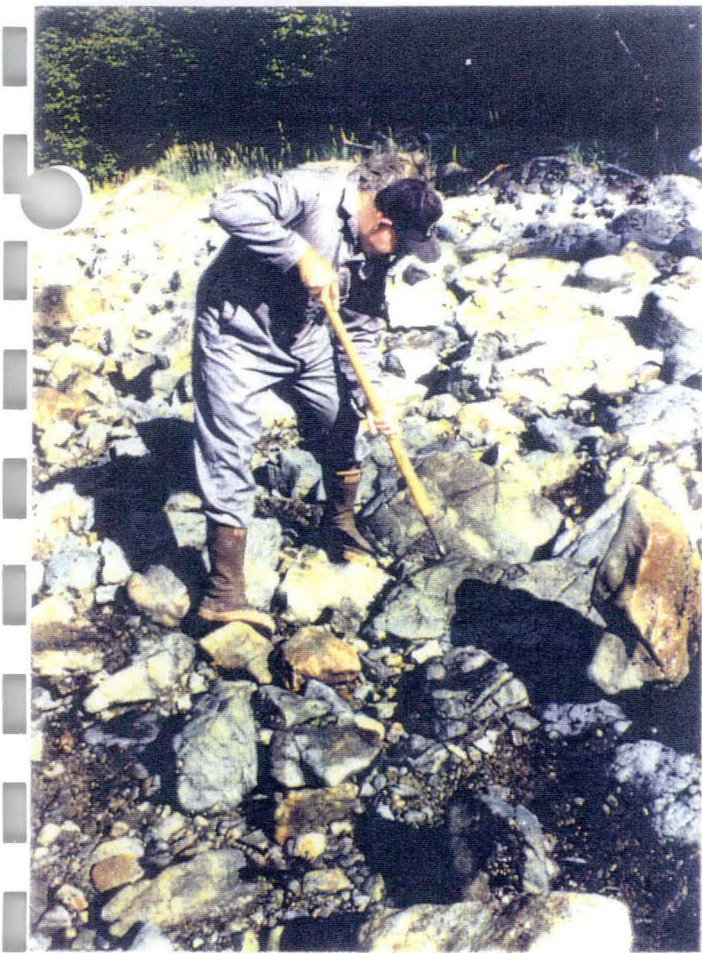
OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 06/24/93 TIME: -0-

SEGMENT: IN031 STATION: -0-
LOCATION: INGOT ISLAND
KEYWORD: -0-
REASON FOR TAKING PHOTO: HOR UNDER BOULDER/COBBLE.

TAKEN BY: MARIANNE PROFITA INITIALS: _____

Taken by: M. Profita
Roll #: 93MSP004 Frame #: 5



OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 06/24/93 TIME: -0-

SEGMENT: IN031

STATION: -0-

LOCATION: INGOT ISLAND

KEYWORD: -0-

REASON FOR TAKING PHOTO: MOVING BOULDERS TO EXPOSE SUBSURFACE HOR.

TAKEN BY: MARIANNE PROFITA INITIALS: _____
ROLL #: 93MSP004 FRAME #: 9 EVIDENCE ID#: _____

Taken by: M. Profita

Roll #: 93MSP004 Frame #: 8/9

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 06/24/93 TIME: -0-

SEGMENT: IN031

STATION: -0-

LOCATION: INGOT ISLAND

KEYWORD: -0-

REASON FOR TAKING PHOTO: SUBSURFACE HOR IN COBBLE PEBBLE.

TAKEN BY: MARIANNE PROFITA INITIALS: _____
ROLL #: 93MSP004 FRAME #: 11 EVIDENCE ID#: _____

Taken by: M. Profita

Roll #: 93MSP004 Frame #: 10/11

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 06/24/93 TIME: -0-

SEGMENT: IN031

STATION: -0-

LOCATION: INGOT ISLAND

KEYWORD: -0-

REASON FOR TAKING PHOTO: HOR UNDER BOULDER COBBLE.

TAKEN BY: MARIANNE PROFITA INITIALS: _____
ROLL #: 93MSP004 FRAME #: 8 EVIDENCE ID#: _____

Taken by: M. Profita

Roll #: 93MSP004 Frame #: 2/8

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 06/24/93 TIME: -0-

SEGMENT: IN031

STATION: -0-

LOCATION: INGOT ISLAND

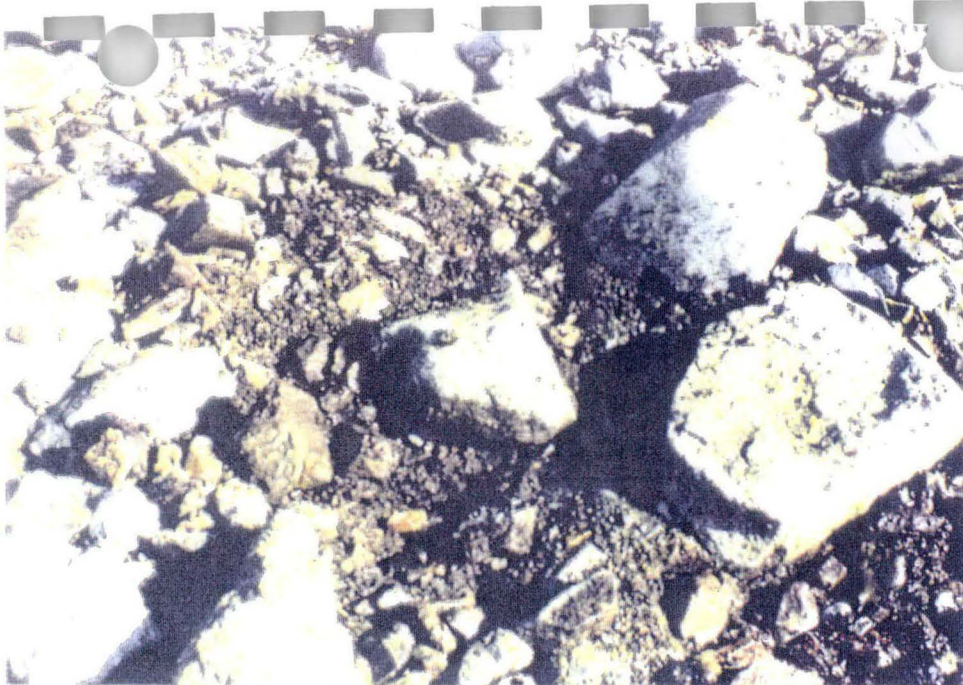
KEYWORD: -0-

REASON FOR TAKING PHOTO: ROLLED BOULDER EXPOSED OP/HOR SUBSURFACE.

TAKEN BY: MARIANNE PROFITA INITIALS: _____
ROLL #: 93MSP004 FRAME #: 10 EVIDENCE ID#: _____

Taken by: M. Profita

Roll #: 93MSP004 Frame #: 10



OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 06/24/93 TIME: -0-

SEGMENT: IN031 STATION: -0-
LOCATION: INGOT ISLAND
KEYWORD: -0-
REASON FOR TAKING PHOTO: OVERVIEW LOCATION B AND C LOOKING EAST.

TAKEN BY: MARIANNE PROFITA INITIALS: _____
ROLL #: 93MSP004 FRAME #: 15 EVIDENCE ID#: _____

Taken by: M. Profita
Roll #: 93MSP004 Frame #: 15

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 06/24/93 TIME: -0-

SEGMENT: IN031 STATION: -0-
LOCATION: INGOT ISLAND
KEYWORD: -0-
REASON FOR TAKING PHOTO: ASPHALT BEFORE BREAKUP IN LOCATION A.

TAKEN BY: MARIANNE PROFITA INITIALS: _____
ROLL #: 93MSP004 FRAME #: 18 EVIDENCE ID#: _____

Taken by: M. Profita
Roll #: 93MSP004 Frame #: 18

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 06/24/93 TIME: -0-

SEGMENT: IN031 STATION: -0-
LOCATION: INGOT ISLAND
KEYWORD: -0-
REASON FOR TAKING PHOTO: ASPHALT WHICH EXTENDS SUBSURFACE TO HOR.

TAKEN BY: MARIANNE PROFITA INITIALS: _____
ROLL #: 93MSP004 FRAME #: 13 EVIDENCE ID#: _____

Taken by: M. Profita
Roll #: 93MSP004 Frame #: 13

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 06/24/93 TIME: -0-

SEGMENT: IN031 STATION: -0-
LOCATION: INGOT ISLAND
KEYWORD: -0-
REASON FOR TAKING PHOTO: OVERVIEW LOOKING WEST TO LOCATION A.

TAKEN BY: MARIANNE PROFITA INITIALS: _____
ROLL #: 93MSP004 FRAME #: 16 EVIDENCE ID#: _____

Taken by: M. Profita
Roll #: 93MSP004 Frame #: 16



5-1

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 06/24/93 TIME: -0-

SEGMENT: IN031

STATION: -0-

LOCATION: INGOT ISLAND

KEYWORD: -0-

REASON FOR TAKING PHOTO: LOCATION A ASPHALT.

TAKEN BY: MARIANNE PROFITA

INITIALS: _____

ROLL #: 93MSP005

FRAME #: _____

1 EVIDENCE ID#: _____

Taken by: _____

M. Profita

Roll #: _____

93msp005

Frame #: _____

1

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 06/24/93 TIME: -0-

SEGMENT: IN031

STATION: -0-

LOCATION: INGOT ISLAND

KEYWORD: -0-

REASON FOR TAKING PHOTO: ASPHALT BEFORE BREAKUP IN LOCATION A.

TAKEN BY: MARIANNE PROFITA

INITIALS: _____

ROLL #: 93MSP004

FRAME #: _____

19

EVIDENCE ID#: _____

Taken by: _____

M. Profita

Roll #: _____

93msp004

Frame #: _____

18 19

IN 033 A

SEGMENT: IN 033 A

LOCATION: Knight Island North Group, southeastern Ingot Island.

OTHER STUDIES

PHYSICAL SETTING

Coastal Morphology and Sedimentology

Very irregular shoreline with dominant fractured bedrock outcrops with large boulder veneers in bedrock lows.

Environmental Sensitivity Index (ESI)

Type 1; exposed rocky coast.

Fetches and Directions (kilometers)

SE= 33; E= 52; NE= 2

Energy Level

High with some bedrock protected moderate locations.

GENERAL BIOLOGICAL SETTING

Deer harvesting.

OILING SUMMARY

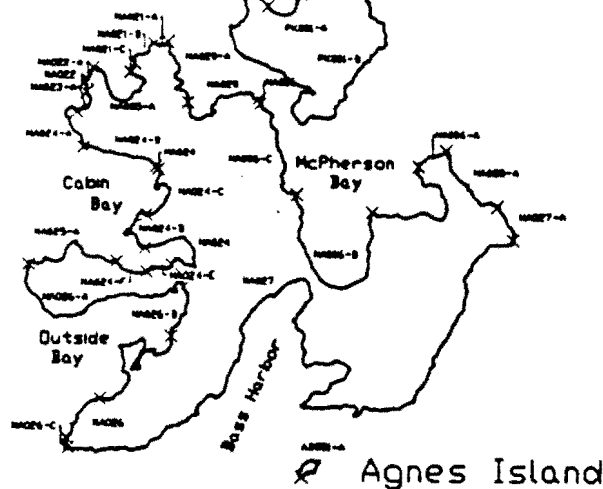
Numerous locations of SOR and MS are present. Oiling occurs interstitially between very large boulders and in protective bedrock fractures in the upper and supra intertidal zones. All the oil is soft, and no AP was discovered. Manual removal of surface and associated subsurface oil was conducted in 1991 and, to a much lesser degree, in 1992. Despite the earlier treatment, no measurable improvement of surface oiling has occurred since 1991, and considerable amounts remain.

Very little subsurface oil remains in 1993. As recorded, the amount of subsurface oil, particularly an OP location in the northern part of the site, has shown significant improvement. One should be cautious, however, in interpreting these data because the 1991 subsurface oil area was recorded as mostly surface oil in 1993 (location 'B'). Subsurface oiled-sediment removal occurred at this location in 1991, and it is possible that a real reduction in subsurface oil occurred but that some of this oil was turned-up and placed on the surface where it was discovered in 1993.

Storey Island

Peak Island

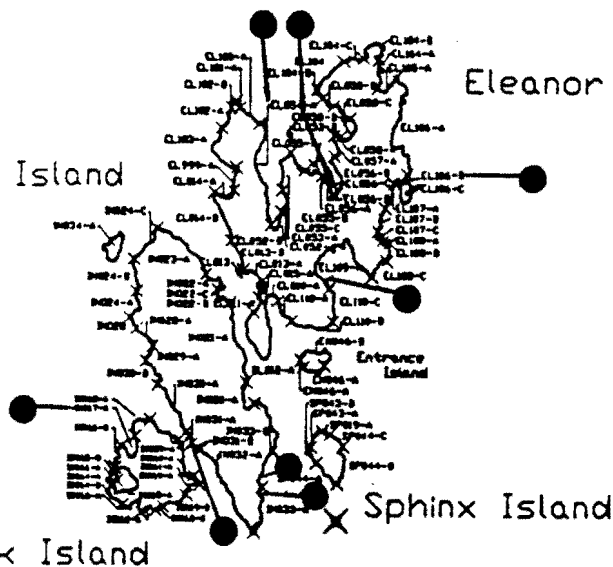
Naked Island



Eleanor Island

Ingot Island

Smith Island



Little Smith Island



Prince William Sound
Northeast area
Beach Sub-Segment Map
Map Projection: UTM, Zone 6

Date: 1/15/92

File Name: NESEGS

Beach Segments

X Subdivision Endticks

2

IN

SITE OF 1993
SURVEY

SITE #1 of FINSAP

5m narrow

UNSURVEYED

in U.C.

UNSURVEYED

XXXX Wide
 //// Medium
 ---- Narrow
 TTTT Very Light
 .000 No Oil

IN033 A

ADEC Subsegment Length: 1260m

METERS

0 100 200

AK State Plane Zone 4
 IN033Ab



Subdivision Field Map

Map Key: KMIIN033Ab

Name: Reimer

Date: 5/20/92

Date Entered:

1993 ADEC RESTORATION PROJECT #930380
SHORELINE SURVEY COMMENT SHEET

LOCATION Inlet Is SEGMENT IN 33A SUBDIVISION A DATE 6/25/93

AFFILIATION DWR
NAME Wyn Menefee SIGNATURE Wyn Menefee

no treatment recommended.
Hard Arrow beach

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

Same as In 033 except rocks even larger.
No treatment necessary.

AFFILIATION
NAME IVAN NAVCE, LT, USCGA SIGNATURE I Navce

OILING LIMITED TO PROTECTED AREAS AND COATS ON SURFACES

AFFILIATION
NAME _____ SIGNATURE _____

DATE 6 / 25 / 93

MEMBERS: D. MULYSON - ADEC
M. PROFITA - ADEC
V. BAER - USFS
W. MENEFEE - ADNR
E. NANCE - USCG

THE 10:30 to 11:20

TIDE LEVEL 0 ft. to -1.5 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

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

SURFACE OIL CHARACTER										SURFACE SEDIMENT		SHORE SLOPE		AREA		ZONE				NOTES
AP	MS	TB	SO	CV	CT	ST	FL	DB	NO	TYPE	VH	M	L	m	m	S	UI	MI	LI	
			S							CPG	H	1	2							M-HS OR
B			P		S	S				BCR	H	7	22							HS OR, CT, ST
	P		T		S					RB	H	2	2							MS OR
			T		S					R	V	1	15							
E	P		S		P	S				RB	H	3	5							MS/I - very weathered SC
			S		S					RB	H	1	10							WEATHERED SOR
			S		P					RB	H	5	20							M-HS OR
					S					R	V	5	5							
I			S							BC	H	5	1							M-HS OR
			S							BC	H	1	2							M-HS OR

DISTRIBUTION: C = 61-100%; B = 51-60%; F = 11-50%; S = 1-10%; T = <1%

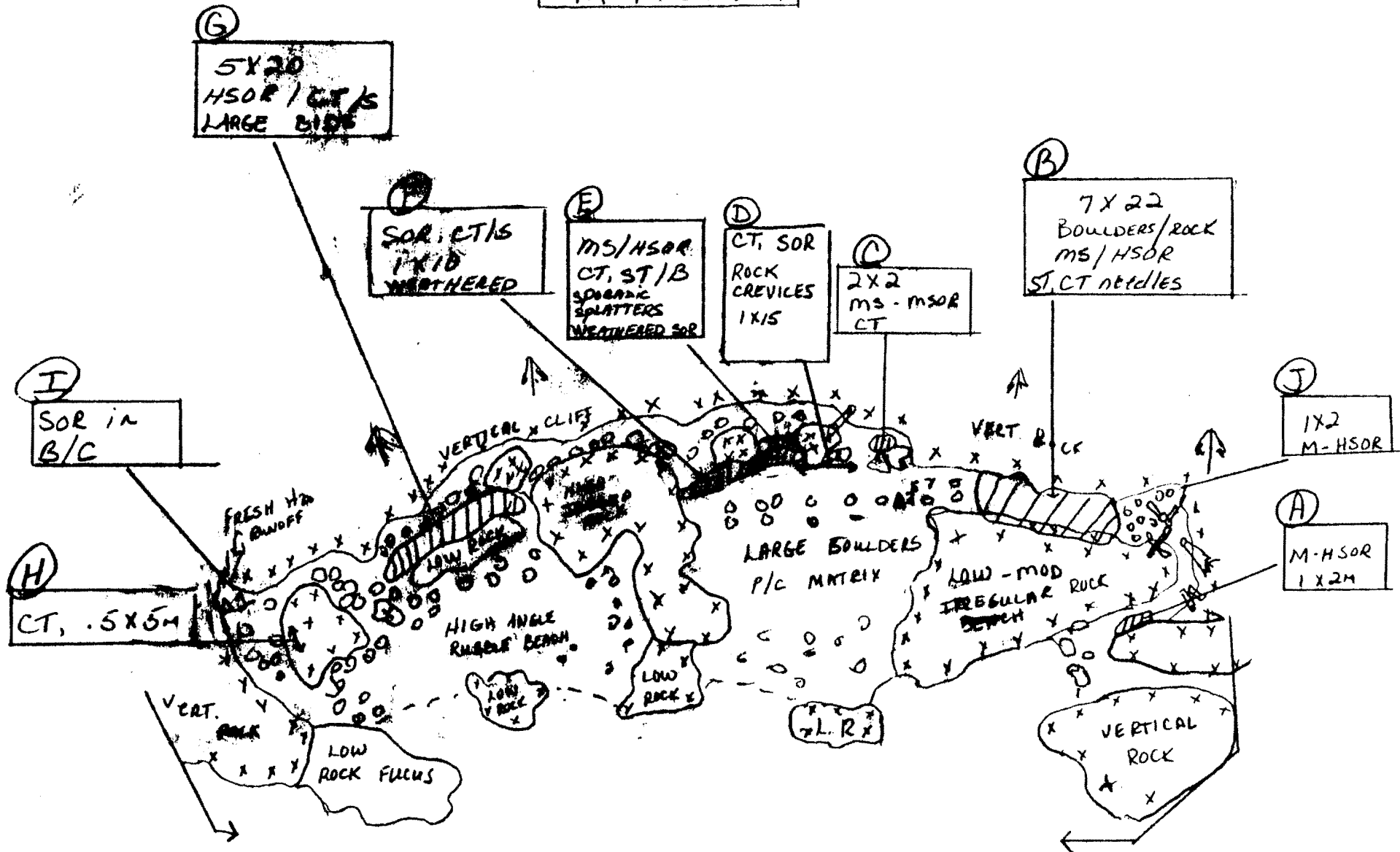
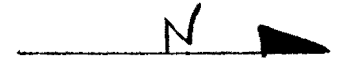
SLOPE: V = VERTICAL: H = HIGH ANGLE: M = MEDIUM ANGLE: L = LOW ANGLE PHOTO ROLL #

