[Shoreline evaluations, 1991].

Kenai PY-04 to PY-10

Title supplied by cataloger. This title page is supplied by Alaska Resources Library and Information Services (ARLIS).
REGION: KENAI

SEGMENT: ST/PY-04

SUBDIVISIONS: A (1 OF 1)
SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
3N,3P Harbor seal and sea lion pupping (5/15 to 7/1)
3,3Q Harbor seal and sea lion molting (8/15 to 9/15)
4QQ National Wildlife Refuge
5R Seabird colony (5/1 to 9/1)
See attached Ecological Constraint sheet for specific constraints and contacts.

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid any unnecessary disturbance or damage to unoiled biota and substrate. Avoid disturbance to the pinniped haulout areas and seabird rookeries.

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO SIGNATURE: __________________________ DATE: __________________________

OILING CATEGORIZATION:
Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 0 m: No Oil 2572 m
Subsurface Oil Observed: Yes X No X Maximum Depth ______

RECOMMENDATIONS:
X No Treatment Recommended
_____ Treatment Recommended
_____ Manual Pickup
_____ Bioremediation
_____ Tarmat Removal

Snare/Absorbent Booms
Oil Snares (pom poms)
Absorbents (pads, rolls, etc)
Spot Washing: Wands
Beach Cleaner
Other (see comments)

COMMENTS: ____________________________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________

TAG COMMENTS: ________________________________________________________
______________________________________________________________________
______________________________________________________________________

TAG APPROVAL DATE: __________
ADEC
EXXON
NOAA
USCG

FOSC: __________ DATE: __________

NOAA
USCG
Salmon stream mouth - fry outmigration (3/1 to 6/15)
Salmon stream mouth - spawning (7/10 to 8/31)

No disturbance of stream bed or banks unless authorized by ADF&G. No beach flushing into stream drainage. No bioremediation or other chemical application within 100m of stream without authorization from ADF&G. No use of methods which might affect nearshore oil or toxicity levels, such as hot water wash or Inpil application, prior to at least July 1 unless authorized by ADF&G. Treatment which is not intrusive and which will not affect nearshore oil or toxicity levels, such as manual removal, can probably proceed without adherence to time constraints. In any case, contact ADF&G Habitat Division prior to treatment for consultation and/or permit application.

AGENCY CONTACT PERSON: ADF&G John Morison 267-2324

Salmon fry nursery area. (4/31 to 7/31)

No use of methods which might affect nearshore oil or toxicity levels, such as hot water wash or Inpil application, prior to July 31 unless authorized by ADF&G. Treatment which will not affect nearshore oil or toxicity levels, such as manual or mechanical removal, can probably proceed without adherence to time constraints. Contact ADF&G prior to treatment for confirmation and advice.

AGENCY CONTACT PERSON: ADF&G Larry Peitz 424-3214

Esther Hatchery release (4/15 to 6/15)
Main Bay Hatchery release (4/20 to 6/15)
Sawmill Bay Hatchery release (4/15 to 6/1)
Cannery Creek Hatchery release (4/21 to 6/1)
Remote release site

Contact ADF&G for specific dates, locations and constraints. Restricted boat and air traffic to essential minimum. When set net sites are present (1/1) restrict beach operations to essential minimum as authorized by ADF&G. If plans for treatment include methods such as hot water wash or Inpil application which might affect nearshore oil or toxicity levels, contact ADF&G for consultation and authorization.

AGENCY CONTACT PERSON: ADF&G James Brady 424-3212

Herring spawning (4/1 to 6/15)

Contact ADF&G for confirmation - dates and locations may vary. Restricted boat traffic to essential minimum. Avoid damage to unveiled intertidal and subtidal algal and seaweed. If plans for treatment include methods such as hot water wash or Inpil application which might affect nearshore oil or toxicity levels, contact ADF&G for consultation and authorization.

AGENCY CONTACT PERSON: ADF&G Evelyn Biggs 424-3235

Harbor seal and sea lion pupping (6/15 to 7/1)
Harbor seal and sea lion molting (6/15 to 9/15)

Restrict boat and air traffic to essential minimum. No personnel within 400m. Aircraft to maintain 800m horizontal and 300m vertical distance from headlands. No application of Inpil within two weeks of arrival dates (work window at these sites is limited to 7/2 to 7/31). Contact ADF&G and USFWS prior to treatment for confirmation.

AGENCY CONTACT PERSON: US National Marine Fisheries Service Steve Zimmerman 586-7235
ADF&G Don Callina 267-2403

Seabird colony (5/1 to 9/1)

Restrict air and boat traffic to essential minimum. No personnel within 800m. Aircraft to maintain 800m horizontal, 300m vertical distance from colony. Contact USFWS prior to treatment.

AGENCY CONTACT PERSON: USFWS Jill Parker 788-3377

Shorebird/zebrafinch concentration (4/1 to 5/12)

Restrict all activity to essential minimum, especially air traffic. Contact USFWS and ADF&G for confirmation.

AGENCY CONTACT PERSON: USFWS Jill Parker 788-3377
ADF&G Tom Rothy 267-2208

All Bald Eagle nests (3/1 to 9/1)

Active Bald Eagle nests (3/1 to 9/1)

Restrict air traffic and all disturbance to essential minimum. No personnel within 400m 3/1 to 6/1. Air approach and takeoff from and to seaward only; maintain 800m horizontal, 300m vertical distance from nests. Contact USFWS prior to treatment for confirmation of dates.

AGENCY CONTACT PERSON: USFWS Jill Parker 788-3377

Recreation:

Tent sites (8/1 to 9/15)
Anchorage (8/1 to 9/15)
Forest Service cabins (8/1 to 9/15)
Lodge (8/1 to 9/15)
Special use destination

Subistence: Salmon harvesting (5/1 to 9/30)

Contact ADF&G and appropriate Native Corporation for specific dates, locations, and constraints. Restricted boat and air traffic and beach disturbance to essential minimum. If plans for treatment include methods such as hot water wash or application of Inpil which might affect intertidal or nearshore oil or toxicity levels, contact ADF&G and appropriate Native Corporation for authorization - see Native Corporation Contact List for each Native Corporation's contact person.

AGENCY CONTACT PERSON: ADF&G Jim Falle 267-2359
FIELD SHORELINE COMMENT SHEET

DOCUMENT SITE: PY 004  SUBDIVISION: A (141)  DATE: 4/25/90

NAME: Donald A. MacDonald  SIGNATURE: Donald A. MacDonald

☐ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS:
The entire segment was surveyed from the skiff. The segment includes seabird colonies and Sea Lion haulout and pupping area. There were no visible signs of oil. The entire segment is subject to high wave action. Hundreds of sea birds and numerous Sea Lions were seen. The segment consists of the southern and southwestern shore of outer island.

ADEC
NAME: John R. Reed  SIGNATURE: John R. Reed

☐ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS:
No oil was observed in this segment. This segment consists of vertical rock walls. Seabirds rest on rock walls. I agree with data on SSAT Forms.