FRAMES

[illegible]

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

IN 033A
6/25/93
M. PROFITA



1993 Surface Oil Summary
Segment IN033 Subdivision A

Location	Area of Oiling Type in Square Meters				
	AP	MS	SOR	CV	CT
A	0.	0.	0.12	0.	0.
B	0.	0.	46.2	0.	9.24
C	0.	1.2	0.02	0.	0.02
D	0.	0.	0.075	0.	0.9
E	0.	4.5	0.9	0.	4.5
F	0.	0.	0.6	0.	0.6
G	0.	0.	6.	0.	30.
H	0.	0.	0.	0.	0.15
I	0.	0.	0.03	0.	0.
J	0.	0.	0.12	0.	0.
TOTALS=	0.	5.7	54.065	0.	45.41

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 IN033A

Loc.	1993 PIT #	Gr. Sz.	Zn.	En.	Note	TREATMENT		1993 OILED SED. VOL. (m3)					1992 OILED SED. VOL. (m3)					1991 OILED SED. VOL. (m3)					WT.'ed OIL VOL.			% CHANGE WT.'ed VOL.		
						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		2 BCP-PCG	U	M	AP ON SURFACE	NO	MR, Rb, Rs	0.0	0.2	0.0	0.0	0.0	?	?	?	?	?	7.5	2.3	0.0	0.0	0.0	0.8	?	46.5	?	?	-98.3
ZB		BP-GP	U	M		NO	NO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	6.0	0.0	-100.0	-100.0
ZC		B-BPCG	S	H	WITH SOR ON SURFACE	Rs	Rs, Rb	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	1.1	0.0	-100.0	-100.0
TOTALS=								0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.7	2.5	0.0	0.0	0.0	0.8	0.0	53.6	Inf	-100.0	-98.5

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.

IN 033 B

SEGMENT: IN 033 B

LOCATION: Knight Island North Group, southeastern Ingot Island.

OTHER STUDIES

PHYSICAL SETTING

Coastal Morphology and Sedimentology

Two pocket beaches separated by shoreline cliffs. The central beaches contain varying percentages of pebbles, cobbles, and boulders. Bedrock outcrops are important, and cliffs and boulder beaches occur on the limbs.

Environmental Sensitivity Index (ESI)

Type 1; exposed rocky.

Type 7; gravel beach.

Fetches and Directions (kilometers)

SE= 33; E= 52; NE= 2

Energy Level

High with some moderate locations.

GENERAL BIOLOGICAL SETTING

Deer harvesting.

OILING SUMMARY

Site 1 contains a location with a large and concentrated amount of AP and SOR (location 'B'). AP and SOR in location 'B' occur among boulders, bedrock, and cobbles in the upper intertidal zone. The surface oil is associated with a subsurface oil lens. Two other areas in site 2 contain significant amounts of SOR ('E' and 'F'). Surface oil in locations 'E' and 'F' is also among boulders and bedrock in the upper intertidal zone. No improvement occurred at the above three locations since 1992, in fact, more surface oil was recorded in 1993 than in 1992. This is despite the fact that manual treatment took place in 1991 and 1992.

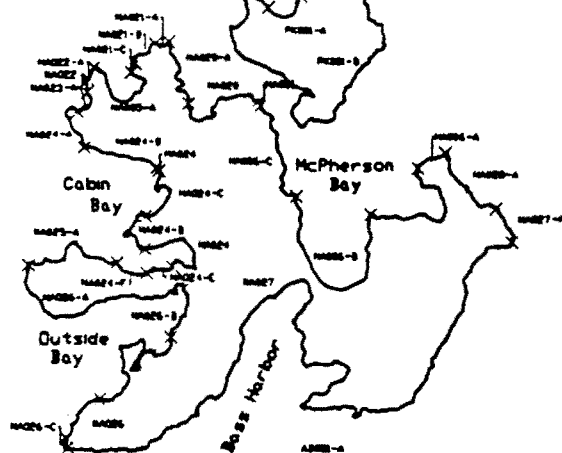
One location of MOR to OP subsurface oil remained in 1993. The oil at this location is associated with the surface oil in location 'B' at site 1, and surveyors recorded heavier and greater amounts in 1993 than in 1992. Another subsurface oil location was present in the northern part of site 2 in 1992 corresponding with the surface oil in location 'E' as designated on the 1993 sketch map. This subsurface oil was not present in 1993.

Oiling at site 'B' was minimal.

Storey Island

Peak Island

Naked Island

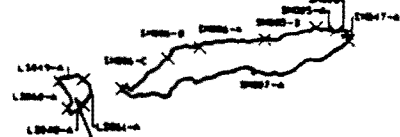
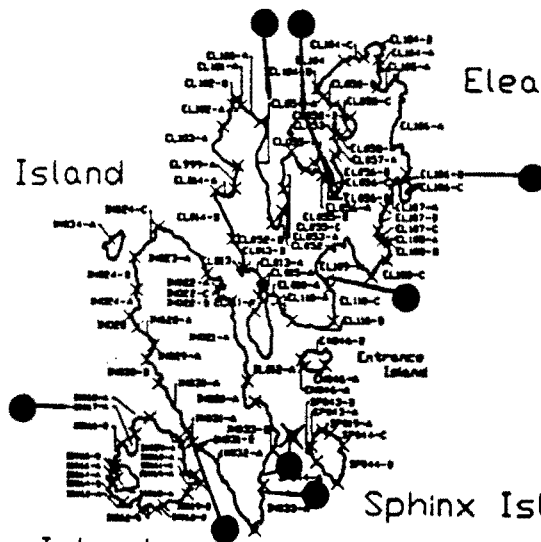


Agnes Island

Eleanor Island

Ingot Island

Smith Island



Little Smith Island

Sphinx Island

Disk Island

0 2 4 KILOMETERS		Prince William Sound Northeast area Beach Sub-Segment Map Map Projection: UTM, Zone 6
Date:	1/15/92	
File Name:	NESEGS	— Beach Segments x Subdivision Endticks

1993 ADEC RESTORATION PROJECT #930380
SHORELINE SURVEY COMMENT SHEET

IN 50T

LOCATION ISLAND

SEGMENT IN033

SUBDIVISION B

DATE 6/25/93

AFFILIATION DNR

NAME Wyn Monette

SIGNATURE Wyn Monette

Concur with findings.

No treatment recommended.

The rock beaches were well armored and oil will take a long time to degrade.

AFFILIATION U.S. Forest Service

NAME Vic Baer

SIGNATURE Vic Baer

Small amounts of surface tar/asphalt between large rocks that cover entire area. No treatment necessary.

AFFILIATION

NAME IVAN NANCE, VT, USCGR

SIGNATURE I Nance

OILING LIMITED TO PROTECTED AREAS AND COAT ON SURFACES.

AFFILIATION

NAME _____ SIGNATURE _____

1993 ADEC RESTORATION PROJECT # 930380

SHORELINE OILING SUMMARY

PAGE 1 OF 3

SEGMENT IN 033

TEAM MEMBERS: MARIANNE PROFFITA - ADEC
DIANNE MUNSON - ADEC
IVAN NANCE - USCG
VIC BAER - USES
WIN MENEFEE - DNR

SUBDIVISION B

DATE 6/25/93

TIME 8:45 to 10:00

TIDE LEVEL 4.0 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

L O C	SURFACE OIL CHARACTER										SURFACE SEDIMENT TYPE	SHORE SLOPE VHML	AREA		ZONE				NOTES
	AP	MS	TB	SOR	CV	CT	ST	FL	DB	NO			WIDTH	LENGTH					
													m	m					
A					C						B,C,R	M	0.5	1					
B	B				B						R,B,C,P	M	6	7					
C			T			S					R,B,C	V-M							Along Rock-WALLS and BEDS
D					C						B,C	M	1 FT.	1 FT.					
E		S			P	P					R,B,C	H	5	10					
F					P						R,B	H	1.5	7					
G	P				P						R,B,C	M	1 FT.	1 FT.					
H						SH					R,B,C	H							WITHIN THIS POLYEST BEACH

DISTRIBUTION: C = 61-100%; B = 51-60%; 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 N	PIT ZONE				SURFACE- SUBSURFACE SEDIMENTS	NOTES
		OP	HOR	MOR	LOR	OF	TR	NO					S	U	M	L		
1	24								9-15	Y	-	-					R,B,C,P,G	
2	20								10-15	Y	-	-					R,B,C,P,G	
3	24								12-22	Y	-	-					B,C,P,G	
4	14								1-9	Y	-	-					R,B,C,P,G	
5	14								-	-	-	-					T,B,P,G	
6	18								-	-	-	-					B,C,P,P,G	
7	24								-	-	-	-					R,P,G	
8	25								-	-	-	-					R,B,P,G	

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

BOUNDARY
IN 33A

① SOR
VERY SMALL AMOUNT
1 FOOT X 1 FOOT

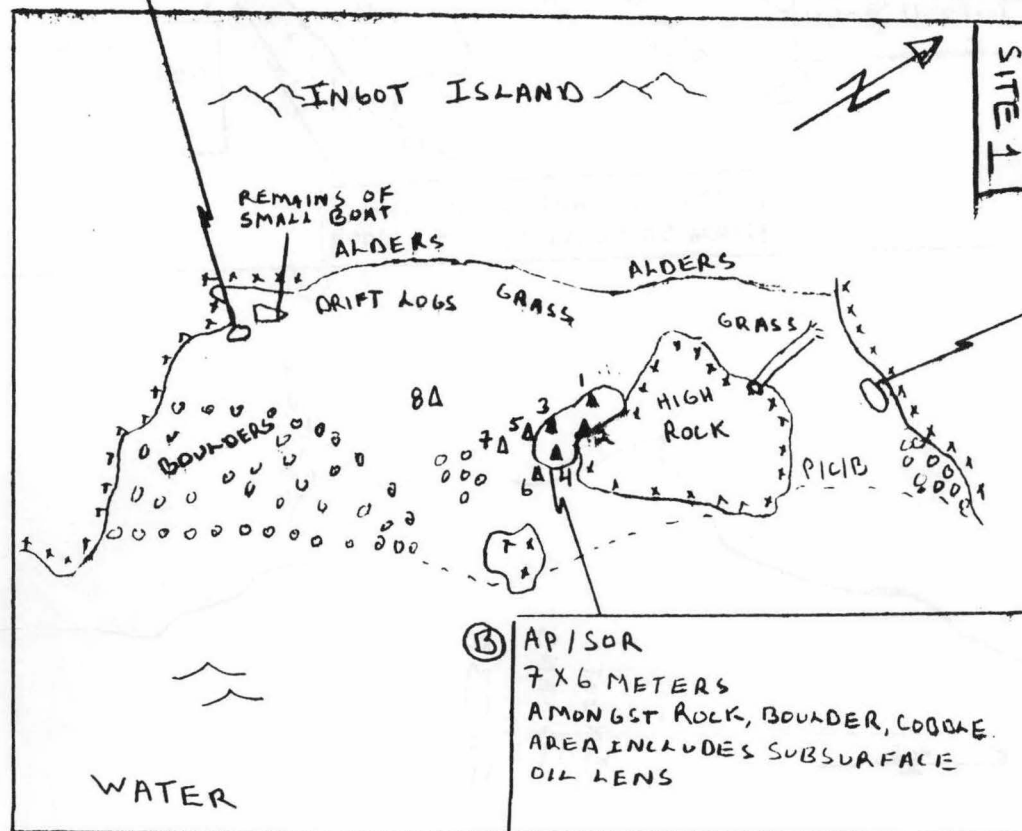
SITE #1
③

CT W/SPRUE NEEDLES
ALONG ROCK WALLS
AND LARGE BOUNDRS / SPORADIC
CT AND TAR SPATTER IN
TRACE AMOUNTS IN BOUNDRS AND ROCK

INGOT
ISLAND
IN 33B

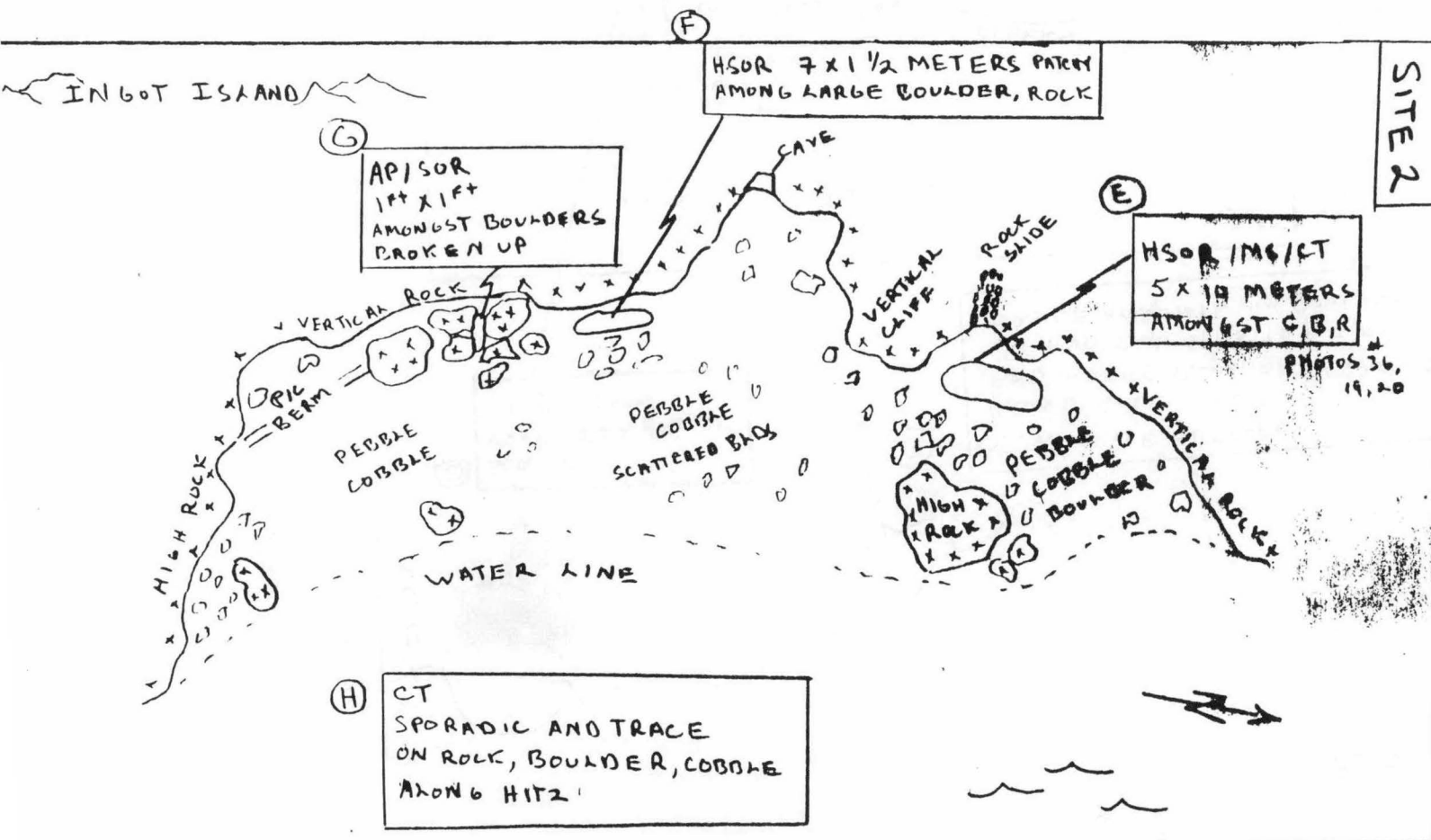
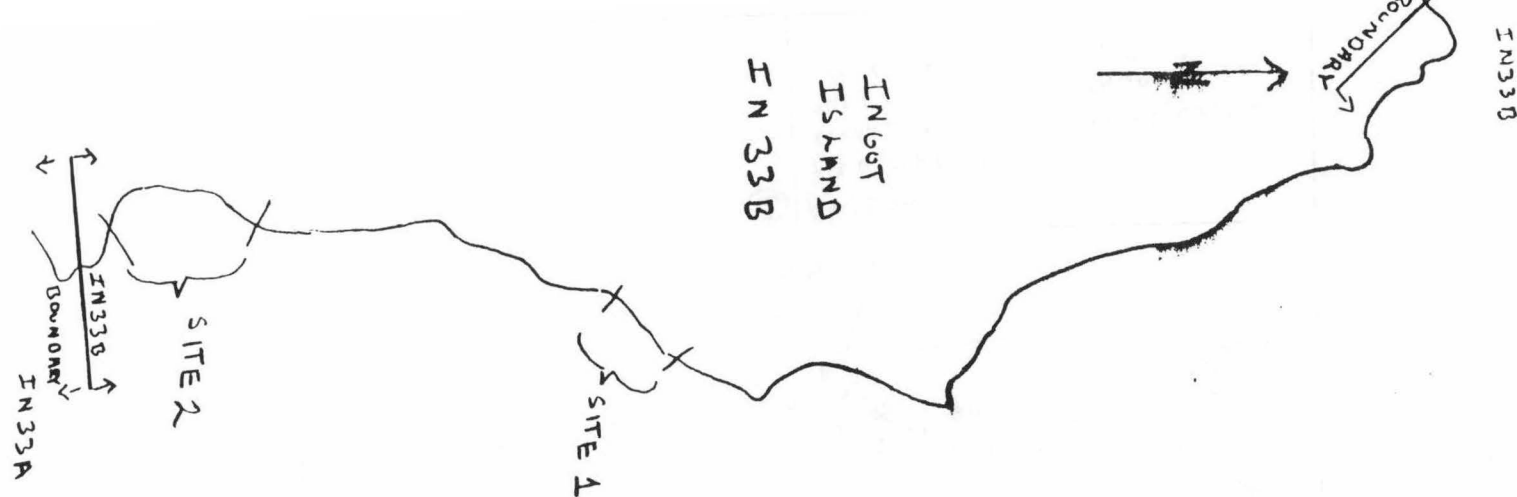
→ N

BOUNDARY
IN 33B



② HSDR
1 X 1/2 METER
NEXT TO ROCK CLIFF
IN PEBBLE, COBBLE, BOUNDR

IN 033B
6/25/93
D. MUNSON



IN 033B
6/25/93
D MUNSON

1993 Surface Oil Summary
Segment IN033 Subdivision B

Location	Area of Oiling Type in Square Meters				
	AP	MS	SOR	CV	CT
A	0.	0.	0.475	0.	0.
B	29.4	0.	29.4	0.	0.
C					
D	0.	0.	0.0855	0.	0.
E	0.	3.	15.	0.	15.
F	0.	0.	3.15	0.	0.
G	0.027	0.	0.027	0.	0.
H					
TOTALS=	29.427	3.	48.1375	0.	15.

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 IN033B

Loc.	1993 PIT #	Gr. Sz.	Zn.	En.	Note	TREATMENT		1993 OILED SED. VOL. (m3)					1992 OILED SED. VOL. (m3)					1991 OILED SED. VOL. (m3)					WT.'ed OIL VOL.			% CHANGE WT.'ed VOL.		
						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	1-4	RBCP-PG	UM	H		MT, Rs	MT, SR	1.9	0.6	0.5	0.0	0.0	0.0	0.0	0.2	0.0	0.0	?	?	?	?	?	13.5	0.7	?	1781.3	?	?
ZB		BC-PGCSR	U	M			NO	0.0	0.0	0.0	0.0	0.0	3.5	0.0	0.0	0.0	0.0	?	?	?	?	?	0.0	17.5	?	-100.0	?	?
TOTALS=								1.9	0.6	0.5	0.0	0.0	3.5	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.5	18.2	0.0	-25.7	Inf	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.



5-35

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 06/25/93 TIME: -0-

SEGMENT: IN033

STATION: -0-

LOCATION: INGOT ISLAND

KEYWORD: -0-

REASON FOR TAKING PHOTO: OVERVIEW OF BEACH BOULDER FIELD
LOOKING SOUTH.

TAKEN BY: MARIANNE PROFITA

INITIALS: _____

ROLL #: 93MSP005

FRAME #: 34

EVIDENCE ID#: _____

Taken by: _____

Roll #: 93MSP005

Frame #: 34

Roll #: 93MSP005 Frame #: 33

Taken by: _____

ROLL #: 93MSP005 FRAME #: 32 EVIDENCE ID#: _____

INITIALS: _____

TAKEN BY: MARIANNE PROFITA

BOULDER/COBBLE-SUBSURFACE OILING OP.

REASON FOR TAKING PHOTO: SOR BETWEEN

KEYWORD: -0-

LOCATION: INGOT ISLAND

STATION: -0-

SEGMENT: IN033

OFFICE: ANCHORAGE DATE: 06/25/93 TIME: -0-

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

22-5

5-37

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 06/25/93 TIME: -0-

SEGMENT: IN033

STATION: -0-

LOCATION: INGOT ISLAND

KEYWORD: -0-

REASON FOR TAKING PHOTO: OVERVIEW OF SEGMENT LOOKING SOUTH.

TAKEN BY: MARIANNE PROFITA

INITIALS: _____

ROLL #: 93MSP005

FRAME #: 35

EVIDENCE ID#: _____

Taken by: _____

Roll #: 93MSP005

Frame #: 35

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 06/25/93 TIME: -0-

SEGMENT: IN033

STATION: -0-

LOCATION: INGOT ISLAND

KEYWORD: -0-

REASON FOR TAKING PHOTO: PHOTO SHOWING SUBSURFACE OILING
CONDITIONS UNDER AP/SOR.

TAKEN BY: MARIANNE PROFITA

INITIALS: _____

ROLL #: 93MSP005

FRAME #: 33

EVIDENCE ID#: _____

Taken by: _____

Roll #: 93MSP005

Frame #: 33

22-5



5-31

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 06/25/93 TIME: -0-

SEGMENT#: IN033

STATION#: -0-

LOCATION: INGOT ISLAND

KEYWORDS: -0-

REASON FOR TAKING PHOTO: MS/OP UNDER BEDROCK CLIFF OVERHANG IN BOULDER/COBBLE.

TAKEN BY: MARIANNE PROFITA INITIALS: _____
ROLL #: 93MSP005 FRAME #: 30 EVIDENCE ID#: _____Taken by: M. ProfitaRoll #: 93MSP005 Frame #: 30

5-25

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 06/25/93 TIME: -0-

SEGMENT#: IN033

STATION#: -0-

LOCATION: INGOT ISLAND

KEYWORDS: -0-

REASON FOR TAKING PHOTO: OVERVIEW OF AREA CONTAINING MOUSSE/OP UNDER BOULDER/COBBLE.

TAKEN BY: MARIANNE PROFITA INITIALS: _____
ROLL #: 93MSP005 FRAME #: 27 EVIDENCE ID#: _____Taken by: M. ProfitaRoll #: 93MSP005 Frame #: 27

5-32

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 06/25/93 TIME: -0-

SEGMENT#: IN033

STATION#: -0-

LOCATION: INGOT ISLAND

KEYWORDS: -0-

REASON FOR TAKING PHOTO: PHOTO SHOWING OILING CONDITION IN BOULDER/COBBLE UNDER BEDROCK OVERHANG.

TAKEN BY: MARIANNE PROFITA INITIALS: _____
ROLL #: 93MSP005 FRAME #: 31 EVIDENCE ID#: _____Taken by: M. ProfitaRoll #: 93MSP005 Frame #: 31

5-26

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 06/25/93 TIME: -0-

SEGMENT#: IN033

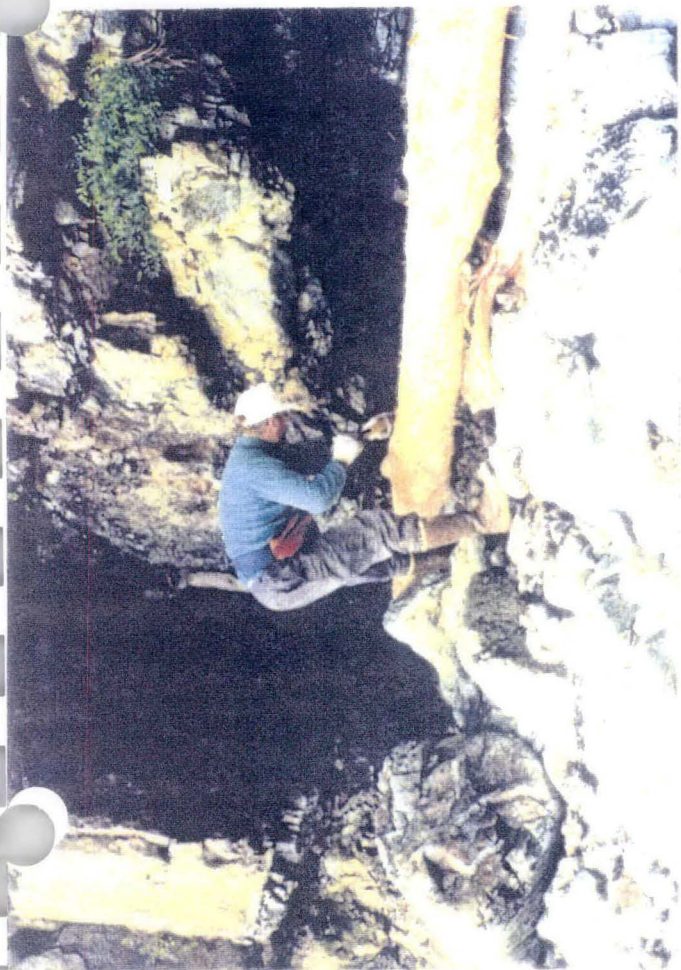
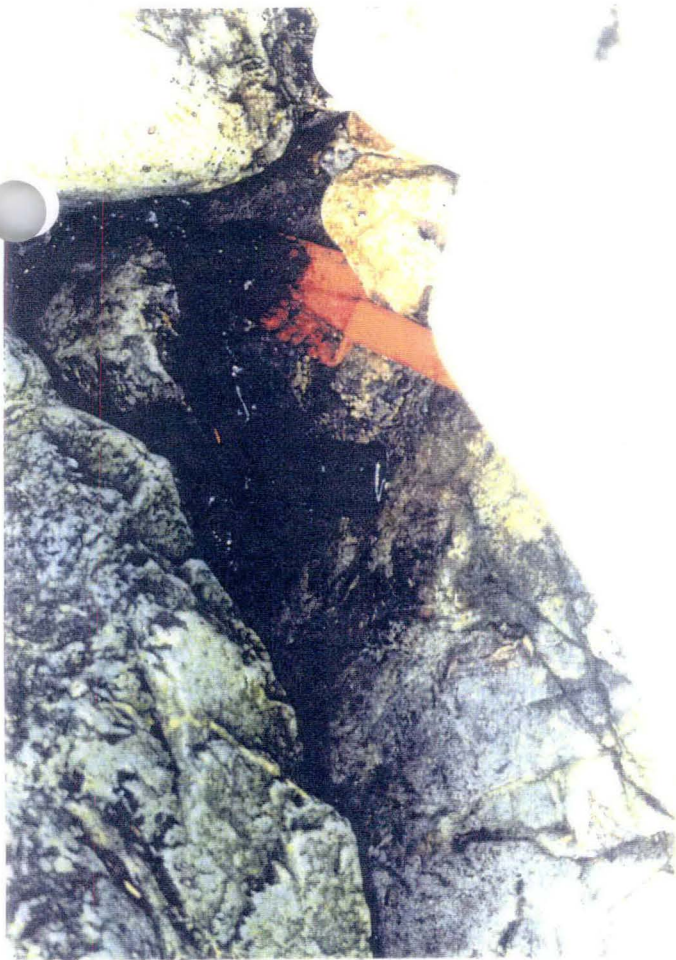
STATION#: -0-

LOCATION: INGOT ISLAND

KEYWORDS: -0-

REASON FOR TAKING PHOTO: MS/OP UNDER BOULDER/COBBLE.

TAKEN BY: MARIANNE PROFITA INITIALS: _____
ROLL #: 93MSP005 FRAME #: 28 EVIDENCE ID#: _____Taken by: M. ProfitaRoll #: 93MSP005 Frame #: 28



5-

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 06/25/93 TIME: -0-

SEGMENT: IN033 STATION: -0-
 LOCATION: INGOT ISLAND
 KEYWORD: -0-
 REASON FOR TAKING PHOTO: MOUSSE RUNNING OUT FROM UNDER LARGE BOULDERS.

TAKEN BY: MARIANNE PROFITA INITIALS: _____
 ROLL #: 93MSP005 FRAME #: 23 EVIDENCE ID#: _____

Taken by: M. Profita

Roll #: 93MSP005 Frame #: 23

5-26

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 06/25/93 TIME: -0-

SEGMENT: IN033 STATION: -0-
 LOCATION: INGOT ISLAND
 KEYWORD: -0-
 REASON FOR TAKING PHOTO: OVERVIEW OF BEDROCK OVERHANG CONTAINING MOUSSE/OP UNDER BOULDER/COBBLE.

TAKEN BY: MARIANNE PROFITA INITIALS: _____
 ROLL #: 93MSP005 FRAME #: 26 EVIDENCE ID#: _____

Taken by: M. Profita

Roll #: 93MSP005 Frame #: 26

5-19

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 06/25/93 TIME: -0-

SEGMENT#: IN033 STATION#: -0-
 LOCATION: INGOT ISLAND
 KEYWORDS: -0-
 REASON FOR TAKING PHOTO: MOUSSE UNDER AND AROUND LARGE BOULDERS.

TAKEN BY: MARIANNE PROFITA INITIALS: _____
 ROLL #: 93MSP005 FRAME #: 19 EVIDENCE ID#: _____

Taken by: M. Profita

Roll #: 93MSP005 Frame #: 13 18 19

5-21

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 06/25/93 TIME: -0-

SEGMENT: IN033 STATION: -0-
 LOCATION: INGOT ISLAND
 KEYWORD: -0-
 REASON FOR TAKING PHOTO: PIT DRAWN ON LOG AS PIT LOCATOR. NOT WRITTEN BY ADEC PERSONNEL.

TAKEN BY: MARIANNE PROFITA INITIALS: _____
 ROLL #: 93MSP005 FRAME #: 22 EVIDENCE ID#: _____

Taken by: M. Profita

Roll #: 93MSP005 Frame #: 22

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100.

SEGMENT: KN 024 A

LOCATION: Bay of Isles Group, Knight Island, northwest shore of Short Arm.

OTHER STUDIES

PHYSICAL SETTING

Coastal Morphology and Sedimentology

Two sites were surveyed in 1993. Site 'A' is a small, high-angle, pocket beach with angular pebbles, cobbles, and boulders on the surface and a fine-grained organic matrix in the subsurface. Drift logs are present in the upper and supra intertidal zones, but no well defined berms exist. Site 'B' is also a small pocket beach with a small intermittent stream forming a poorly defined channel down the center of the beach. Sediments at site 'B' are finer grained than at site 'A' and consist of angular cobbles and pebbles flanked by areas of bedrock and boulders on each side.

Environmental Sensitivity Index (ESI)

Type 7; gravel beach.

Fetches and Directions (kilometers)

NE= 4

Energy Level

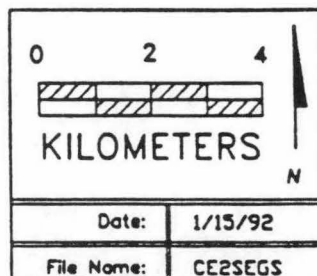
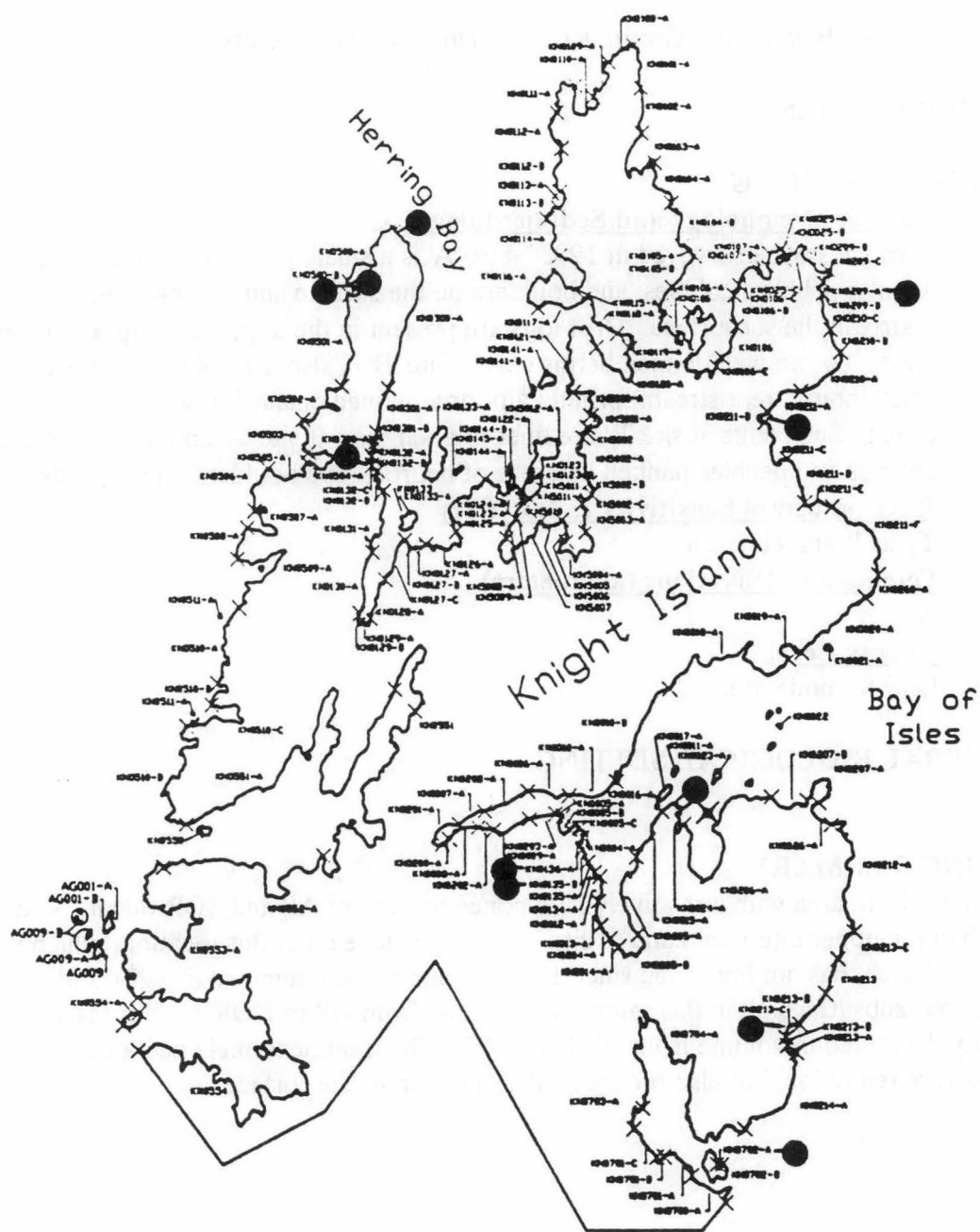
Low to moderate.