LAND MANAGER - ACSWCD
NAME: Mary Potter  SIGNATURE: Mary Potter

☐ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS:
No oil was observed in this segment. (PY 4 no longer includes the oiled beach at the far northern end of Outer Island). This oiled beach at the far northern end of Outer Island. This segment has several critical wildlife habitats including a small rockery with black legged Kittiwakes, gulls, and pelagic cormorants. This is surrounded by red faced Cormorants and pelagic cormorants. Young gulls, red faced Cormorants and pelagic cormorants. The SE and Southern portion of outer island is also a prime Sea Lion rockery and haulout.
SHORELINE OILING SUMMARY

EST. CJ Snow UPLANDS DESCRIPTION: Forest IS Rock  
SURVEYED FROM: Foot Boat Helo WORKING DIRECTION: N to S  
SURFACE SEDIMENTS: R 90% B 10% % P % G % S % M % V %  
SLOPE: Lang 8% Hang 5% Vert 95%  
WAVE EXPOSURE: Low Med High  
OIL CATEGORY LENGTH: W 0 m M 0 m N 0 m VL 0 m NO 0 m  

SURFACE OIL

<table>
<thead>
<tr>
<th>CHARACTER</th>
<th>DISTRIBUTION</th>
<th>OIL / FILM COLOR</th>
<th>IMPACTED ZONES</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASPHALT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PAVEMENT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>POOLED</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COVER</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COAT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STAIN</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MOUSSE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PATTIES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TARBALLS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FILM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NO OIL</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

PAVEMENT H F S 0 sq. m by 0 cm  
PATTIES / TARBALLS 0 BAGS  
NEAR SHORE SHEEN? NO BR RW SL TL  
OILED DEBRIS NO AMOUNT DID YOU COLLECT DEBRIS?  
Logs  
Vegetation  
Trash  
Debris  
# BAGS 0  

Photographs:  
Roll No. 57-18-8  
Frames 35436  

SUBSURFACE OIL

<table>
<thead>
<tr>
<th>PIT NO.</th>
<th>PIT DEPTH (cm)</th>
<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED MATERIAL</th>
<th>BELOW OIL / FILM COLOR</th>
</tr>
</thead>
</table>

COMMENTS PY-4A: Nearly all of this segment is comprised of bedrock cliffs, except for one high angle boulder beach. Hence, no pits were dug.
SHORELINE ECLOGICAL SUMMARY

Segment ST: PY-4  Subdivision: A  Date (mo/day/yr): 1-25-90

Biologist: MARK CARR  (24 hr.) 11:10

(A) Substrate type and % of segments:
(1) Bedrock  20  (2) Boulder  10  (3) Cobble  (4) Pebble  (5) Sand  (6) Silt

(B) Overall % cover of biota (% of segment): Dense  80  Moderate  10  Low  10

(C) Density, substrate preference (by number from A. above), & vertical zonation of major taxa: (upper-U; mid-M; low tidal-L);
juveniles/adults (X), new settlement (3)

BARNACLES

<table>
<thead>
<tr>
<th>Density</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dense</td>
<td>1U</td>
<td>2U, 1L</td>
<td>3L</td>
</tr>
<tr>
<td>Moderate</td>
<td>1U</td>
<td>2U, 1M</td>
<td>3L</td>
</tr>
<tr>
<td>Sparse</td>
<td>1U</td>
<td>2U, 1M</td>
<td>3L</td>
</tr>
<tr>
<td>Rare</td>
<td>1U</td>
<td>2U, 1M</td>
<td>3L</td>
</tr>
</tbody>
</table>

MYTILUS

<table>
<thead>
<tr>
<th>Density</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dense</td>
<td>1U</td>
<td>2U, 1L</td>
<td>3L</td>
</tr>
<tr>
<td>Moderate</td>
<td>1U</td>
<td>2U, 1M</td>
<td>3L</td>
</tr>
<tr>
<td>Sparse</td>
<td>1U</td>
<td>2U, 1M</td>
<td>3L</td>
</tr>
<tr>
<td>Rare</td>
<td>1U</td>
<td>2U, 1M</td>
<td>3L</td>
</tr>
</tbody>
</table>

GASTROPODS

<table>
<thead>
<tr>
<th>Density</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dense</td>
<td>1U</td>
<td>2U, 1L</td>
<td>3L</td>
</tr>
<tr>
<td>Moderate</td>
<td>1U</td>
<td>2U, 1M</td>
<td>3L</td>
</tr>
<tr>
<td>Sparse</td>
<td>1U</td>
<td>2U, 1M</td>
<td>3L</td>
</tr>
<tr>
<td>Rare</td>
<td>1U</td>
<td>2U, 1M</td>
<td>3L</td>
</tr>
</tbody>
</table>

FUCUS

<table>
<thead>
<tr>
<th>Density</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dense</td>
<td>1U</td>
<td>2U, 1L</td>
<td>3L</td>
</tr>
<tr>
<td>Moderate</td>
<td>1U</td>
<td>2U, 1M</td>
<td>3L</td>
</tr>
<tr>
<td>Sparse</td>
<td>1U</td>
<td>2U, 1M</td>
<td>3L</td>
</tr>
<tr>
<td>Rare</td>
<td>1U</td>
<td>2U, 1M</td>
<td>3L</td>
</tr>
</tbody>
</table>

Wildlife Observations/ General Comments:
Steller's sea lion (18)  Bald eagle (3) (1 immature, 2 mature)
red-faced cormorant (a 80)  oyster catcher (3), pigeon guillemot (4)
glaucous-winged gull (100)  black-legged kittiwake (a 800) on rock

Historical Considerations:
3R (Seabird colony), 3 P (pinniped pupping and molting), 400 (National Wildlife Refuge).
REGION: KENAI

SEGMENT: ST/PY-05

SUBDIVISIONS: A (1 OF 1)
SHORELINE EVALUATION

SEGMENT ST/ PY-05 SUBDIVISION A (1 OF 1) DATE 4/24/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:

4QQ National Wildlife Refuge
5R Seabird colony (5/1 to 9/1)
See attached Ecological Constraint sheet for specific constraints and contacts.

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid any unnecessary disturbance or damage to unoiled biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO SIGNATURE: _______________________ DATE: ______________________

OILING CATEGORIZATION:

Wide 0 m: Medium 32 m: Narrow 0 m: V.Light 2139 m: No Oil 9521 m
Subsurface Oil Observed: Yes X No____ Maximum Depth 20+ cm

RECOMMENDATIONS:

_____ No Treatment Recommended _____ Snare/Absorbent Booms
X Treatment Recommended _____ Oil Snares (pom poms)
_____ Manual Pickup _____ Absorbents (pads, rolls, etc)
X Bioremediation _____ Spot Washing: Wands
_____ Tarmat Removal _____ Beach Cleaner
_____ Oil Snares (poms, poms)
_____ Absorbents (pads, rolls, etc)
_____ Spot Washing: Wands
_____ Other (see comments)

COMMENTS: Recommended treatment includes bioremediation of area of subsurface oil as indicated on attached sketch map. Due to seabird colony time constraints, contact USFWS for specific work dates.

TAG COMMENTS: ____________________________________________

TAG APPROVAL DATE: __________

ADEC EXXON NOAA USCG
FOSC: __________ DATE: __________
Salmon fry nursery area (4/31 to 7/23)
No use of methods which might affect nearshore oil or toxicity levels, such as hot water wash or Inipol application, prior to July 31 unless authorized by ADF&G. Treatment which will not affect nearshore oil or toxicity levels, such as manual or mechanical removal, can probably proceed without adherence to time constraints. Contact ADF&G prior to treatment for confirmation and advice.
AGENCY CONTACT PERSON: ADF&G Larry Peltz 424-3214

Esther Hatchery release (4/15 to 6/15)
Main Bay Hatchery release (4/20 to 6/15)
Sawmill Bay Hatchery release (4/15 to 6/1)
Canter Creek Hatchery release (4/21 to 6/1)

Remote release site

Gill net area (6/7 to 6/31)
Purse seine area (7/20 to 9/30)
Purse seine hook-off (7/20 to 9/30)
Set net sites (6/11 to 7/25)

Contact ADF&G for dates and locations. Restrict boat and air traffic to essential minimum. When set net sites are present (1L) restrict beach operations to essential minimum as authorized by ADF&G. If plans for treatment include methods such as hot water wash or Inipol application which might affect nearshore oil or toxicity levels, contact ADF&G for consultation and authorization.
AGENCY CONTACT PERSON: ADF&G Evelyn Price 424-3238

Harbor seal and sea lion pupping (5/15 to 7/1)
Harbor seal and sea lion molting (7/15 to 9/15)

Restrict boat and air traffic to essential minimum. No personnel within 400m. Aircraft to maintain 800m horizontal and 300m vertical distance from haulouts. No application of Inipol within two weeks of arrival dates (work window at these sites is limited to 7/2 to 7/31). Contact ADF&G and USFWS prior to treatment for confirmation.
AGENCY CONTACT PERSON: US National Marine Fisheries Service Steve Zimmerman 586-7235

Seabird colony (5/1 to 9/1)

Restrict aircraft and boat traffic to essential minimum. No personnel within 800m. Aircraft to maintain 800m horizontal, 300m vertical distance from colony. Contact USFWS prior to treatment.
AGENCY CONTACT PERSON: USFWS Jill Parker 786-3377

Shorebird/waterfowl concentration (4/1 to 5/15)

Restrict all activity to essential minimum, especially air traffic. Contact USFWS and ADF&G for confirmation.
AGENCY CONTACT PERSON: USFWS Jill Parker 786-3377

All Bald Eagle nests (3/1 to 6/1)

Active Bald Eagle nests (3/1 to 9/1)

Restrict air and boat traffic to essential minimum. No personnel within 400m. 3/1 to 6/1. Air approach and takeoff from and to seaward only, max within 800m horizontal, 300m vertical distance from nests. Contact USFWS prior to treatment for confirmation of dates.
AGENCY CONTACT PERSON: USFWS Jill Parker 786-3377

Recreation:
Tent sites (6/1 to 9/15)
Anchorage (6/1 to 9/15)
Forest Service cabins (6/1 to 9/15)
Lodge (6/1 to 9/15)
Special use destination

Subsistence area: Salmon harvesting (5/1 to 9/30)

Finish harvesting

Occur harvesting (9/15 to 2/28)

Invertebrate harvesting

Contact ADF&G and appropriate Native Corporation for specific dates, locations, and constraints. Restrict boat and air traffic and beach disturbance to essential minimum. If plans for treatment include methods such as hot water wash or application of Inipol which might affect intertidal or nearshore oil or toxicity levels, contact ADF&G and appropriate Native Corporation for authorization - see Native Corporation Contact List for each Native Corporation's contact person.
AGENCY CONTACT PERSON: ADF&G Jim Fall 267-2359
FIELD SHORELINE COMMENT SHEET

SEGMENT ST: PY-05 SUBDIVISION: A (left) DATE 4/24/90

NAME: Donald A. Macdonald SIGNATURE: Donald A. Macdonald

☐ NO TREATMENT RECOMMENDED    ☑ TREATMENT SUGGESTED

COMMENTS: Special concerns of NOAH include the presence of marine mammals (seals/otters) in the area. The SSAT forms are well done.

☐ NO TREATMENT RECOMMENDED    ☑ TREATMENT SUGGESTED

ADEC
NAME: John R. Reed SIGNATURE: John R. Reed

COMMENTS: I am recommending manually removal of the patchy move on the pocket beach in the N/W corner of PY-05. Shovels or hand shovels should do the trick. There is also patchy coat on the boulders in this pocket beach. Some scattered coat persists throughout the segment. I agree with data on SSAT forms.

LAND MANAGER - USEWIS
NAME: Mary Partner SIGNATURE: Mary Partner

☐ NO TREATMENT RECOMMENDED    ☑ TREATMENT SUGGESTED

COMMENTS: Oil persists in this segment primarily as splatters of coat and spray on several boulder beaches. At the boulder beach in the N/W portion of the area there is a 15% patchy coat in a 12 m x 5 m area and patchy mousse in a 3 x 10 m area. Scattered throughout is coat and stains. The patchy mousse between boulders and vegetation should be removed manually. This mousse is still fairly soft and can be recovered with shovels and rakes. The coat on the boulders is fairly hard and tarry at this time.
SHORELINE OILING SUMMARY

OUTLOOK
NO F.A. MacDonald

LAND REP Partner

SUBDIVISION

TIME 07:45 10/11/90

TIDE LEVEL -2.0 to +6.0

DATE 4/24/90

SURVEYED FROM: E Foot  X Boat  X Helo

WORKING DIRECTION: E to W

SURFACE SEDIMENTS: 20% B 15% C 5% S 0% G 0% S 0% M 0% V O %

SLOPE: Lang 15% Hang 5% Vert 80% WAVE EXPOSURE: 0 Low 0 Med 0 High

OIL CATEGORY LENGTH: W 0 m M 25 m N 0 m V L 2250 m NO 10643 m

SURFACE OIL

<table>
<thead>
<tr>
<th>CHARACTER</th>
<th>DISTRIBUTION</th>
<th>OIL / FILM COLOR</th>
<th>IMPACTED ZONES</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASPHALT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PAVEMENT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>POOLED</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COVER</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COAT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STAIN</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MOUSSE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PATTIES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BALLS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NO OIL</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

PAVEMENT H F S O sq. m by 0 cm

PATTIES / TARBALLS 1 BAGS

NEAR SHORE SHEEN? NO BR RW SL TL

OILED DEBRIS NO

AMOUNT NO SM MD LG

DID YOU COLLECT DEBRIS? YES X: NO 0

Log
Vegetation
Trash
Debris

TYPE: BUOY, NEST, MOUND

# BAGS 3

Photographs:
Roll No. 5T-18-9
Frames 24-26

SUBSURFACE OIL

<table>
<thead>
<tr>
<th>PIT NO.</th>
<th>PIT DEPTH (cm)</th>
<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED INTERNAL</th>
<th>OILED DEBRIS</th>
<th>OIL / FILM COLOR</th>
<th>PIT ZONE</th>
<th>AMOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>15</td>
<td></td>
<td>3.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>15</td>
<td></td>
<td>0.15</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>20</td>
<td></td>
<td>0.20</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SURFACE - SUBSURFACE SEDIMENTS

B-C, R
B-C, P, R
B-C, R
B-C, B
B-P, B
B-P, G

COMMENTS ST/AY-S comprises mostly granitic bedrock with a few low angle boulder beaches. Little or no oil was observed in this segment with the exception of a small boulder beach in the northwest part (see sketch map).
**Date:** Apr 24 90