GENERAL BIOLOGICAL SETTING

Eagle nest.

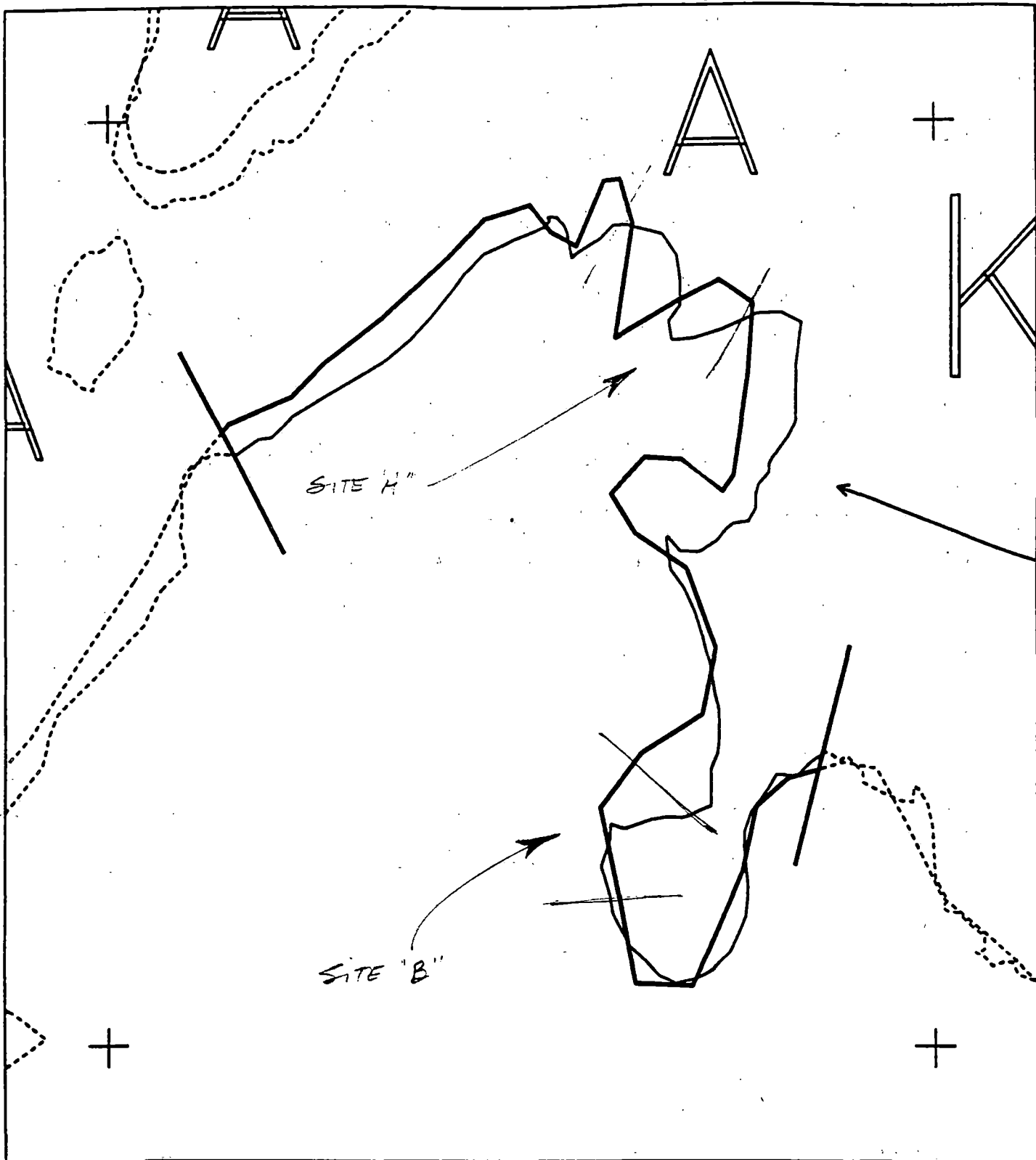
OILING SUMMARY

A 3 m by 14 m area with a relatively high concentration of AP and SOR occurs across the beach in the upper intertidal zone of site 'A'. The surface oil at this location, which is a boulder beach, has not improved since 1991 despite manual removal in 1991 and 1992. However, subsurface oil in this same area reduced from OP to HOR conditions and greatly decreased in volume from 1991 to 1993. The treatment likely had an effect on this subsurface reduction, but also brought subsurface oil to the surface.



Prince William Sound
Central area #2
Beach Sub-Segment Map
Map Projection: UTM, Zone 6

— Beach Segments
X Subdivision Endticks



XXXX
 ////

 TTTT
 0000

Wide
 Medium
 Narrow
 Very Light
 No Oil

KN0024 A

ADEC Subsegment Length: 1502m

METERS

0 100 200

AK State Plane Zone 4
 kn0024a



Subdivision Field Map

Map Key: KNIK0024A

Name: _____

Date: _____

Data Entered: _____

1993 ADEC RESTORATION PROJECT #930380
SHORELINE SURVEY COMMENT SHEET

BAY OF ISLES

LOCATION KNIGHT IS. SEGMENT KN024 SUBDIVISION A DATE 7/19/93

AFFILIATION ADNR, DIV. OF LAND

NAME KATIE FARLEY

SIGNATURE

Kathleen M Farley

When further habitat restoration is done for any site in this vicinity, all sites with oil $\geq$ MOR should be restored at Bay of Isles because of its significant recreation, fishery and aesthetic values to the public. The oiled areas ($\leq$ MOR) are contained so that additional clean-up is attainable while minimizing the crew's transportation costs by staging out of the bay with access to several sites. Site "B" is an excellent anchorage and camping site for boaters.

AFFILIATION USCG/DIT

NAME Phil Means

SIGNATURE

Phil Means

Agree with Shoreline Oiling Summary as written. Manual break-up of small AP for enhanced degradation not expected to result in release.

AFFILIATION

NAME

SIGNATURE

AFFILIATION

NAME

SIGNATURE

PAGE 1 OF 3

SUBDIVISION A

MEMBERS: D. Munson - J Matthews - W Evans - A DEC
Katie Farley - ADNR, Phil Means - USCG
Ed Owens - Sam Stoker - Exxon

TIME 17 : 50 to 20 : 25

TIDE LEVEL $+5.0$ ft. to $+1.8$ 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

F. T. OIL CATEGORY LENGTH: H_____m M_____m L_____m VL_____m N_____m NS_____m

DISTRIBUTION: C = 61-100%; S = 51-60%; P = 11-50%; B = 1-10%; T = <1%

LOPE: V = VERTICAL: H = HIGH ANGLE: M = MEDIUM ANGLE: L = LOW ANGLE PHOTO ROLL #

FRAMES

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

PAGE 2 OF 3

SEGMENT KNO2A

SUBDIVISION A

DATE 07/19/98

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

This site is high/sub angular Boulders/Cobbles; oiling is sporadic AP/SOR in a 3x14 m band in upper intertidal zone - interstitially located. Subsurface oil is discontinuous (no lens evident). Cuscuta-like pellets visible on both site A + B.

1750-1930

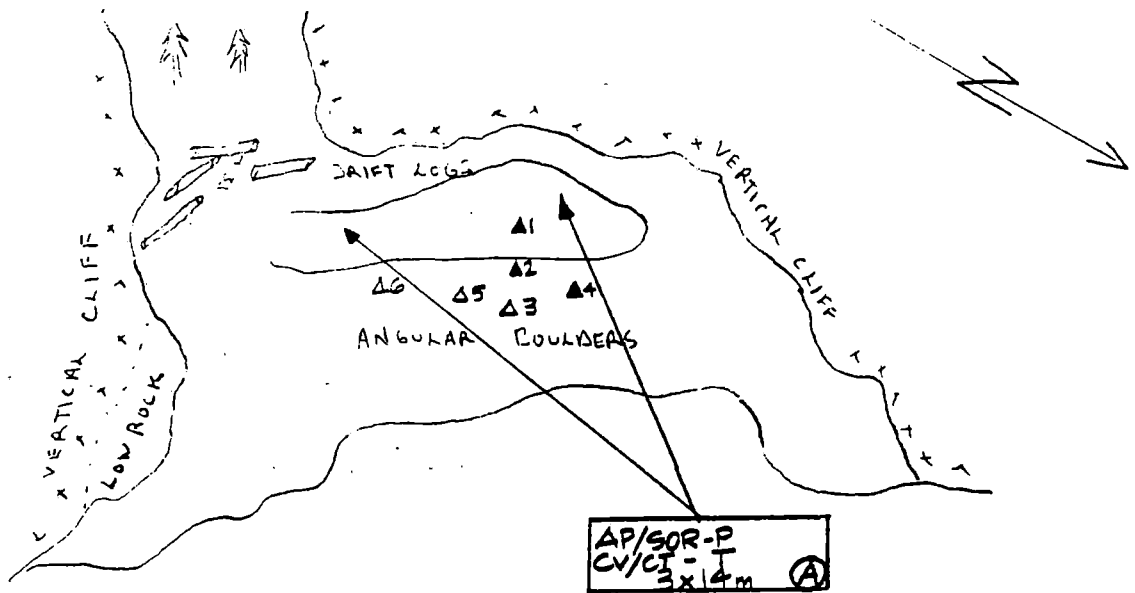
SITE A

7-19-93

1750-2025

Munson/Mathews

page 3 of 3



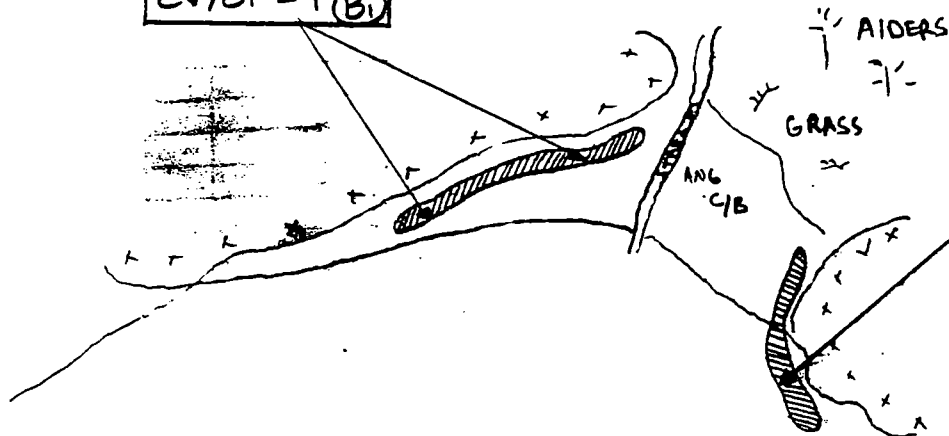
1945-2025

SITE B

AP/SOR-T 1x20
CV/CT-T (B1)

N

SOR-T
CV/CT-T
1x26m (B2)



1993 Surface Oil Summary
Segment KN024 Subdivision A

| Location | Area of Oiling Type in Square Meters | | | | |
|----------|--------------------------------------|----|-------|------|------|
| | AP | MS | SOR | CV | CT |
| A | 12.6 | 0. | 12.6 | 0.21 | 0.21 |
| B1 | 0.1 | 0. | 0. | 0.1 | 0.1 |
| B2 | 0. | 0. | 0.13 | 0.13 | 0.13 |
| TOTALS= | 12.7 | 0. | 12.73 | 0.44 | 0.44 |

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 KNO24A

| | | | | | | 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 | 1,2,4-6 | BCP-PGS | UM | M | | Rs,MR | Rs,Rb,MT | 0.0 | 0.7 | 1.1 | 0.0 | 1.0 | 0.0 | 0.0 | 0.4 | 0.0 | 0.0 | 15.0 | 7.5 | 0.0 | 0.0 | 0.0 | 6.1 | 1.2 | 105.0 | 408.3 | -98.9 | -94.2 |
| | | | | | | TOTALS= | | 0.0 | 0.7 | 1.1 | 0.0 | 1.0 | 0.0 | 0.0 | 0.4 | 0.0 | 0.0 | 15.0 | 7.5 | 0.0 | 0.0 | 0.0 | 6.1 | 1.2 | 105.0 | 408.3 | -98.9 | -94.2 |

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: July 19, 1993 Time: 17:55 (5:55 pm)

Location (segment #): KN24A Site A

Reason for taking photo: HOR Pit 1

Taken by: L.J. Evans *LJE*

Roll #: LJE002 Frame #: 022

OFFICIAL PHOTOGRAPH ADEC

Date: July 19, 1993 Time: 17:48 (5:48 pm)

Location (segment #): KN24A Site A

Reason for taking photo: Overview towards Southeast

Taken by: L.J. Evans *LJE*

Roll #: LJE002 Frame #: ~~020~~ 020

OFFICIAL PHOTOGRAPH ADEC

Date: July 19, 1993 Time: 18:00 (6:00 pm)

Location (segment #): KN24A Site A

Reason for taking photo: Pit 2

Taken by: L.J. Evans *LJE*

Roll #: LJE002 Frame #: 024

OFFICIAL PHOTOGRAPH ADEC

Date: July 19, 1993 Time: 17:58 (5:58 pm)

Location (segment #): KN24A

Reason for taking photo: Diane Munson at Pit 2

Taken by: L.J. Evans *LJE*

Roll #: LJE002 Frame #: 023



OFFICIAL PHOTOGRAPH ADEC

Date: July 19, 1993 Time: 18:58 (6:58 pm)

Location (segment #): KN24A Site B

Reason for taking photo: Overview, looking
N from edge of lagoon towards (up)
stream

Taken by: L.J. Evans *LJE*

Roll #: LJE002 Frame #: 025

SEGMENT: KN 132 B

LOCATION: Knight Island North Group, west coast of Herring Bay, Knight Island.

OTHER STUDIES

PHYSICAL SETTING

Coastal Morphology and Sedimentology

Pocket beach with a long west limb and a stream delta with sandy, granular banks and pebbly tidal flats. The stream is bounded on the west by a granular beach that grades along shore to a pebble cobble beach and then to a mostly boulder beach. The stream is banked by a rocky headland to the west.

Environmental Sensitivity Index (ESI)

Type 7; gravel beach.

Type 8; sheltered rocky.

Type 9; sheltered tidal flat.

Fetches and Directions (kilometers)

NNE= 55

Energy Level

Low to moderate

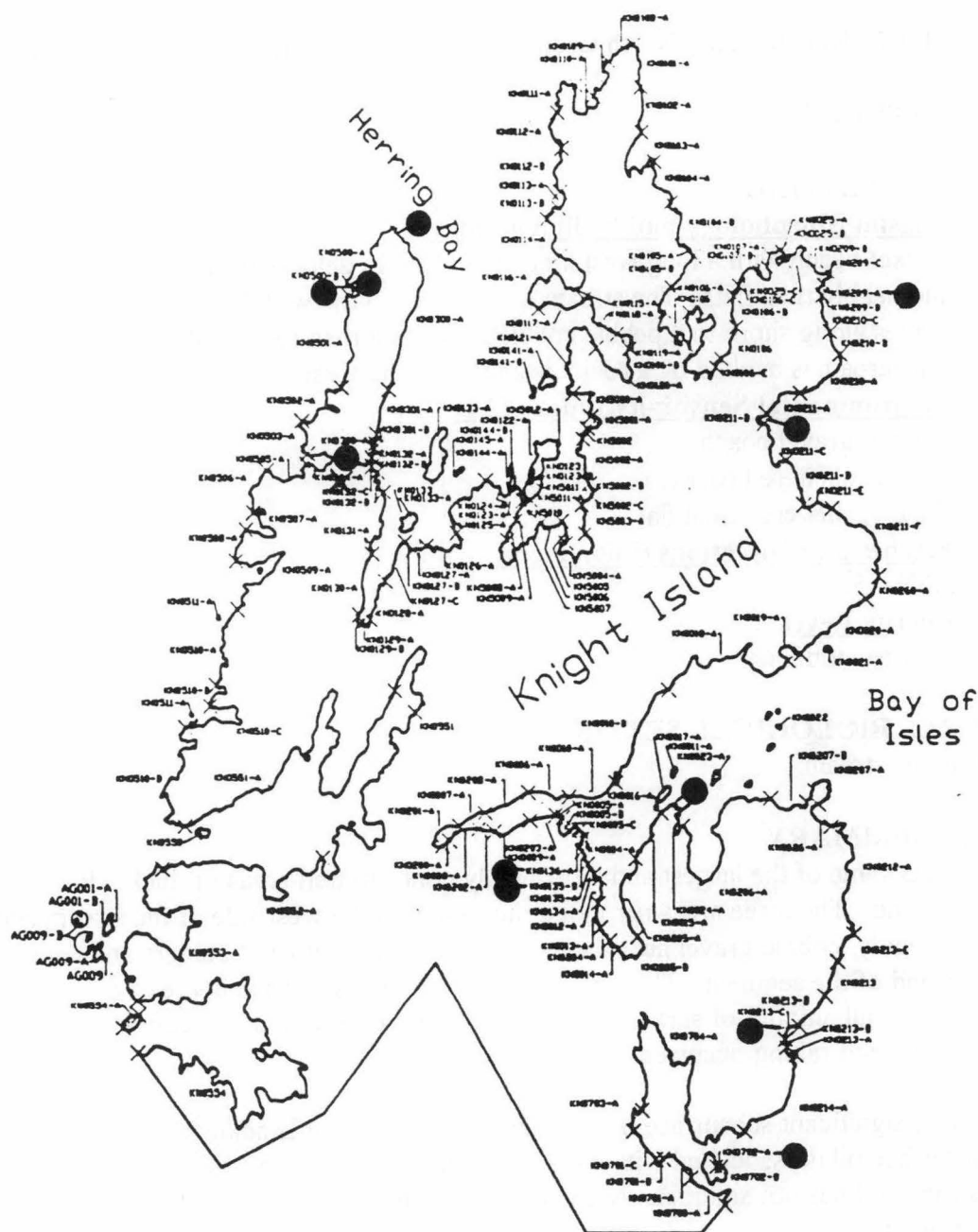
GENERAL BIOLOGICAL SETTING

Anadromous stream.

OILING SUMMARY

This site has some of the largest and most highly concentrated areas of thick AP in Prince William Sound. The three areas run along the beach on the west side of the stream and occur on pebbly, cobble gravel near the stream and interstitially in boulders and cobbles on the north end of the segment. The amount of SOR appears to have decreased since 1991 as has the overall amount of surface oil. Manual removal and tilling occurred in 1991 and manual tilling and raking occurred in 1992.

One area of significant subsurface oil remained in 1993, and it is adjacent to the stream. The subsurface oil is associated with surface AP in a portion of location 'A'. The amount of subsurface oil has not significantly decreased and the oiling category has remained as MOR or greater.



| | |
|---|---------|
| <div> <div>0 2 4</div> <div> <div></div> <div></div> <div></div> </div> <div>KILOMETERS</div> <div>N</div> </div> | |
| Date: | 1/15/92 |
| File Name: | CE2SEGS |



Prince William Sound
 Central area #2
 Beach Sub-Segment Map
 Map Projection: UTM, Zone 6

- Beach Segments
- Subdivision Endticks

NOTE:

ADEC SHORLINE DOES
NOT REFLECT TRUE
NATURE OF OILING
EXTENT

B

1993 RESTORATION
Survey covered
ENTIRE Subdivision
SEE SKETCH FOR
oiling distribution

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

KN0132 B
ADEC Subsegment Length: 170m
METERS

AK State Plane Zone 4
14N0132b

Subdivision Field Map

Map Key: KNIK0132B

Name: Reimer

Date: 5/31/92

Date Entered:



1993 ADEC RESTORATION PROJECT #930380
SHORELINE SURVEY COMMENT SHEET

LOCATION HERRING BAY SEGMENT KN0132 SUBDIVISION B DATE 6/22/93

AFFILIATION DNR

NAME Wyn Manofee

SIGNATURE

Wyn Manofee

2 K. H. crabs present + defending territory. Anadromous stream. Mussel beds have no o.s. The large areas of asphalt could be broken up with a couple of people with 2 low tide cycles. Possible beach for a chemical that would remove asphalt from rocks - like AES 5'.

ADFG Fish camp is cleaned up. Possible recreational camp use now.

AFFILIATION

NAME IVAN NANCE, LT, USCGR

SIGNATURE

I Nance

PATCHY AD IN AREA A WAS TREATED LAST YEAR IN FINSAP, IT IS SURPRISING THAT IT IS AS EVIDENT AS IT IS THIS YEAR.

AFFILIATION U.S. Forest Service

NAME Vic Baer

SIGNATURE

Vic Baer

Asphalt could be treated by break-up in area A, this material is on or close to surface.

ADFG ~~camp~~ has been cleaned up, but two fire pits need ~~to be~~ nonburnables cleaned up (nails, etc.)

AFFILIATION

NAME

SIGNATURE

1993 ADEC RESTORATION PROJECT # 930380

SHORELINE OILING SUMMARY

PAGE 1 OF 3

SEGMENT KNO132B

SUBDIVISION B

DATE 6/22/93

TEAM MEMBERS: ERNIE PAPER-ADEC, MARIANNE PROFITA-ADEC
DIANNE MUNSON-ADEC
VIC PACE-USFS
WYN MENEFEE-ADNR
IVAN NANCE-USCG

TIME 08:25 to 10:05 TIDE LEVEL -2.0 ft. to -2.7 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

| | SURFACE OIL CHARACTER | | | | | | | | | | SURFACE SEDIMENT | SHORE SLOPE | AREA | | ZONE | | | | NOTES |
|---|-----------------------|----|----|-----|----|----|----|----|----|----|------------------|-------------|-------|--------|------|----|----|----|-----------|
| | AP | MS | TB | SOR | CV | CT | ST | FL | DB | NO | TYPE | VHML | WIDTH | LENGTH | S | UI | MI | LI | |
| | | | | | | | | | | | | | m | m | | | | | |
| A | P | | | | | | | | | | P,C | M | 4 | 145 | | | | | |
| B | B | | | B | | | | | | | R,B,C | H | 1 | 1 | | | | | BROKEN UP |
| C | T | | | T | | | | | | | R,B | H | 1 | 40 | | | | | |
| D | P | | | | | P | | | | | R,B,C | L | 3 | 23 | | | | | |
| E | P | | | | | | | | | | B,C,P | M | 2 | 9 | | | | | |
| F | S | | | | | | | | | | B,C,P | H | 4 | 60 | | | | | |
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DISTRIBUTION: C = 61-100%; B = 61-80%; P = 11-60%; S = 1-10%; T = <1%

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

| PIT O. 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 29 | | | | | | | | 3-8 | Y | - | - | | | | | P/P, S | |
| 2 15 | | | | | | | | 1-8 | Y | - | - | | | | | P/P, S | |
| 3 18 | | | | | | | | 1-15 | Y | - | - | | | | | P/P, S | |
| 4 15 | | | | | | | | 2-7 | Y | - | - | | | | | P/P, S | |
| 5 30 | | | | | | | | 1-28 | Y | - | - | | | | | P/P, S | |
| 6 18 | | | | | | | | 1-8 | Y | - | - | | | | | B, P/P, S | |

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

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

PAGE 1 OF 1

TEAM NO. _____

SEGMENT KN132

SUBDIVISION B

DATE / / 93

[illegible]

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

OG COMMENTS:

- 2 KITTIWAKES DEFENDING
- 2 OYSTER CATCHERS

① AP / HARD, FRIABLE
145 X 4 METERS
PATCHY, 3 - 10CM IN THICKNESS
AP FROM STREAM TO AREA ②
WHERE LARGER BOULDERS BEGIN.

(D) AP / HARD, FRIABLE
INTERSTITIAL AMONGST
BOULDER, COBBLE, ROCK
5-14 CM IN THICKNESS.
CT WITH SPRUCE NEEDLES
ON LARGE ROCK AND ON
BOULDER, COBBLE.
23 X 3 METERS - PATCHY

Rock said

(F) AP
SPORADIC
INTERSTITIAL AMONGST
BOULDERS / COBBLES
60 X 4 METERS

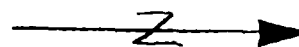
(E) AP
PATCHY
INTERSTITIAL AMONGST
BOULDERS AND UNDER
CLEAN PEBBLES/COBBLES.
9 x 2 METERS

AP/SOR
INTERSTITIAL
UNDER LARGE
BOULDER.
BROKEN UP.
1 X 1 METER

KN132B
6/22/93
D. MUNSON

(C) AP/SOR
TRACE 1740 METERS
IN ROCK OUTCROP
CRACKS, INTERSPERSED
AMONGST ANGULAR BOULDERS

HERRING BAY



1993 Surface Oil Summary
Segment KN132 Subdivision B

| Location | Area of Oiling Type in Square Meters | | | | |
|----------|--------------------------------------|----|-----|----|------|
| | AP | MS | SOR | CV | CT |
| A | 174. | 0. | 0. | 0. | 0. |
| B | 0.7 | 0. | 0.7 | 0. | 0. |
| C | 0.2 | 0. | 0.2 | 0. | 0. |
| D | 20.7 | 0. | 0. | 0. | 20.7 |
| E | 5.4 | 0. | 0. | 0. | 0. |
| F | 14.4 | 0. | 0. | 0. | 0. |
| TOTALS= | 215.4 | 0. | 0.9 | 0. | 20.7 |

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 KN132B

| | | | | | | 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 | 1-5 | P-GSP | U | L | AP ON SURFACE | MT | MT,MR,
Rs,Rb | 0.0 | 2.4 | 0.4 | 1.4 | 0.0 | 0.0 | 0.0 | 5.8 | 2.4 | 0.0 | 0.0 | 0.0 | 4.0 | 2.7 | 0.0 | 13.8 | 22.1 | 17.3 | -37.7 | 27.5 | -20.6 |
| ZB | 6 | BCP-PS | U | L | | MT | MT,MR,
Rs,Rb | 0.0 | 0.3 | 0.0 | 0.0 | 0.0 | ? | ? | ? | ? | ? | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.1 | ? | 0.0 | ? | ? | Inf |
| ZC | | B-PGS | U | L | | MT | MT,MR,
Rs,Rb | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| ZD | | B-GS | U | VL | | MT | MT,MR,
Rs,Rb | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | -100.0 | Inf | 0.0 |
| | | | | | | TOTALS= | | 0.0 | 2.7 | 0.4 | 1.4 | 0.0 | 0.0 | 0.0 | 5.8 | 2.5 | 0.1 | 0.0 | 0.0 | 4.0 | 2.7 | 0.0 | 14.9 | 22.3 | 17.3 | -33.4 | 28.9 | -14.1 |

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: 06/22/93 TIME: 0900

SEGMENT: KN0132

STATION: -0-

LOCATION: Knight Island

KEYWORD: -0-

REASON FOR TAKING PHOTO: Broken up asphalt - same area as photos #22-#24.

TAKEN BY: Marianne Profita

INITIALS: _____

ROLL #: 93MSP002

FRAME #: 26

EVIDENCE ID#: _____

Taken by: _____

Roll #: _____

Frame #: 26

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 06/22/93 TIME: 0900

SEGMENT#: KN0132

STATION#: -0-

LOCATION: Knight Island

KEYWORDS: -0-

REASON FOR TAKING PHOTO: Remaining Asphalt

TAKEN BY: Marianne Profita

INITIALS: _____

ROLL #: 93MSP002

FRAME #: 24

EVIDENCE ID#: _____

Taken by: M. Profita

Roll #: 93MSP002

Frame #: 24

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 06/22/93 TIME: 0900

SEGMENT#: KN0132

STATION#: -0-

LOCATION: Knight Island

KEYWORDS: -0-

REASON FOR TAKING PHOTO: Asphalt patches below large boulders with spruce needles attached.

TAKEN BY: Marianne Profita

INITIALS: _____

ROLL #: 93MSP002

FRAME #: 30

EVIDENCE ID#: _____

Taken by: M. Profita

Roll #: 93MSP002

Frame #: 30

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 06/22/93 TIME: 0900

SEGMENT: KN0132

STATION: -0-

LOCATION: Knight Island

KEYWORD: -0-

REASON FOR TAKING PHOTO: Asphalt patches below large boulders with spruce needles attached (see photo #28)

TAKEN BY: Marianne Profita

INITIALS: _____

ROLL #: 93MSP002

FRAME #: 29

EVIDENCE ID#: _____

Taken by: M. Profita

Roll #: 93MSP002

Frame #: 29



OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 06/22/93 TIME: -0-

SEGMENT#: KN0132

STATION#: -0-

LOCATION: KNIGHT ISLAND

KEYWORDS: -0-

REASON FOR TAKING PHOTO: SPRUCE NEEDLES IN TAR STUCK TO LARGE BOULDERS.

TAKEN BY: MARIANNE PROFITA INITIALS: _____
ROLL #: 93MSP003 FRAME #: 13 EVIDENCE ID#: _____

Taken by: M. Profita

Roll #: 93MSP003 Frame #: 13

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 06/22/93 TIME: -0-

SEGMENT#: KN0132

STATION#: -0-

LOCATION: KNIGHT ISLAND

KEYWORDS: -0-

REASON FOR TAKING PHOTO: ASPHALT WEST SIDE OF STREAM.

TAKEN BY: MARIANNE PROFITA INITIALS: _____
ROLL #: 93MSP003 FRAME #: 12 EVIDENCE ID#: _____

Taken by: M. Profita

Roll #: 93MSP003 Frame #: 12

OFFICIAL PHOTOGRAPH ADEC EXXON VALDEZ OIL SPILL

OFFICE: ANCHORAGE DATE: 06/22/93 TIME: -0-

SEGMENT#: KN0132

STATION#: -0-

LOCATION: KNIGHT ISLAND

KEYWORDS: -0-

REASON FOR TAKING PHOTO: ASPHALT PATCHES BELOW LARGE BOULDERS.
OVERVIEW SPRUCE NEEDLES STUCK ON BOULDER.

TAKEN BY: MARIANNE PROFITA INITIALS: _____
ROLL #: 93MSP003 FRAME #: 14 EVIDENCE ID#: _____

Taken by: M. Profita

Roll #: 93MSP003 Frame #: 14

SEGMENT: KN 135 B

LOCATION: Bay of Isles Group, western shore of South Arm

OTHER STUDIES

ADEC transect station #138.

PHYSICAL SETTING

Coastal Morphology and Sedimentology

Angular boulder and cobble beach that grades along shore to a pebble beach in the vicinity of an intermittent stream. Multiple pebble swash bars are present on the south end of the segment near the poorly defined stream channel. High-tide pebble berms and drift logs are also present.

Environmental Sensitivity Index (ESI)

Type 7; gravel beach.

Fetches and Directions (kilometers)

NE= 5

Energy Level

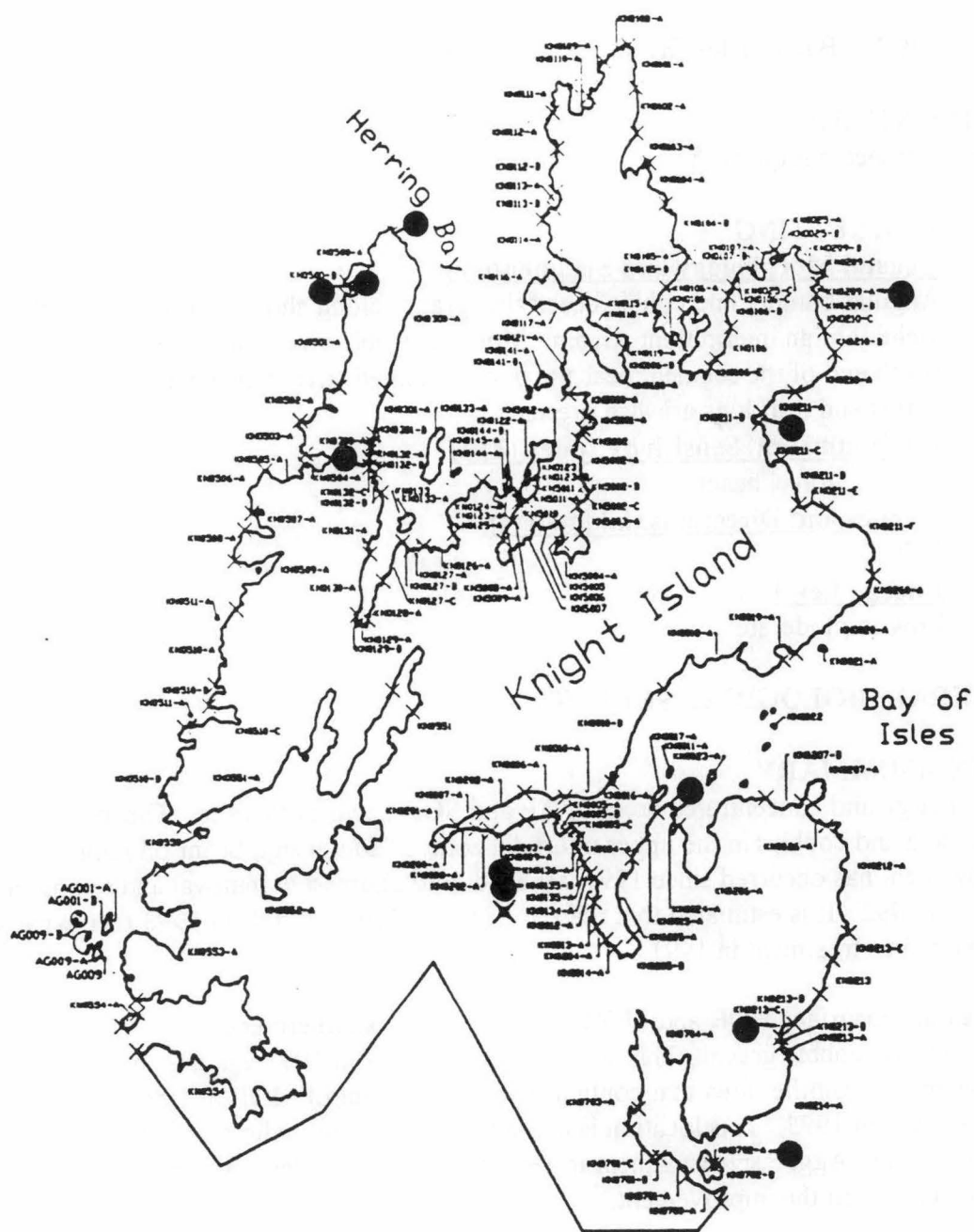
Low to moderate.