**Sketch Map**

- Low angle boulder beach with CT/S and MS/S
- Some mousse collected

**Legend**

- 
- Pit - No Subsurface Oil
- Pit - Subsurface Oil
- CT/C Continuous Distribution
- CT/B Broken Distribution
- CT/P Paired Distribution
- CT/S Splashed Distribution
- Eld Vegetation

**Checklist**

- N Area
- Approx. Scale
- Geology/Bedrock
- Oil Dist
- Width
- Length
- % Cover
- Subsidence Characteristics
- Est. HWA/LWA
- SSL
- Profile Location(s)
- Profile(s)
- Pit Location(s)
- Photo Location(s)

**Legend**

- 1
- 2
- Delta

**Diagram Notes**

- Low angle boulder and cobble beach
- Bedrock ± boulders
SHORELINE ECOLOGICAL SUMMARY

Segment ST / PY-5  Subdivision  A  Date (mo/day/yr)  4-29-90

24 hr)  0745  Biologist  MARK CARR

(A)  Substrate type and % of segment:
(1) Bedrock  (2) Boulder  (3) Cobble  (4) Pebble  (5) Sand  (6) Silt

(B)  Overall % cover of biota (% of segment): Dense 70  Moderate 20  Low 10

(C)  Density, substrate preference (by number from A, above), & vertical zonation of major taxa: (upper-U; mid-M; low tidal-L); juveniles/adults (X), new settlement (3)

BARNACLES

<table>
<thead>
<tr>
<th></th>
<th>Dense</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bed</td>
<td>2</td>
<td>1L</td>
<td>1U</td>
<td>1M</td>
</tr>
<tr>
<td>Code 2</td>
<td>2</td>
<td>1L</td>
<td>1U</td>
<td>1M</td>
</tr>
<tr>
<td>Code 3</td>
<td>2</td>
<td>1L</td>
<td>1U</td>
<td>1M</td>
</tr>
</tbody>
</table>

MYTILUS

<table>
<thead>
<tr>
<th></th>
<th>Dense</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bed</td>
<td>2</td>
<td>1L</td>
<td>1U</td>
<td>1M</td>
</tr>
<tr>
<td>Code 2</td>
<td>2</td>
<td>1L</td>
<td>1U</td>
<td>1M</td>
</tr>
<tr>
<td>Code 3</td>
<td>2</td>
<td>1L</td>
<td>1U</td>
<td>1M</td>
</tr>
</tbody>
</table>

GASTROPODS

<table>
<thead>
<tr>
<th></th>
<th>Dense</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bed</td>
<td>2</td>
<td>1L</td>
<td>1U</td>
<td>1M</td>
</tr>
<tr>
<td>Code 2</td>
<td>2</td>
<td>1L</td>
<td>1U</td>
<td>1M</td>
</tr>
<tr>
<td>Code 3</td>
<td>2</td>
<td>1L</td>
<td>1U</td>
<td>1M</td>
</tr>
</tbody>
</table>

FUCUS

<table>
<thead>
<tr>
<th></th>
<th>Dense</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bed</td>
<td>2</td>
<td>1L</td>
<td>1U</td>
<td>1M</td>
</tr>
<tr>
<td>Code 2</td>
<td>2</td>
<td>1L</td>
<td>1U</td>
<td>1M</td>
</tr>
<tr>
<td>Code 3</td>
<td>2</td>
<td>1L</td>
<td>1U</td>
<td>1M</td>
</tr>
</tbody>
</table>

Wildlife Observations/General Comments:
glaucous-winged gulls (72), red-crested commorant (1), oyster-catcher (2), harlequin duck (18), H.W. crows (2), bald eagle (1), sea otter (1)

Ecological Considerations:
ST (Active bald eagle nest), 4 QA (National Wildlife Refuge)

Sensitivity Codes
SHORELINE EVALUATION

SEGMENT ST/ PY-05 SUBDIVISION A (1 OF 1) DATE 4/24/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:

4QQ National Wildlife Refuge
5R Seabird colony (5/1 to 9/1)
See attached Ecological Constraint sheet for specific constraints and contacts.

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid any unnecessary disturbance or damage to unoiled biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO SIGNATURE: DATE: 5/15/90

OILING CATEGORIZATION:

Wide 0 m: Medium 32 m: Narrow 0 m: V.Light 2139 m: No Oil 9521 m
Subsurface Oil Observed: Yes x No Maximum Depth 20+ cm

RECOMMENDATIONS:

x No Treatment Recommended x Snare/Absorbent Booms
x Treatment Recommended x Oil Snare (pom poms)
Manual Pickup Absorbents (pads, rolls, etc)
Bioremediation Spot Washing: Wands
Tarmat Removal Beach Cleaner
Other (see comments)

COMMENTS: Recommended treatment includes bioremediation of area of subsurface oil as indicated on attached sketch map. Due to seabird colony time constraints, contact USFWS for specific work dates.

TAG COMMENTS: Manual Removal of Available Noodle Prior To

TAG APPROVAL DATE: 5/15/90

ADEC
EXXON
NOAA
USCG

FOSC: DATE: 7/10/90

Bioremediation not Authorized
SEGMENT: PYS
SUBDIVISION: A
DATE: Apr 12 90

CHECKLIST
- Area
- Approx. Scale
- Seg/Sub Info
- Oil Dist.
- Width
- Length
- % Cover
- Substrate Character
- Est. HWA
- SSL
- Profile Location(s)
- Photo(s)
- Site Location(s)
- Photo Location(s)

LEGEND
1 △
Pit - No Subsurface Oil

2 △
Pit - Subsurface Oil

CT/C Continuous Distribution
CT/B Broken Distribution
CT/P Pictorial Distribution
CT/S Splashed Distribution

Low angle boulder and cobble beach

Low angle boulder beach with CT/S (≈ 45%)
in a 12 x 25m area, MS/P
in a 3 x 10m area, CV/S
ST/S, and FL/S (rainbow)
some mousse collected

Low angle boulder beach with CT/S and PT/S
CULTURAL RESOURCE EVALUATION REQUIRED PRIOR TO TREATMENT

APPLICABLE ECOLOGICAL TIME CONSTRAINTS

5R  Seabird Colony  NO CONSTRAINT. Work site is more than 800m from seabird colony.

OTHER ECOLOGICAL CONSIDERATIONS

Avoid any unnecessary disturbance or damage to unollked biota and substrate.

FOSC  Date 7-11-90
Prepared by L. Phillips  Date 7/10/90
SHORELINE EVALUATION

SEGMENT ST/ PY-05 SUBDIVISION A (1 OF 1) DATE 4/24/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:

QQ National Wildlife Refuge
ER Seabird colony (5/1 to 9/1)
See attached Ecological Constraint sheet for specific constraints and contacts.

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid any unnecessary disturbance or damage to unoiled biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO SIGNATURE: Michael Date: 5/15/90

OILING CATEGORIZATION:

Wide 0 m: Medium 32 m: Narrow 0 m: V.Light 2139 m: No Oil 9521 m
Subsurface Oil Observed: Yes X No Maximum Depth 20+ cm

RECOMMENDATIONS:

_ No Treatment Recommended
X Treatment Recommended
X Manual Pickup
X Bioremediation
_ Tarmat Removal

_ Snare/Absorbent Booms
_ Oil Snares (pom poms)
_ Absorbents (pads, rolls, etc)
_ Spot Washing: Wands
_ Beach Cleaner
_ Other (see comments)

COMMENTS: Recommended treatment includes bioremediation of area of subsurface oil as indicated on attached sketch map. Due to seabird colony time constraints, contact USFWS for specific work dates.

SEE CONSTRAINTS ADDENDUM DATED 7/10/90

TAG COMMENTS: Manual removal of available moss prior to bioremediation

TAG APPROVAL DATE: 5/15/90

DEC A P WATTS
EXXON M. V. ROBISON
NOAA D. A. WARD
USCG C. A. REITER

FOSC: DATE: 7/10/90
Bioremediation not authorized
REGION: KENAI

SEGMENT: PY-06

SUBDIVISIONS: A (1 OF 4)
SEGMENT ST/ PY-06   SUBDIVISION A (1 OF 4)   DATE 4/1/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
Bald eagle nest (5T1 - 3/1 to 6/1; Seabird colony (5R1 - 5/1 to 9/1; National Wildlife Refuge (400). Restrict air traffic to essential minimum. Approach and takeoff from and to seaward only. Contact ADF&G and USFWS prior to treatment.

SUBDIVISION ECOLOGICAL CONSTRAINTS: Avoid unnecessary disturbance/damage to unoiled biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS: If cultural resources are uncovered during shoreline treatment, stop work in the vicinity, mark the location of the find and contact a member of Exxon's Cultural Resource Program immediately (564-3657; 564-3658 or 564-3276).

SHPO SIGNATURE:_________________________________ DATE:__________________

OILING CATEGORIZATION:
Wide 0 m: Medium 47 m: Narrow 0 m: V.Light 0 m: No Oil 0 m
Subsurface Oil Observed: Yes X No Maximum Depth 15 cm

RECOMMENDATIONS:
X No Treatment Recommended
X Treatment Recommended
X Manual Pickup
R X Bioremediation
R Tarmat: Breakup
R Removal
Snare/Absorbent Booms
Oil Snares (pom poms)
Absorbents (pads,rolls,etc)
Spot Washing: Wands
Wands
Spot Washing: Wands
Beach Cleaner
Other (see comments)

COMMENTS: Manual removal of pooled oil, oily trash and debris, bioremediate. Should be done before 5/1, weather and safe access permitting. No air traffic or work crew access from 5/1 to 9/1.

TAG COMMENTS:______________________________________________________________

TAG APPROVAL DATE:__________________
ADEC
EXXON
NOAA
USCG

FOSC:_____________ DATE:___________
Manual removal of oil and debris is recommended. The oil, especially the pooled oil in the upper 172, is quite thick and may be hardened in the upper 172. Cleanup will be effective only if done early. If we have to wait until September the oil will harden further. Hopefully, cleanup can be completed prior to the bird colony critical time window (1 May).

I am suggesting manual removal of the pooled oil and the oil and debris, keeping in mind the time window for the bird colonies.

Oiled debris and readily recoverable oil should be removed, especially in the New corner of the beach. Due to the limited oil cleanup methods available adequate treatment will be difficult. Because of the presence of critical wildlife nearby including a bald eagle nest, peregrine falcon nest and seabird colony cleanup must occur. Further treatment should be considered.
**SHORELINE OILING SUMMARY**

**OG**

**BIO**

**EXXON**

**TEAM NO.**

**EST. SUBDIVISION LENGTH:**

**LAND DESCRIPTION:**

**SURVEYED FROM:**

**WORKING DIRECTION:**

**SLOPE:**

**SURFACE SEDIMENTS:**

**OIL CATEGORY LENGTH:**

**SURFACE OIL**

**SUBSURFACE OIL**

**PIT NO.**

**PIT DEPTH**

**SUBSURFACE OIL CHARACTER**

**OILED INTERVAL**

**BELOW**

**OIL / FILM COLOR**

**PIT ZONE**

**SUBSURFACE SEDIMENTS**

**NOTES:**

Regarding pits: subsurface oil is considered any oil that is in interstitial below the general surface where the boulders sit. It is not a continuous unit but is instead discontinuous around the boulders (not is it continuous between the boulders). Boulder surfaces have mostly <10% cv, ct, and (most) stain left of remnant patches or protected surfaces.

REVIEWED BAT DATE 4 Apr 90

Page 1 of 4

APR-00-1990 2:16:58 FROM Gasco Alas
### Barnacles

<table>
<thead>
<tr>
<th>Density</th>
<th>1U</th>
<th>1M</th>
<th>1L</th>
<th>Moderate</th>
<th>1U</th>
<th>1M</th>
<th>1L</th>
<th>Sparse</th>
<th>1U</th>
<th>1M</th>
<th>1L</th>
<th>Rare</th>
<th>1U</th>
<th>1M</th>
<th>1L</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

### Mytilus

<table>
<thead>
<tr>
<th>Density</th>
<th>1U</th>
<th>1M</th>
<th>1L</th>
<th>Moderate</th>
<th>1U</th>
<th>1M</th>
<th>1L</th>
<th>Sparse</th>
<th>1U</th>
<th>1M</th>
<th>1L</th>
<th>Rare</th>
<th>1U</th>
<th>1M</th>
<th>1L</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

### Gastropods

<table>
<thead>
<tr>
<th>Density</th>
<th>1U</th>
<th>1M</th>
<th>1L</th>
<th>Moderate</th>
<th>1U</th>
<th>1M</th>
<th>1L</th>
<th>Sparse</th>
<th>1U</th>
<th>1M</th>
<th>1L</th>
<th>Rare</th>
<th>1U</th>
<th>1M</th>
<th>1L</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

### Fucus

<table>
<thead>
<tr>
<th>Density</th>
<th>1U</th>
<th>1M</th>
<th>1L</th>
<th>Moderate</th>
<th>1U</th>
<th>1M</th>
<th>1L</th>
<th>Sparse</th>
<th>1U</th>
<th>1M</th>
<th>1L</th>
<th>Rare</th>
<th>1U</th>
<th>1M</th>
<th>1L</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

**Wildlife Observational General Comments:**

Bald eagle (1). mature.

**Ecological Considerations:**

* Sensitivity codes: 5-T (Bald eagle nest), 5-R (Seabird colony), 4-QQ (Not Wildlife Refuge).
SEGMENT ST/PL

DATE: APRIL 19 90

CHECKLIST

Rainfall
Aggregation Scale
Seg/Sub Body
Oil/Dirt
Width
Length
% Cover
Substrate Character

LEGEND

1
Phi: No Subsurface Oil

2
Phi: Subsurface Oil

CT:"CCT"
Continuos Distribution
Broken Distribution

CT/P
Pecky Distribution

CT/S
Splattered Distribution

Oil Stained Vegetation

--- Photo location, direction, and number

Oil Character Length (m): AP O PO 40 CV 40 CT 95 ST 95 MS O PT O TB O FL O NO 30
due to convoluted shoreline, it is impossible to show boundaries of subdiv A + B.

I suggest you enter this to GIS as 100 of "medium"
somewhere in this cave.