GENERAL BIOLOGICAL SETTING

OILING SUMMARY

Several large and concentrated areas of AP and SOR occur at this site. The locations are in boulders and cobbles in the upper intertidal zone. Though significant oil remains much improvement has occurred since 1991 largely due to aggressive removal and raking in 1991 and 1992. It is estimated that there is 80% less AP and SOR in 1993 than what was present before treatment in 1991.

An area of subsurface HOR and MOR is present in the southern end of the segment in sandy, pebbly, cobble gravel. This area was much larger in 1991 and has shown great improvement. Another area that contained a large amount of MOR in 1991 had only a small amount in 1993. This location is in boulder and cobble sediments in the northern half of the site. Aggressive treatment in 1991 that included oiled subsurface sediment removal enhanced the improvement.



0 2 4
KILOMETERS

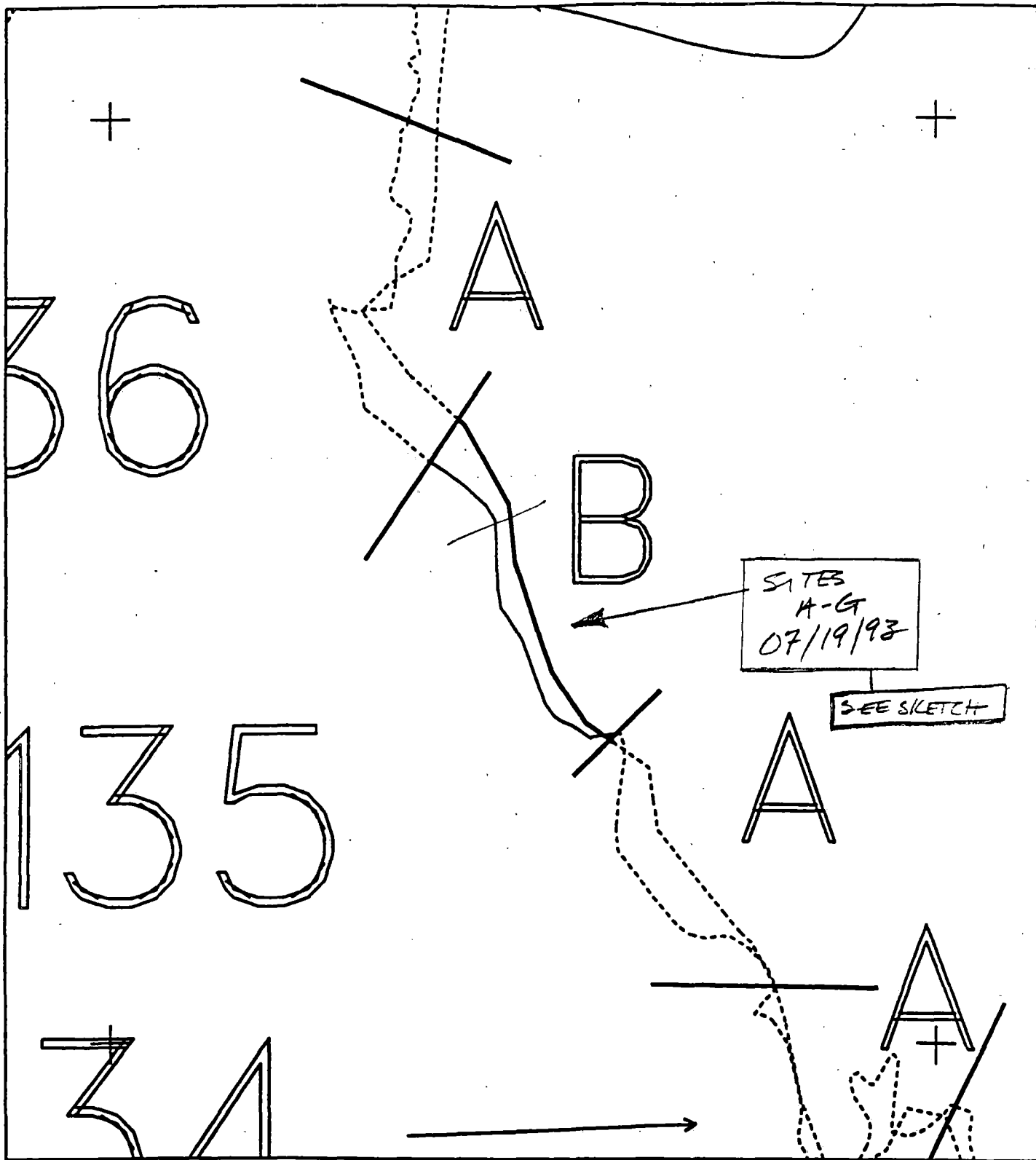


Prince William Sound
Central area #2
Beach Sub-Segment Map
Map Projection: UTM, Zone 6

Date: 1/15/92

File Name: CE2SEGS

— Beach Segments
X Subdivision Endticks



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

KN0135 B
 ADEC Subsegment Length: 265m
 METERS
 5 100 200
 AK State Plane Zone 4
 kha0135b

Subdivision Field Map
 Map Key: KNIKNO135B
 Name: CSC
 Date: 07/19/93
 Date Entered:



1993 ADEC RESTORATION PROJECT #930380
SHORELINE SURVEY COMMENT SHEET

DAY OF ISLES

CATION KNIGHT IS. SEGMENT KN0135 SUBDIVISION B DATE 7/19/93

AFFILIATION ZNR, DIV. OF LAND

NAME KATIE ARLEY SIGNATURE Katie Arley

If further restoration work is conducted at KN0136--
"the infamous estuary" site nearby, the area surrounding pits 9-14 &
Area "G" should be dispersed; and any additional asphalt
found should be broken up.

A sea lion was sighted off-shore from the site.

AFFILIATION DESG/D17

NAME Phil Means SIGNATURE Phil Means

Concur with description of oiled/unoiled areas provided
in Shoreline Oiling Summary. Manual break-up of small AP
for enhanced degradation not expected to result in release.

AFFILIATION

NAME _____ SIGNATURE _____

AFFILIATION

NAME _____ SIGNATURE _____

1993 ADEC RESTORATION PROJECT # 930380

SHORELINE OILING SUMMARY

PAGE 1 OF 2

KNIGHT
ISLAND

SEGMENT KN 0135

SUBDIVISION B

DATE 07/19/93

MEMBERS: D. Munson, E. Piper, J. Matthews, J. Gibeault
W. Evans - ADEC; Phil Means - USGG
Kate Farley - ADNR; E. Owens and
S. Sticker - Exxon

TIME 08:30 to 10:15

TIDE LEVEL 2.0 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

| L | SURFACE OIL CHARACTER | | | | | | | | | | SURFACE
SEDIMENT
TYPE | SHORE
SLOPE
VHML | AREA | | ZONE | | | | NOTES |
|---|-----------------------|----|----|----|----|----|----|----|----|----|-----------------------------|------------------------|------------|-------------|------|----|----|----|-------|
| | AP | MS | TB | SO | CV | CT | ST | FL | DB | NO | | | WIDTH
m | LENGTH
m | S | UI | MI | LI | |
| A | P | | | P | | | | | | | R,B | M | 5 | 19 | | | | | |
| B | | | | | C | C | | | | | R | V | 2 | 25 | | | | | |
| B | | | | | | S | | | | | B,C | M | 9 | 8 | | | | | |
| P | | | | | | | | | | | B,C | M | 4 | 6 | | | | | |
| F | S | | | S | | T | | | | | P,C | M | 2-8 | 40 | | | | | |
| | | | | | | S | | | | | B | M | 4 | 60 | | | | | |
| | | | | T | | T | | | | | R,B | V,H | 4 | 10 | | | | | |

DISTRIBUTION: C = 61-100%; B = 51-60%; P = 11-50%; S = 1-10%; T = <1%

SLOPE: V = VERTICAL; H = HIGH ANGLE; M = MEDIUM ANGLE; L = LOW ANGLE

PHOTO ROLL #

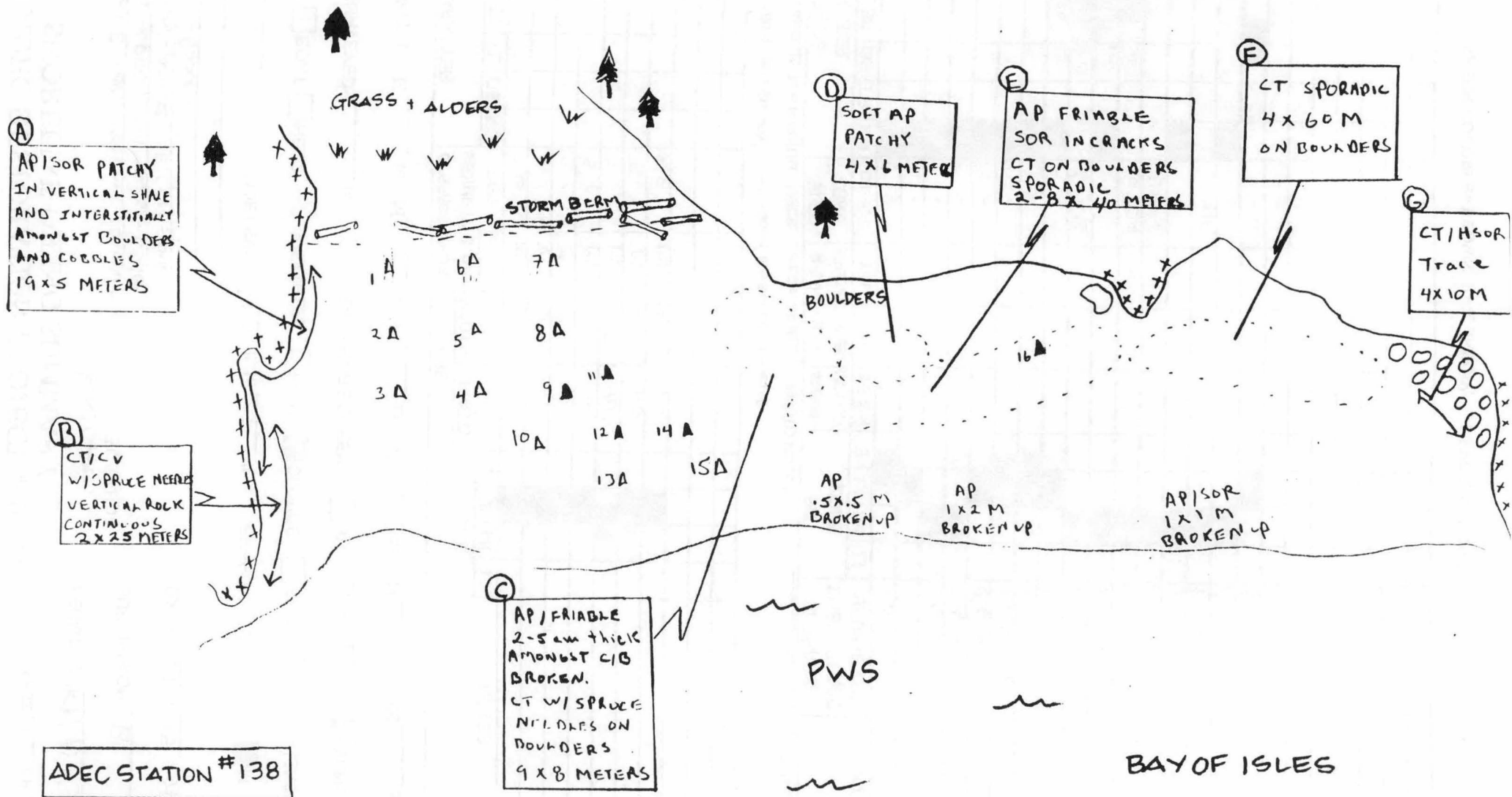
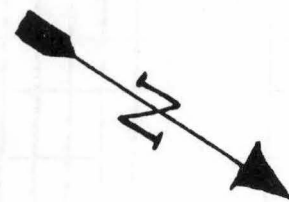
FRAMES

| 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 | 31 | | | | | | | | - | | | | | | | | P.G / P.G | |
| 2 | 26 | | | | | | | | - | | | | | | | | P.G / P.G | |
| 3 | 32 | | | | | | | | - | | | | | | | | P.G / P.G | |
| 4 | 28 | | | | | | | | - | | | | | | | | P.G / P.G | |
| 5 | 27 | | | | | | | | - | | | | | | | | P.G / P.G | |
| 6 | 25 | | | | | | | | - | | | | | | | | P.G / P.G | Rock Below |
| 7 | 30 | | | | | | | | - | | | | | | | | P.G / P.G | |
| 8 | 27 | | | | | | | | - | | | | | | | | P.G / P.G | |
| 9 | 33 | | | | | | | | 6-26 | Y | | | | | | | P.G / P.G | |
| 10 | 24 | | | | | | | | - | | | | | | | | P.G / P.G | |
| 11 | 27 | | | | | | | | 10-27 | N | | | | | | | P.G / P.G | |
| 12 | 28 | | | | | | | | 6-16 | | | | | | | | P.G / P.G | |
| 13 | 25 | | | | | | | | - | | | | | | | | P.G / P.G | |
| 14 | 28 | | | | | | | | 5-18 | | | | | | | | P.G / P.G | |
| 15 | 30 | | | | | | | | - | | | | | | | | P.G / P.G | |
| 16 | 22 | | | | | | | | 1-0 | U | | | | | | | P.G / P.G | |

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

1135 B
07/19/93

D. MUNSON



ADEC STATION #138

BAY OF ISLES

1993 Surface Oil Summary
Segment KN135 Subdivision B

| Location | Area of Oiling Type in Square Meters | | | | |
|----------|--------------------------------------|----|------|------|-------|
| | AP | MS | SOR | CV | CT |
| A | 28.5 | 0. | 28.5 | 0. | 0. |
| B | 0. | 0. | 0. | 47.5 | 47.5 |
| C | 50.4 | 0. | 0. | 0. | 4.32 |
| D | 7.2 | 0. | 0. | 0. | 0. |
| E | 4.8 | 0. | 4.8 | 0. | 0.4 |
| F | 0. | 0. | 0. | 0. | 14.4 |
| G | 0. | 0. | 0.2 | 0. | 0.2 |
| TOTALS= | 90.9 | 0. | 33.5 | 47.5 | 66.82 |

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 KN135B

| Loc. | 1993 PIT # | Gr. Sz. | Zn. | En. | Note | TREATMENT | | 1993 OILED SED. VOL. (m3) | | | | | 1992 OILED SED. VOL. (m3) | | | | | 1991 OILED SED. VOL. (m3) | | | | | WT.'ed OIL VOL. | | | CHANGE WT.'ed VOL. | | |
|---------|------------|----------|-----|-----|------|-----------|------------|---------------------------|-----|-----|-----|-------|---------------------------|-----|-----|-----|-------|---------------------------|------|-------|------|-------|-----------------|------|-------|--------------------|----------|----------|
| | | | | | | 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 | 9,11,12,14 | PC-SG | UML | L | | MR, Rs | MR, Rs, Rb | 0.0 | 3.6 | 7.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.7 | 2.8 | 0.0 | 0.0 | 37.8 | 83.2 | 6.3 | 18.9 | 35.5 | 7.7 | 413.3 | 360.5 | -98.1 | -91.4 |
| ZB | 16 | BCPG-SGR | UM | L | | MR, Rs | MR, Rs, Rb | 0.0 | 0.0 | 0.0 | 0.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 39.6 | 68.6 | 13.2 | 1.7 | 0.0 | 256.1 | Inf | -100.0 | -99.3 |
| TOTALS= | | | | | | | | 0.0 | 3.6 | 7.0 | 0.8 | 0.0 | 0.0 | 0.0 | 0.7 | 2.8 | 0.0 | 0.0 | 37.8 | 122.8 | 74.9 | 32.1 | 37.1 | 7.7 | 669.4 | 382.3 | -98.8 | -94.5 |

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.

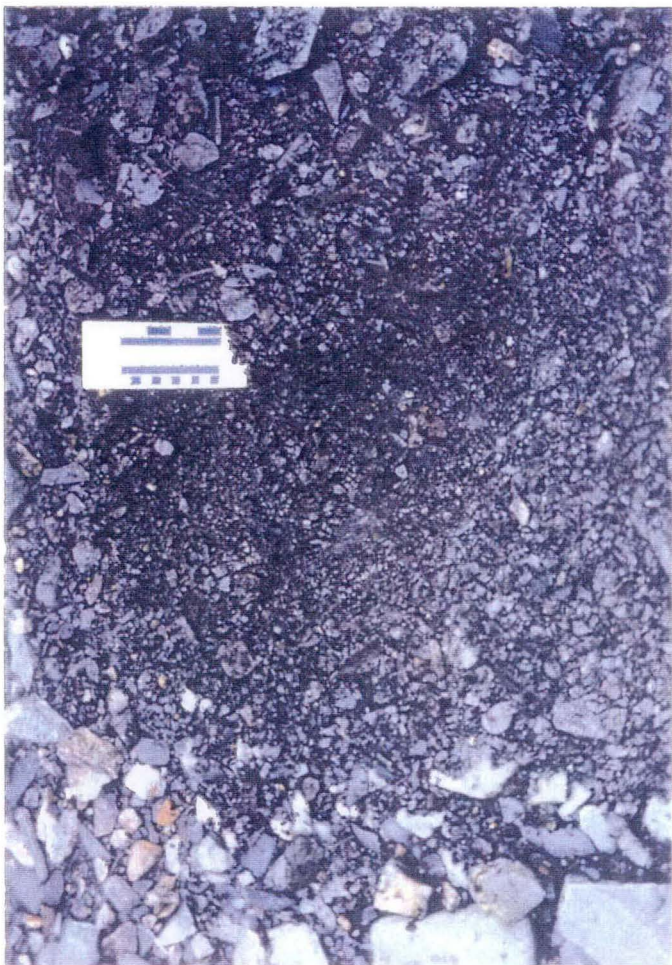
En.= wave-energy level, H= high, M= moderate, L= low, VL= very low.