Map Key: KEN-1010
Name: Mann
Date:___
REGION: KENAI

SEGMENT: PY-06

SUBDIVISIONS: B (2 OF 4)
SHORELINE EVALUATION

SEGMENT ST/ PY-06 SUBDIVISION B (2 OF 4) DATE 4/1/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
Bald eagle nest (5T) - 3/1 to 6/1; Seabird colony (5R) - 5/1 to 9/1; National Wildlife Refuge (400). Restrict air traffic to essential minimum. Approach and takeoff from and to seaward only. Contact ADF&G and USFWS prior to treatment.

SUBDIVISION ECOLOGICAL CONSTRAINTS: Avoid unnecessary disturbance/damage to unoiled biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS: If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO SIGNATURE: __________________ DATE: _______________________

OILING CATEGORIZATION:
Wide 0 m: Medium 42 m: Narrow 0 m: V.Light 0 m: No Oil 0 m
Subsurface Oil Observed: Yes No X Maximum Depth ___

RECOMMENDATIONS:
X No Treatment Recommended Snare/Absorbent Booms
_____ Treatment Recommended Oil Snares (pom poms)
_____ Manual Pickup Absorbsents (pads, rolls, etc)
_____ Bioremediation Spot Washing: Wands
_____ Tarmat: Breakup Beach Cleaner
_____ Removal Spot Washing: Wands
_____ Other (see comments)

COMMENTS: ______________________________________________________

_________________________________________________________________

TAG COMMENTS: __________________________________________________

_________________________________________________________________

TAG APPROVAL DATE: __________
ADEC EXXON NOAA USCG
FOSC: __________________ DATE: ______

_________________________________________________________________
SEGMENT ST1  PY 06  SUBDIVISION:  B  DATE APRIL 1, 1990

NAME  JACQUI MICHIE  SIGNATURE  J. MICHIE

☐ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS

This site is inaccessible.

AME  JOHN R. REED  SIGNATURE  John R. Reed

☐ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS

This site is inaccessible.

AND MANAGER  Usful

AME  Mary Partners  SIGNATURE  Mary Partners

☐ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS

Oil remains in the form of stain, coat cover and pooled. Due to the oil to a height of 15 m. in the hostPh Cruch. Due to the inaccessibility of the area it cannot be adequately treated. Weathering of this oil since 1984 is negligible.
OG: LANN
USCG/NOA: MICHEL
BIO: CARR LAND REP: POTTER - FWS
EXXON: ROYER ADEC: REED

TEAM NO.: 18
TIDE LEVEL: +0.2 to 0.0
EST. SUBDIVISION LENGTH: 120 m
DATE: 19NO. 1/1/90

SURFACE DESCRIPTION: ☑ Grass ☑ Forest ☑ Rock

SURVEYED FROM: ☑ Foot ☑ Boat ☑ Helo
WORKING DIRECTION: NA to

SLOPE: Lang 10% Hang 10% Ven 90% WAVE EXPOSURE: ☑ Low ☑ Med ☑ High

OIL CATEGORY LENGTH: W 0 m M 70 m N 10 m V 0 m NO 20 m

SURFACE OIL

<table>
<thead>
<tr>
<th>CHARACTER</th>
<th>DISTRIBUTION</th>
<th>OIL / FILM COLOR</th>
<th>IMPACTED ZONES</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASPHALT PAVEMENT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>POOLED</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>COVER</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>COAT</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>STAIN</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>MOUSSE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PATTIES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TARBALLS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FILM</td>
<td></td>
<td></td>
<td>✔</td>
</tr>
<tr>
<td>NO OIL</td>
<td></td>
<td></td>
<td>✔</td>
</tr>
</tbody>
</table>

PAVEMENT: HFS N/A m, b N/A cm

PATTIES/TARBALLS 0 BAGS

NEAR SHORE SHEEN? NO BR RW SL TL

OILED DEBRIS YES AMOUNT
Legs ✔ Legs MD
Vegetation
Trash
Debris #BAGS N/A

Photographs:
Roll No. 18-2
Frames 29-31

SUBSURFACE OIL

NO PITS DUG BECAUSE SITE IS INACCESSIBLE TO FOOT TRAFFIC.

<table>
<thead>
<tr>
<th>PIT NO.</th>
<th>PIT DEPTH (cm)</th>
<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED INTERVAL</th>
<th>BELOW OIL / FILM COLOR</th>
<th>PIT ZONE</th>
<th>SUBSURFACE SEDIMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

COMMENTS

* We observed Hoist Point Crack by binoculars from atop a 100' cliff.

This site is inaccessible due to high cliffs. The spectacular oiling of its upward walls was the result of oil spraying during big waves. Weathering of the oil on the wall has been slight since last August—except for the lower portion of these walls.

Page 1 of

REVIEWED: SAT DATE: 5/30/90

APR-03-1990 21:23 FROM: ESLAD TO: ESLAD R:65

Page 1 of 2
I~
L
L
0
n~
SUBOMISON
Pl--01
LEGEND

1
2
Pt - No Subsurface Oil
Pt - Subsurface Oil
Continuous Distribution
Broken Distribution
Patchy Distribution
Splashed Distribution
Oil Character Length (m): AP 0 PO 10 CV 20 CT 70 ST 70 MS 0 PT 0 TB 0 FL 0 NO 60

Oil Character Length (m): AP 0 PO 10 CV 20 CT 70 ST 70 MS 0 PT 0 TB 0 FL 0 NO 60

NB: width of the cave is exaggerated

Hoof Point Crack
boulders (v. large)
SHORELINE ECOLOGICAL SUMMARY

Segment ST/PY 6, Subdivision B (of A-D) Date (mo/day/yr) 4/1/80

Time (24 hr) 1200 Biologist M. Carr

(A) Substrate type and % of segments:
1. Bedrock (2) Boulder (3) Cobble (4) Pebble (5) Sand (6) Silt

(B) Overall % cover of biota (% of segment): Dense Moderate Low

(C) Density: substrate preference (by number from A, above), &
vertical zonation of major taxa: (upper-U; mid-M; low tidal-L);
juveniles/ adults (X), new settlement (3)

Barnacles

<table>
<thead>
<tr>
<th></th>
<th>Dense</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>1U</td>
<td>1M</td>
<td>1L</td>
<td>1U</td>
<td>1M</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

Mytilus

<table>
<thead>
<tr>
<th></th>
<th>Dense</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>1U</td>
<td>1M</td>
<td>1L</td>
<td>1U</td>
<td>1M</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

Gastropods

<table>
<thead>
<tr>
<th></th>
<th>Dense</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>1U</td>
<td>1M</td>
<td>1L</td>
<td>1U</td>
<td>1M</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

Fucus

<table>
<thead>
<tr>
<th></th>
<th>Dense</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>1U</td>
<td>1M</td>
<td>1L</td>
<td>1U</td>
<td>1M</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

Wildlife Observations/ General Comments:

Bald eagle (2), both immature.

Ecological Considerations:

Sensitivity codes: Same as PY-6A.

5R - Seabird colony (1 May - 1 Sept)
5T - Bald Eagle Nest (1 Mar - 1 June)
5RC - USFWS Refuge

Site is inaccessible, so ecological data were not collected.
due to convoluted shoreline, it is impossible to show boundaries of subdiv. A+B.

I suggest you enter this to GIS as 100 of "medium" somewhere in this cove.

---XXX Wide
---/// Medium
------ Narrow
---TTTT Very Light

PY-6

Map Key: KEN-101a
Name: [Name]
Date: [Date]
subdivisions A and B are enclosed in this box. Due to the convoluted shoreline, it is impossible to show boundaries of subdiv. s A and B on this map. I suggest you enter 100m of "medium" oiling to your GIS map.

Map Key: REN-1010
Name: [Name]
Date: 4/1/190

PY-6

XXX Wide
/// Medium
---- Narrow
TTTT Very Light

ADEC Segment Length: 15052m
REGION: KENAI

SEGMENT: PY-06

SUBDIVISIONS: C (3 OF 4)
SHORELINE EVALUATION

SEGMENT ST/ PY-06 SUBDIVISION C (3 OF 4) DATE 4/1/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
Bald eagle nest (5T) - 3/1 to 6/1; Seabird colony (5R) - 5/1 to 9/1; National Wildlife Refuge (4QO). Restrict air traffic to essential minimum. Approach and takeoff from and to seaward only. Contact ADF&G and USFWS prior to treatment.

SUBDIVISION ECOLOGICAL CONSTRAINTS: Avoid unnecessary disturbance/damage to uncoiled biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS: If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO SIGNATURE: __________________ DATE: __________________

OILING CATEGORIZATION:
Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 0 m: No Oil 785 m
Subsurface Oil Observed: Yes No X Maximum Depth

RECOMMENDATIONS:
X No Treatment Recommended ___ Snare/Absorbent Booms
___ Treatment Recommended ___ Oil Snares (pom poms)
___ Manual Pickup ___ Absorbents (pads, rolls, etc)
___ Bioremediation ___ Spot Washing: ___ Wands
___ Tarmat: ___ Breakup ___ Beach Cleaner
___ Removal ___ Other (see comments)

COMMENTS:


TAG COMMENTS:


TAG APPROVAL DATE: ____________
ADEC ________ EXXON ________ FOSC: ____________ DATE: ________
NOAA ________ USCG ____________
No oil was observed.

No oil was spotted.

No oil was observed.
SHORELINE OILING SUMMARY

TEAM NO.: 18
DATE: 1/1/90
TIME: 13:00 to 13:20

EST. SUBDIVISION LENGTH: 3618 m
DATE: 1/1/90

SURVEYED FROM: Foot

WORKING DIRECTION: S to N

SURFACE OIL

<table>
<thead>
<tr>
<th>CHARACTER</th>
<th>DISTRIBUTION</th>
<th>OIL / FILM COLOR</th>
<th>IMPACTED ZONES</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASPHALT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PAVEMENT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>POOLED</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COVER</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COAT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STAIN</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MOUSSE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PATTIES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TARBALLS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FILM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NO OIL</td>
<td></td>
<td></td>
<td>✔ ✔ ✔</td>
</tr>
</tbody>
</table>

PAVEMENT: H F S O sq.m by 0 cm

PATTIES / TARBALLS: 0 BAGS

NEAR-SHORE SHEEN?: NO BR RW SL TL

OILED DEBRIS: NO
AMOUNT: $M $M $D $L

DEBRIS COLLECTED: NO
TYPE: N/A

Photographs:
Roll No.: None
Frames: None

SUBSURFACE OIL

PIT NO. | PIT DEPTH (cm) | SUBSURFACE OIL CHARACTER | OILED INTERVAL | OILED INTERVAL (cm/cm) | OIL / FILM COLOR | OIL / FILM COLOR | PIT ZONE | ANA | SUBSURFACE SEDIMENTS |
--------|----------------|---------------------------|----------------|------------------------|------------------|------------------|----------|-----|----------------------|
        |                |                            |                |                        |                  |                  |          |     |                      |

COMMENTS

We failed to find any oil here. Lighting was good, tide level was suitable,
and the rock is light-colored. This subdivision is uniform in geomorphology
and oiling (none) and so compares everywhere in PY-6
except subdivision A and B.
NO SKETCH - NO OIL
**SHORELINE ECOLOGICAL SURVEY**

Segment ST, PY-6 Subdivision C (of A-D) Date (mo/day/yr) 4/1/90

Time (24 hr) 1330 Biologist M. CARR

(A) Substrate type and % of segments:

- 1) Bedrock [10]
- 2) Boulder [10]
- 3) Cobble [12]
- 4) Pebble [26]
- 5) Sand [20]
- 6) Silt [10]


(C) Density, substrate preference (by number from A above), &
vertical zonation of major taxa: (upper-U; mid-M; low tidal-L):
juveniles/adults (%), new settlement (3)

<table>
<thead>
<tr>
<th>SUBDIVISION</th>
<th>Dense</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>1U</td>
<td>2</td>
<td>1M 1L</td>
<td>2 1M 1L</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>3 3</td>
<td>3 3</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>4 4</td>
<td>4 4</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>5 5</td>
<td>5 5</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
<td>6 6</td>
<td>6 6</td>
<td>6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BARNACLES</th>
<th>NOT PRESENT</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>SUBDIVISION</th>
<th>Dense</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>1U</td>
<td>2</td>
<td>1M 1L</td>
<td>2 1M 1L</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>3 3</td>
<td>3 3</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>4 4</td>
<td>4 4</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>5 5</td>
<td>5 5</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
<td>6 6</td>
<td>6 6</td>
<td>6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MYTILUS</th>
<th>NOT PRESENT</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>SUBDIVISION</th>
<th>Dense</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>1U</td>
<td>2</td>
<td>1M 1L</td>
<td>2 1M 1L</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>3 3</td>
<td>3 3</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>4 4</td>
<td>4 4</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>5 5</td>
<td>5 5</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
<td>6 6</td>
<td>6 6</td>
<td>6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GASTROPODS</th>
<th>NOT PRESENT</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>SUBDIVISION</th>
<th>Dense</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>1U</td>
<td>2</td>
<td>1M 1L</td>
<td>2 1M 1L</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>3 3</td>
<td>3 3</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>4 4</td>
<td>4 4</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>5 5</td>
<td>5 5</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
<td>6 6</td>
<td>6 6</td>
<td>6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FUCUS</th>
<th>NOT PRESENT</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>SUBDIVISION</th>
<th>Dense</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>1U</td>
<td>2</td>
<td>1M 1L</td>
<td>2 1M 1L</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>3 3</td>
<td>3 3</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>4 4</td>
<td>4 4</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>5 5</td>
<td>5 5</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
<td>6 6</td>
<td>6 6</td>
<td>6</td>
</tr>
</tbody>
</table>

Wildlife Observations/General Comments:

- Glacier-winged gull (2 colonies = 250 indv)
- Surf scoter (5)
- Common murre (1)
- One adult (1)
- Comstock, red-faced (100)

Ecological Considerations:

- Sensitivity codes: Same as PY-6 A
- 52 - SEABIRD Colony 1 May - 1 Sept
- ST - Active Eagle Nest 1 Mar - 1 June
- 4QA - Nat'l Wildlife Refuge

- Boulder are so large, their & fauna abundances are very similar to bedrock.
Subdivisions A and B are enclosed in this box. Due to the convoluted shoreline, it is impossible to show boundaries of subdivisions A and B on this map. I suggest you enter 100m of "medium" oiling to your GIS map.
REGION: KENAI

SEGMENT: PY-06

SUBDIVISIONS: D (4 OF 4)
SEGMENT ST/ PY-06  SUBDIVISION D (4 OF 4)  DATE 4/5/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
Bald eagle nest (5T) - 3/1 to 6/1; Seabird colony (5R) - 5/1 to 9/1; National Wildlife Refuge (400). Restrict air traffic to essential minimum. Approach and takeoff from and to seaward only. Contact ADF&G and USFWS prior to treatment.