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 - year 1)/(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: July 19, 1993 Time: 08:45 (8:45 am)

Location (segment #): KN135 Area A

Reason for taking photo: AP/SOR with some disturbance.

Taken by: L.J. Evans *LJE*

Roll #: LJE002 Frame #: 005

OFFICIAL PHOTOGRAPH ADEC

Date: July 19, 1993 Time: 08:41 (8:41 am)

Location (segment #): KN135

Reason for taking photo: Pit 12

Taken by: L.J. Evans *LJE*

Roll #: LJE002 Frame #: 004

OFFICIAL PHOTOGRAPH ADEC

Date: July 19, 1993 Time: 08:55 (8:55 am)

Location (segment #): KN 135 Area A

Reason for taking photo: AP/SOR in vertical shale, after disturbance

Taken by: L.J. Evans *LJE*

Roll #: LJE002 Frame #: 007

OFFICIAL PHOTOGRAPH ADEC

Date: July 19, 1993 Time: 08:50 (8:50 am)

Location (segment #): KN135 Area A

Reason for taking photo: AP/SOR in vertical shale, undisturbed

Taken by: L.J. Evans *LJE*

Roll #: LJE002 Frame #: 006



OFFICIAL PHOTOGRAPH ADEC

Date: July 19, 1993 Time: 09:00 (9:00 am)

Location (segment #): KN135

Reason for taking photo: Coat and cover with
spruce needles in vertical rock face
area

Taken by: L.J. Evans *LJE*

Roll #: LJE002 Frame #: 009

FW LAB 091 11NN 19.---

Top

OFFICIAL PHOTOGRAPH ADEC

Date: July 19, 1993 Time: 08:55 (8:55 am)

Location (segment #): KN135 Area A

Reason for taking photo: AP/SOR in vertical
shale, after disturbance, close-up

Taken by: L.J. Evans *LJE*

Roll #: LJE002 Frame #: 008

OFFICIAL PHOTOGRAPH ADEC

Date: July 19, 1993 Time: 09:15 (9:15 am)

Location (segment #): KN135

Reason for taking photo: Pit #3, Joni
Matthews & Dianne Munson

Taken by: L.J. Evans *LJE*

Roll #: LJE002 Frame #: 011

OFFICIAL PHOTOGRAPH ADEC

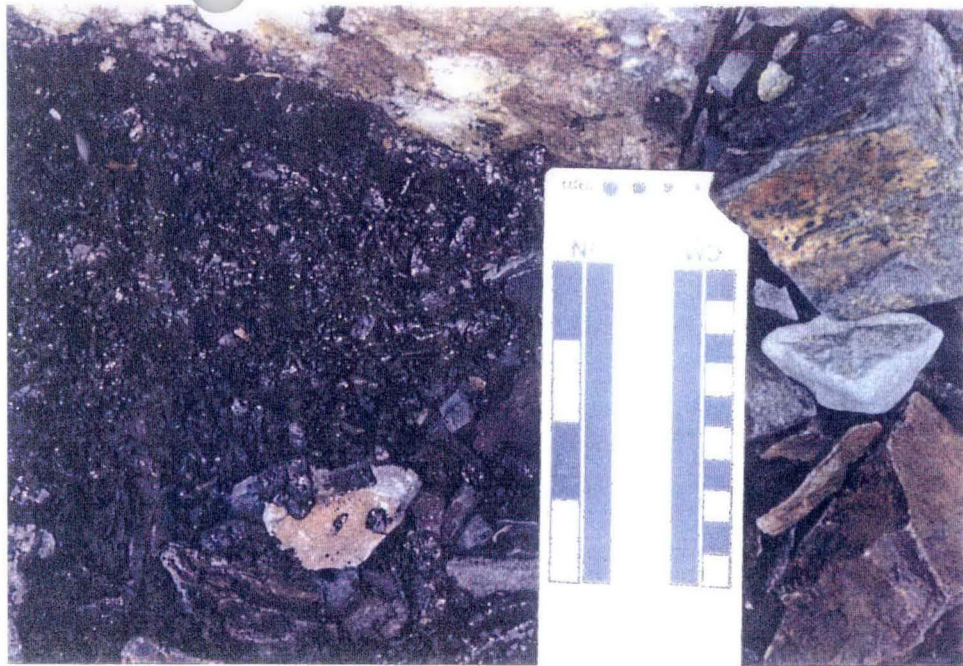
Date: July 19, 1993 Time: 09:00 (9:00 am)

Location (segment #): KN135

Reason for taking photo: Coat and cover with
spruce needles in vertical rock face
area, Dianne Munson

Taken by: L.J. Evans *LJE*

Roll #: LJE002 Frame #: 010



OFFICIAL PHOTOGRAPH ADEC

Date: July 19, 1993 Time: 09:28 (9:28 am)
Location (segment #): KN135 Area B

Reason for taking photo: Interstitial asphalt/
SOR, friable (close-up)

Taken by: L.J. Evans *LJE*
Roll #: LJE002 Frame #: 013

OFFICIAL PHOTOGRAPH ADEC

Date: July 19, 1993 Time: 09:28 (9:28 am)
Location (segment #): KN135 Area B

Reason for taking photo: Interstitial asphalt/
SOR, friable

Taken by: L.J. Evans *LJE*
Roll #: LJE002 Frame #: 012

OFFICIAL PHOTOGRAPH ADEC

Date: July 19, 1993 Time: 09:38 (9:38 am)
Location (segment #): KN135 Area B

Reason for taking photo: SOR, weathered on
top, HSOR (close-up)

Taken by: L.J. Evans *LJE*
Roll #: LJE002 Frame #: 015

OFFICIAL PHOTOGRAPH ADEC

Date: July 19, 1993 Time: 09:37 (9:37 am)
Location (segment #): KN135 Area B

Reason for taking photo: SOR, weathered on top,
HSOR

Taken by: L.J. Evans *LJE*
Roll #: LJE002 Frame #: 014



OFFICIAL PHOTOGRAPH ADEC

Date: July 19, 1993 Time: 10:00 (10:00 am)

Location (segment #): KN135 Area E

Reason for taking photo: HSOR in boulders

Taken by: L.J. Evans *LJE*

Roll #: LJE002 Frame #: 017

OFFICIAL PHOTOGRAPH ADEC

Date: July 19, 1993 Time: 09:35 (9:35 am)

Location (segment #): KN135 Area B

Reason for taking photo: Overview of Area B
(Peter Van Story in frame)

Taken by: L.J. Evans *LJE*

Roll #: LJE002 Frame #: 016

OFFICIAL PHOTOGRAPH ADEC

Date: July 19, 1993 Time: 10:05 (10:05 am)

Location (segment #): KN135

Reason for taking photo: Overview from the
east

Taken by: L.J. Evans *LJE*

Roll #: LJE002 Frame #: 019

OFFICIAL PHOTOGRAPH ADEC

Date: July 19, 1993 Time: 10:00 (10:00 am)

Location (segment #): KN135 Area E

Reason for taking photo: HSOR in boulders

Taken by: L.J. Evans *LJE*

Roll #: LJE002 Frame #: 018

SEGMENT: KN 136 A

LOCATION: Bay of Isles Group, western shore of South Arm.

OTHER STUDIES

ADEC transect station #90.

UAF/TMS intertidal study.

PHYSICAL SETTING

Coastal Morphology and Sedimentology

High-tide lagoon with muddy, organic-rich (peaty) tidal flat. Gravel beach and berm occur in north lagoon entrance.

Environmental Sensitivity Index (ESI)

Type 7; gravel beach.

Type 8; sheltered rocky.

Type 9; sheltered tidal flat.

Fetches and Directions (kilometers)

For the tidal flat the fetch is 0 km.

For the gravel entrance: NE= 5.

Energy Level

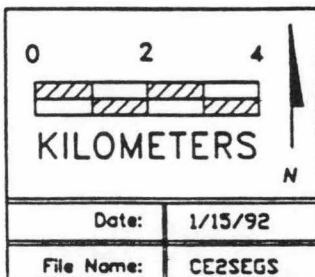
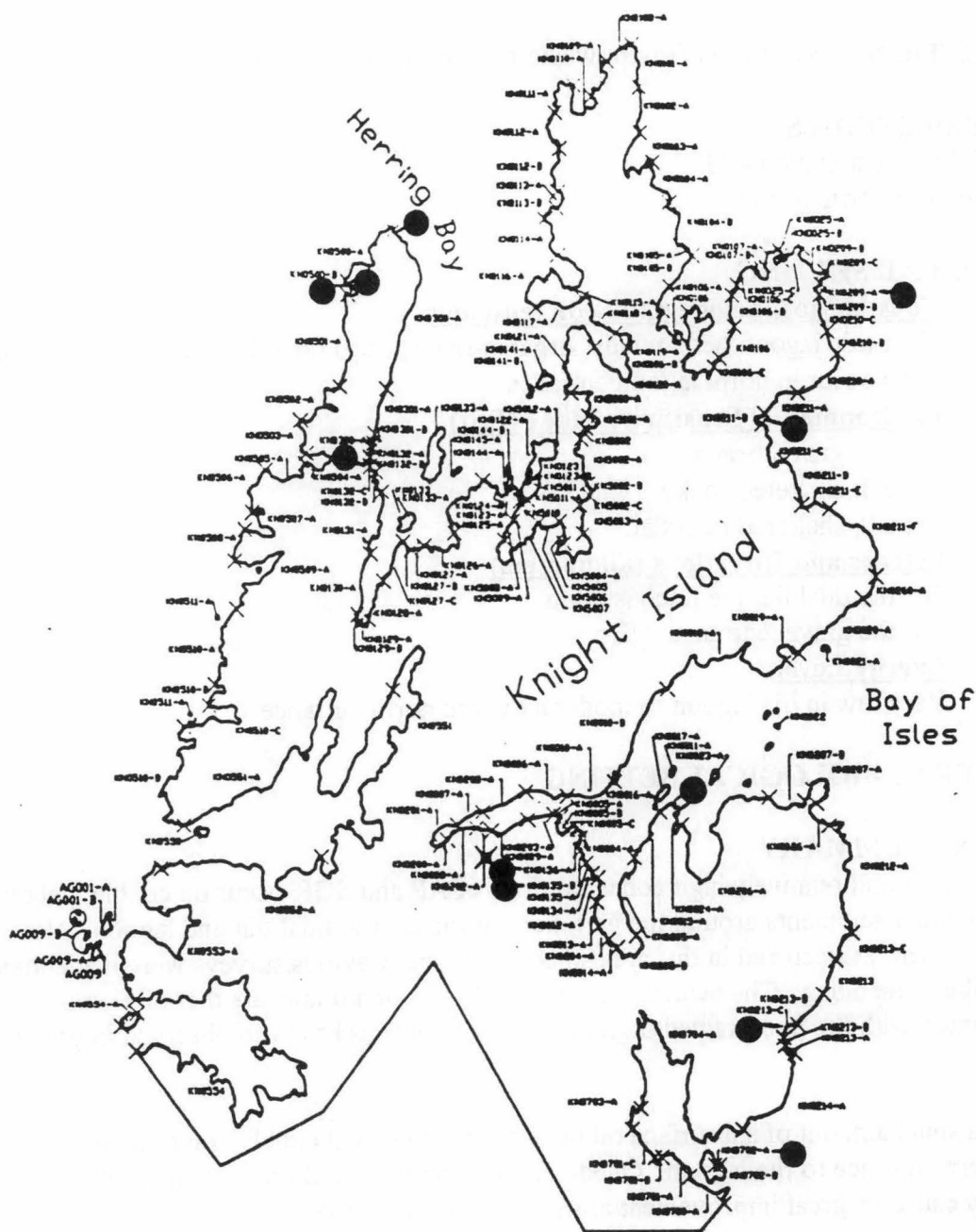
Very low in the lagoon to moderate at the north entrance.

GENERAL BIOLOGICAL SETTING

OILING SUMMARY

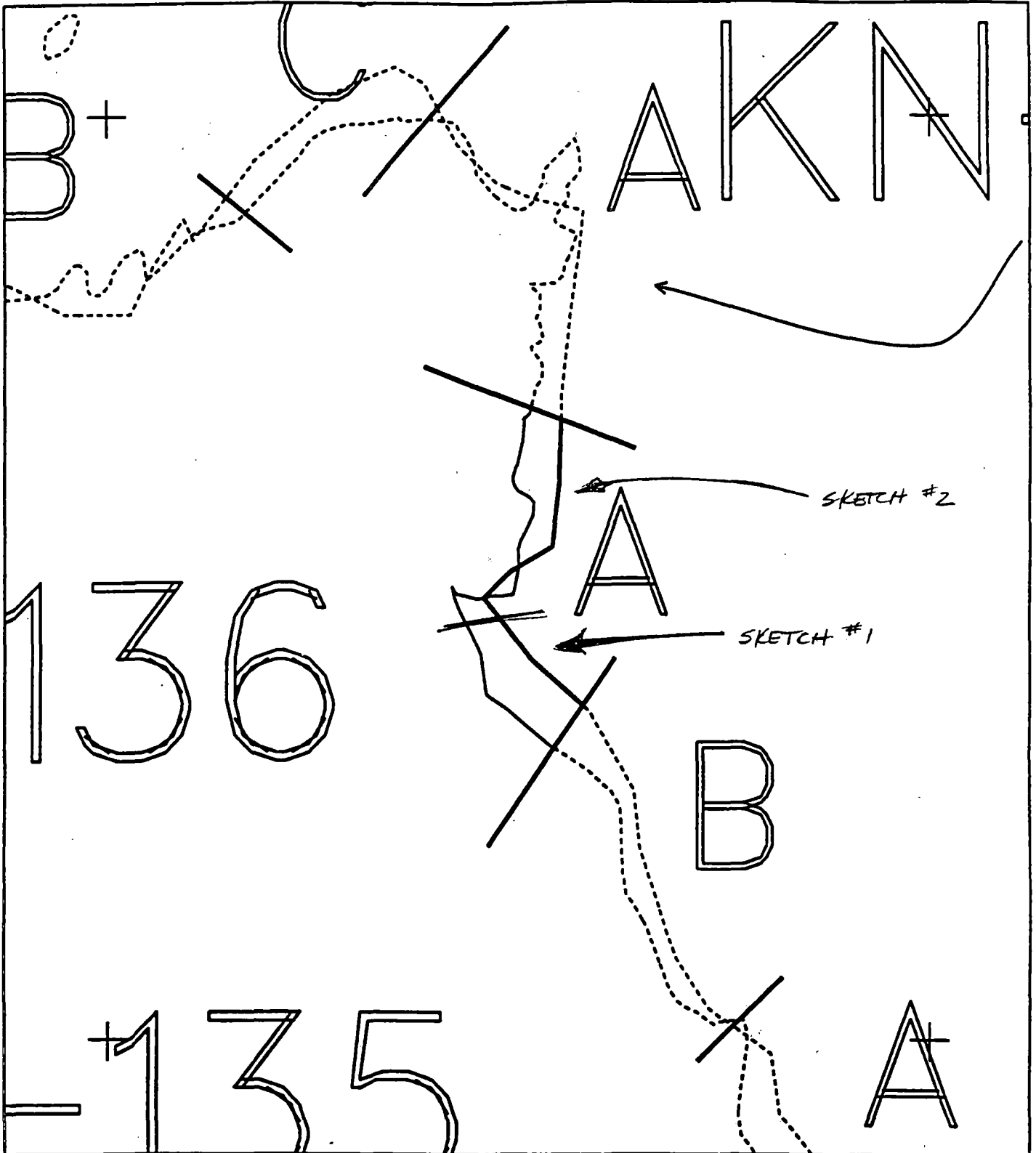
Large areas and relatively high concentrations of AP and SOR occur on cobble, pebble, and granular sediments around the periphery of the central tidal flat and lagoon. No improvement as occurred in this area since 1991, and previous surveys were inadequate in describing the oiling. The central lagoon still sheens, and it appears that oil is still associated with the fine-grained organic-rich sediments as has been observed in previous years.

Only a small amount of subsurface oil persists in pebble and cobble gravel sediments in the northern entrance to the lagoon. Oiled-sediment removal and probably natural wave energy caused a great improvement at this location since 1991.



Prince William Sound
Central area #2
Beach Sub-Segment Map
Map Projection: UTM, Zone 6

— Beach Segments
X Subdivision Endticks



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

KN0136 A
ADEC Subsegment Length: 250m
METERS
AK State Plane Zone 4
kna0136a

Subdivision Field Map
Map Key: KNIK0136A
Name: CAC
Date: 19 July 1993
Date Entered:



1993 ADEC RESTORATION PROJECT #930380
SHORELINE SURVEY COMMENT SHEET

BAY OF ISLES

LOCATION KNIGHT ISL SEGMENT KN0136

SUBDIVISION A

DATE 07/19/93

AFFILIATION DNR DIV OF LANDS

NAME KATIE EARLEY

SIGNATURE

Kathleen M. Earley

It may be of interest to review the data collected by the Institute of Marine Science Intertidal Project (PI. Dr. Ray Hightman) since we were unable to survey and dig pits in the intertidal area. IMS should be consulted as to whether they will continue their intertidal studies; and if they are completed, the rebar should be removed from this site and any others where ^{rebar} was used.

AFFILIATION USCG

NAME Phil Meaney

SIGNATURE

Phil Meaney

Concur with description of oiled/unoiled areas provided in Shoreline Oiling Summary. Manual break-up of small AP for enhanced degradation not expected to result in release.

AFFILIATION

NAME

SIGNATURE

AFFILIATION

NAME

SIGNATURE

SEGMENT KN 0136

SUBDIVISION A

DATE 07 / 19 / 93

MEMBERS: E. Pirex, D. Munro, J. Gibeault, J. Matthews
W. Evans - ADEC
Katie Farley - ADNR, Phil Means USCG
Ed Owens, Sam Stoker - Exxon

TIME CG: 25 to 08: 15

TIDE LEVEL -0.8 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

F. T. OIL CATEGORY LENGTH: H m M m L m VL m N m NS m

| L | SURFACE OIL CHARACTER | | | | | | | | | | SURFACE
SEDIMENT | SHORE
SLOPE | AREA | | ZONE | | | | NOTES |
|---|-----------------------|----|----|-----|----|----|----|----|----|----|---------------------|----------------|-------|--------|------|----|----|----|--------------------------------|
| | | | | | | | | | | | | | WIDTH | LENGTH | S | UI | MI | LI | |
| | AP | MS | TB | SOF | CV | CT | ST | FL | DB | NO | TYPE | VHML | m | m | | | | | |
| A | T | | | T | T | T | | | | | BCP | M | 4 | 6 | | | | | |
| R | P | | | S | | | | | | | BCP | M | 1 | 5 | | | | | interstitial AP/SOR |
| | T | | | T | S | S | | | | | BCP | M | 4 | 16 | | | | | |
| | S | | | S | | | | | | | CPG | L | 2 | 5 | | | | | manually filled /scattered |
| E | P | | | P | | | | | | | CPG | L | 2 | 60 | | | | | lagoon perimeter |
| | B | | | B | | | | | | | P/G | L | 2.5 | 30 | | | | | lagoon perimeter |
| | S | | | S | | | | | | | P/G/Betc | L | 1.5 | 6 | | | | | lagoon perimeter |
| H | P | | | P | | | | | | | P/G | L | 9 | 23 | | | | | lagoon perimeter/grasses |
| | | | | | | | | | | | CBR | M | | | | | | | See Gibeault's notes in detail |
| | | | | S | S | S | | | | | CBR | H | 3 | 40 | | | | | |

DISTRIBUTION: C = 61-100%; B = 51-60%; F = 11-50%; S = 1-10%; T = <1%

LOPE: V = VERTICAL: H = HIGH ANGLE: M = MEDIUM ANGLE: L = LOW ANGLE PHOTO ROLL #

FRAMES

[illegible]

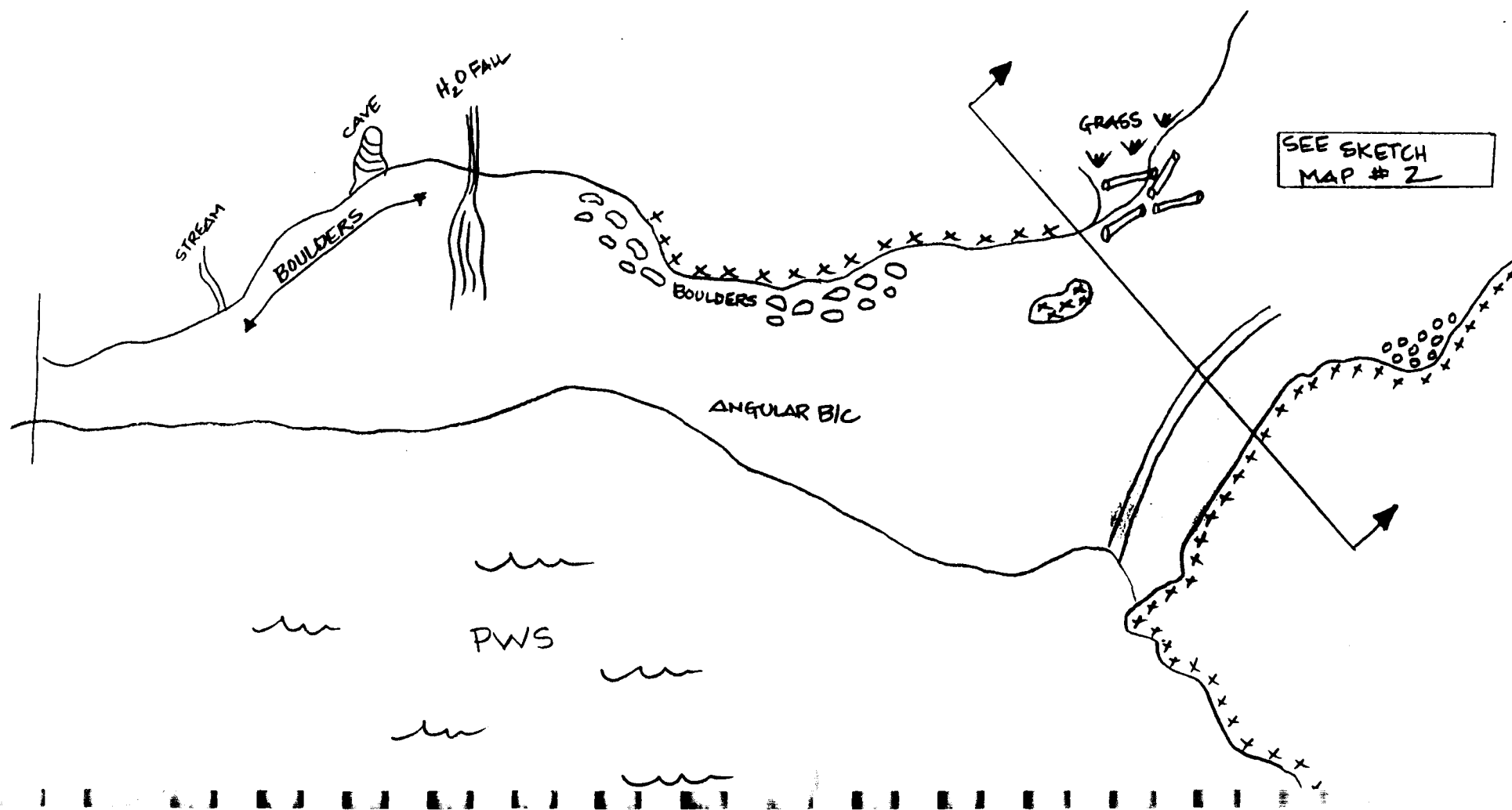
SHEEN COLOR: B=BROWN: R=RAINBOW: S=SILVER: N=NONE

KN136 A

07/19/93

SKETCH # 1

No Survey



1-5-0-

AP/SOR-S
1.5 x 6m

GRASS

P/G

STREAM

AP/SOR-P
2 x 60m

PEAT BOG
Sheens @ edges
of lagoon/marsh

AP/SOR-S
2x5m (D)

Gibeaut's Notes (I)

AP/SOR - P
9 x 23m (H)

AP/SOR-S
CT/CV-S
3x40m (2)

AP-P
SOR-S
1 x 5m (B)

AP/SOR-T
CV/CT-S
4x16m ©

AP/SOR-T
CN/CT-T
4x6m (A)

PWS

KN136 A

07/19/93

0625 - 0815

CVTTRIL ± 7



1993 Surface Oil Summary
Segment KN136 Subdivision A

| Location | Area of Oiling Type in Square Meters | | | | |
|----------|--------------------------------------|----|--------|-------|-------|
| | AP | MS | SOR | CV | CT |
| A | 0.12 | 0. | 0.12 | 0.12 | 0.12 |
| B | 1.5 | 0. | 0.3 | 0. | 0. |
| C | 0.32 | 0. | 0.32 | 3.84 | 3.84 |
| D | 0.6 | 0. | 0.6 | 0. | 0. |
| E | 36. | 0. | 36. | 0. | 0. |
| F | 252. | 0. | 252. | 0. | 0. |
| G | 0.54 | 0. | 0.54 | 0. | 0. |
| H | 62.1 | 0. | 62.1 | 0. | 0. |
| I | 0. | 0. | 94.5 | 0. | 0. |
| J | 7.2 | 0. | 7.2 | 7.2 | 7.2 |
| TOTALS= | 360.38 | 0. | 453.68 | 11.16 | 11.16 |

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 KN136A

| | | | | | | 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 | 1,2,4-10 | PG-GSPt | UM | L | | NO | MR,MT,Rs | 0.0 | 0.5 | 0.0 | 0.9 | 3.0 | 0.0 | 3.2 | 4.3 | 0.0 | 0.0 | 14.1 | 6.6 | 4.1 | 4.4 | 2.2 | 3.8 | 25.9 | 117.8 | -85.4 | -78.0 | -96.8 |
| ZB | | BC-GSC | M | L | | Rs,MR | Rs | ? | ? | ? | ? | ? | 0.0 | 0.0 | 11.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.4 | 0.4 | 0.0 | ? | 33.8 | 2.0 | ? | 1587.5 | ? |
| TOTALS= | | | | | | | | 0.0 | 0.5 | 0.0 | 0.9 | 3.0 | 0.0 | 3.2 | 15.6 | 0.0 | 0.0 | 14.1 | 6.6 | 4.5 | 4.8 | 2.2 | 3.8 | 59.7 | 119.8 | -93.7 | -50.2 | -96.8 |

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.

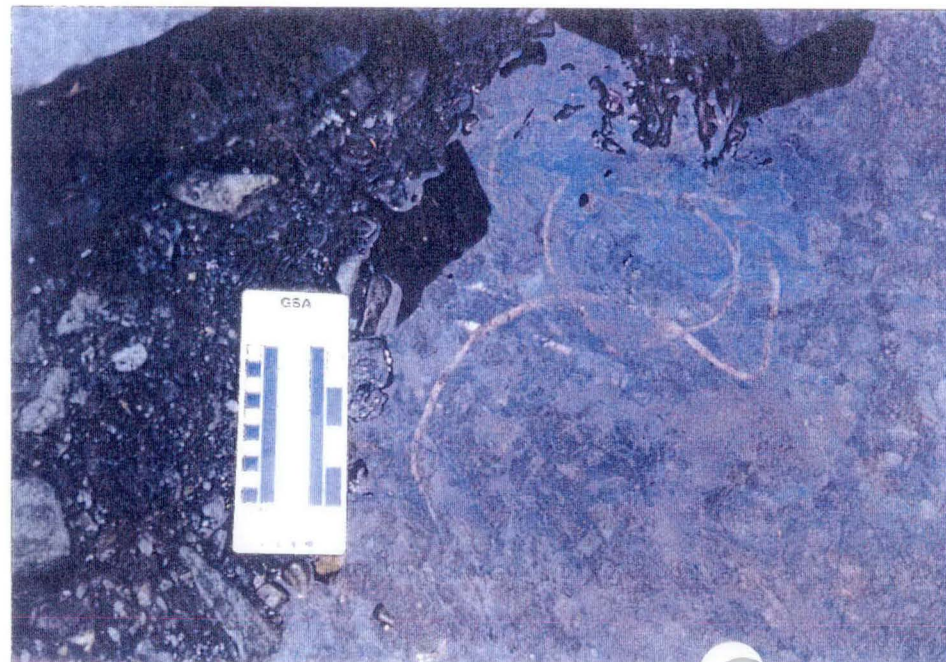
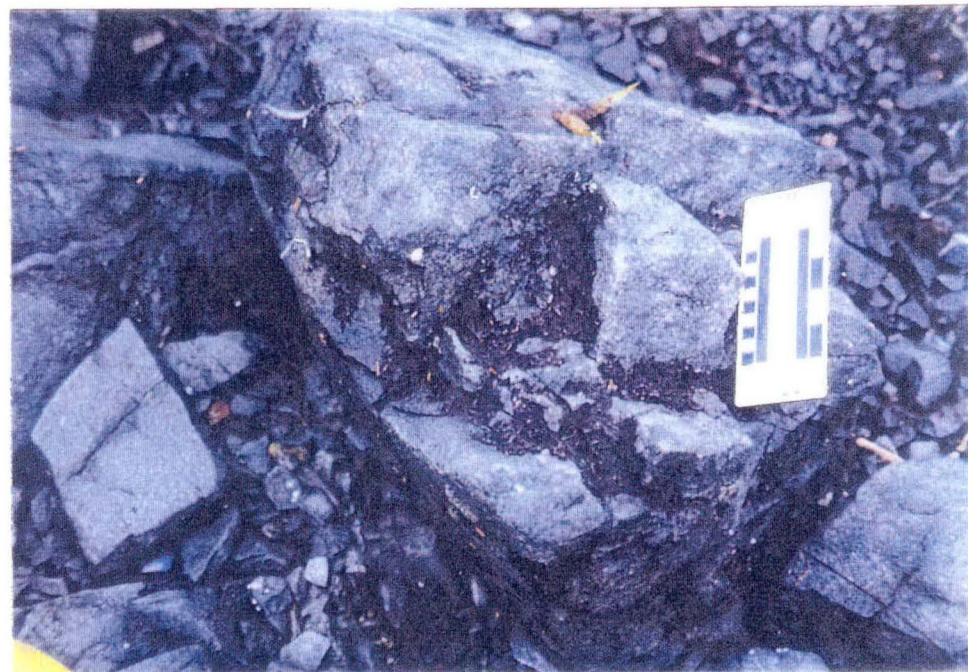
En.= wave-energy level, H= high, M= moderate, L= low, VL= very low.

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, 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 - year 1)/(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: July 19, 1993 Time: 07:05

Location (segment #): KN136

Reason for taking photo: Cover with spruce
needles, located in Area C

Taken by: L.J. Evans *LJE*

Roll #: LJE001 Frame #: 028

OFFICIAL PHOTOGRAPH ADEC

Date: July 19, 1993 Time: 07:00

Location (segment #): KN136

Reason for taking photo: Pit 4

Taken by: L.J. Evans *LJE*

Roll #: LJE001 Frame #: 027

OFFICIAL PHOTOGRAPH ADEC

Date: July 19, 1993 Time: 07:11

Location (segment #): KN136

Reason for taking photo: Sheen on tidal pool
in Area B

Taken by: L.J. Evans *LJE*

Roll #: LJE001 Frame #: 031

OFFICIAL PHOTOGRAPH ADEC

Date: July 19, 1993 Time: 07:05

Location (segment #): KN136

Reason for taking photo: Closeup of cover/coat
with spruce needles, located in Area C

Taken by: L.J. Evans *LJE*

Roll #: LJE001 Frame #: 029



6E
OFFICIAL PHOTOGRAPH ADEC

Date: July 19, 1993 Time: 07:22

Location (segment #): KN136

Reason for taking photo: Pit 8, asphalt

Taken by: L.J. Evans *LJE*

Roll #: LJE001 Frame #: 033

2E
OFFICIAL PHOTOGRAPH ADEC

Date: July 19, 1993 Time: 07:15

Location (segment #): KN136

Reason for taking photo: Asphalt patch in
Area D

Taken by: L.J. Evans *LJE*

Roll #: LJE001 Frame #: 032

7E
OFFICIAL PHOTOGRAPH ADEC

Date: July 19, 1993 Time: 07:35

Location (segment #): KN136

Reason for taking photo: Overview of marshy
area, facing a few degrees North of West

Taken by: L.J. Evans *LJE*

Roll #: LJE001 Frame #: 036

SE
OFFICIAL PHOTOGRAPH ADEC

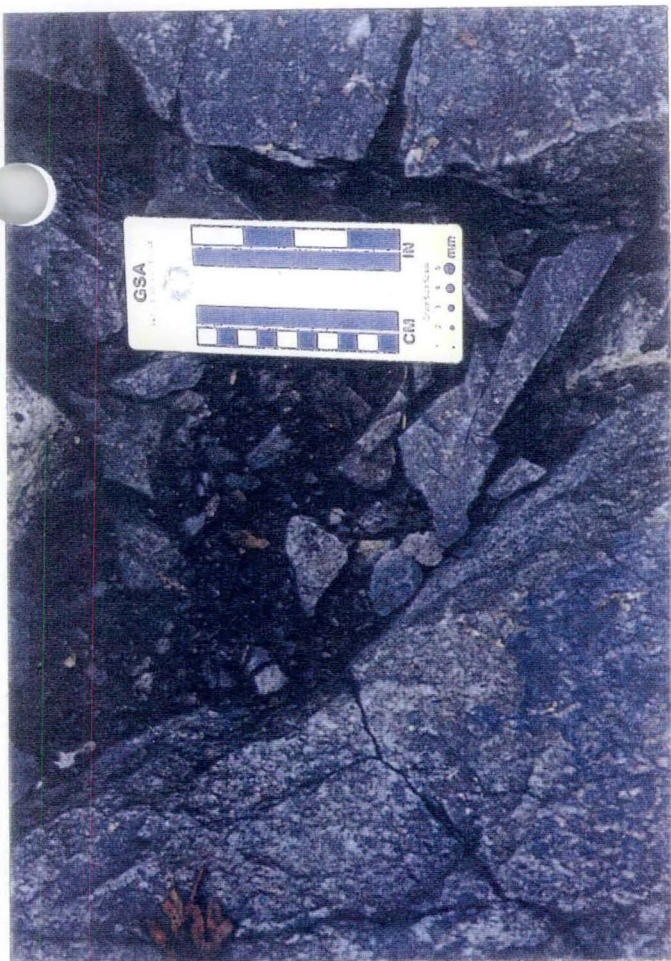
Date: July 19, 1993 Time: 07:34

Location (segment #): KN136

Reason for taking photo: Overview of marshy
area, facing West

Taken by: L.J. Evans *LJE*

Roll #: LJE011 Frame #: 035



OFFICIAL PHOTOGRAPH ADEC

Date: July 18, 1993 Time: 19:47 (7:47 pm)

Location (segment #): KN136 Area F

Reason for taking photo: Tar patch in cobble
and boulders

Taken by: L.J. Evans *LJE*

Roll #: LJE002 Frame #: 002

OFFICIAL PHOTOGRAPH ADEC

Date: July 18, 1993 Time: 19:44 (7:44 pm)

Location (segment #): KN136, Area F

Reason for taking photo: Tar patch in cobble and
boulders

Taken by: L.J. Evans *LJE*

Roll #: LJE002 Frame #: 001

OFFICIAL PHOTOGRAPH ADEC

Date: July 18, 1993 Time: 19:54 (7:54 pm)

Location (segment #): KN136 Area I

Reason for taking photo: Tar and spruce
needles in rocks

Taken by: L.J. Evans *LJE*

Roll #: LJE002 Frame #: 003