SUBDIVISION ECOLOGICAL CONSTRAINTS: Avoid unnecessary disturbance/damage to unoiled biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS: If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO SIGNATURE: ______________________ DATE: ______________________

OILING CATEGORIZATION:
Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 0 m: No Oil 2611 m
Subsurface Oil Observed: Yes __ No X __ Maximum Depth

RECOMMENDATIONS:
X No Treatment Recommended  Snare/Absorbent Booms
____ Treatment Recommended  Oil Snares (pom poms)
____ Manual Pickup  Absorbents (pads, rolls, etc)
____ Bioremediation  Spot Washing: Wands
____ Tarmat: Breakup  Beach Cleaner
____ Removal  Other (see comments)

COMMENTS:

TAG COMMENTS:

TAG APPROVAL DATE: __________
ADEC EXXON NOAA USCG  FOSC: __________ DATE: __________
FIELD SHORELINE COMMENT SHEET

SEGMENT ST  PY 6   SUBDIVISION: D    DATE 4/1/90

USCG/NOAA
NAME  JACQUI MICHEL  SIGNATURE  

☐ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED
COMMENTS

No oil observed.

ADEC
NAME  JOHN R. REED  SIGNATURE  

☐ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED
COMMENTS

No oil was spotted.

LAND MANAGER
NAME  MARY PORTER  SIGNATURE  

☐ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED
COMMENTS

No oil was observed.
SHORELINE OILING SUMMARY

REVISION NO. 03/22/90

OG MANN USCG/NOAA MICHIEL SEGMENT ST/ P2

BIO CARR LAND REP PARTNER - BUS SUBDIVISION

EXXON COYER ADEC FEED TIME 13:00 to 13:20

TEAM NO.: 1B TIDE LEVEL: +0.1 to 0.0 DATE 4/11/90

EST. SUBDIVISION LENGTH: 2950 m

LANDS DESCRIPTION: ☐ Grass ☐ Forest ☐ Rock

SURVEYED FROM: ☐ Foot ☐ Boat ☐ Helo WORKING DIRECTION: SOUTH to NORTH

SURFACE SEDIMENTS: R 90% B 10% C 0% P 0% G 0% S 0% M 0% V 0%

SLOPE: Lang 0% Hang 0% Vert 90% WAVE EXPOSURE: ☐ Low ☐ Med ☐ High

OIL CATEGORY LENGTH: W 0 m M 0 m N 0 m VL 0 m NO 2950 m

SURFACE OIL

<table>
<thead>
<tr>
<th>CHARACTER</th>
<th>DISTRIBUTION</th>
<th>OIL / FILM COLOR</th>
<th>IMPACTED ZONES</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASPHALT PAVEMENT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>POOLED</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COVER</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COAT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STAIN</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MOUSSE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PATTIES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TARBALLS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FILM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NO OIL</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

PAVEMENT: H 0 F S N/A sq. m by N/A cm

PATTIES / TARBALLS N/A BAGS

NEAR SHORE SHEEN? ☐ BR RW SL TL

OILED DEBRIS N/A AMOUNT SM MD LG

<table>
<thead>
<tr>
<th>Debris Type</th>
<th>Logs</th>
<th>Vegetation</th>
<th>Trash</th>
<th>Debris</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>☐YES</td>
<td>☐NO</td>
<td></td>
<td>N/A</td>
</tr>
</tbody>
</table>

Photographs:

Roll No. N/A
Frames N/A

SUBSURFACE OIL SHORELINE WAS INACCESSIBLE SHEER ROCK CLIFF

<table>
<thead>
<tr>
<th>PIT NO.</th>
<th>DEPTH (cm)</th>
<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED INTERVAL (CM-CM)</th>
<th>BELOW OIL / FILM COLOR</th>
<th>OIL / FILM COLOR</th>
<th>PIT ZONE</th>
<th>ANA</th>
<th>SUBSURFACE SEDIMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

COMMENTS

We failed to find any oil on this subdivision. Lighting was good, tide level was suitable, and the rock is light colored (and it was dry). This subdivision is uniform in geomorphology and oiling (no oil).
SKETCH MAP

NO SKETCH - NO OIL

CHECKLIST

LEGEND

1 △
Pt - No Subsurface Oil

2 △
Pt - Subsurface Oil

CT/C
Complete Distribution

CT/B
Broken Distribution

CT/E
Patchy Distribution

CT/S
Splashed Distribution

Oiled Vegetation

Oil Character Length (m): AP 0  PO 0  CV 0   CT 0  ST 0  MS 0  PT 0  TB 0  FL 0  NO 29.50

Date: 4/1/90
**SHORELINE ECOLOGICAL SUMMARY**

Segment ST **PY-6** Subdivision **D** (of A-D) **Date** (mo/day/yr) **01/11/90**

**Time** (24 hr) **1300** **Biologist** **M. CARR**

**Subdivision**

(A) **Substrate type and % cover of segments:**

1) **Bedrock** 90% (2) Boulder 10% (3) Cobble (4) Pebble (5) Sand (6) Silt

(B) **Overall % cover of biota (% of segment):** Dense 70% Moderate 20% Low 10%

(C) **Density, substrate preference (by number from A, above), & vertical zonation of major taxa:** (upper-U; mid-M; low tidal-L; juveniles/adults (X), new settlement (3))

### Photographs:

**Roll No.**

**Frames** **NONE**

#### BARNACLES

<table>
<thead>
<tr>
<th>Density</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>1U</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

**NOT PRESENT**

#### MYTILUS

<table>
<thead>
<tr>
<th>Density</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>1U</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

**NOT PRESENT**

#### GASTROPODS

<table>
<thead>
<tr>
<th>Density</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>1U</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

**NOT PRESENT**

#### FUCUS

<table>
<thead>
<tr>
<th>Density</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>1U</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

**NOT PRESENT**

---

**Wildlife Observations/ General Comments:**

---

**Ecological Considerations:**

- **Sensitivity codes:**
  - 5T (Bald Eagle nest)
  - 5R (Seabird Colony)
  - 4QQ (National Wildlife Refuge)
SENSITIVE SITES

subdivisions A and B are enclosed in this box. Due to the convoluted shoreline, it is impossible to show boundaries of subdiv.'s A and B on this map. I suggest you enter 100m of "medium" oiling to your G15 map.

Wide
/// Medium
----- Narrow
TTTTT Very Light

Map Key: KEN-1010
Name: Navy
Date: 4/1/90

PY-6

ADEC Segment Length: 15052m
Subdivisions A and B are enclosed in this box. Due to the convoluted shoreline, it is impossible to show boundaries of subdiv's A and B on this map. I suggest you enter 100m of "medium" oiling to your GIS map.

XXXWide
///Medium
---Narrow
TTTTVery Light

Map Key: KEK-101a
Name: Mm
Date: 4/1/90

PY-06

PY-6

PY-7

PY-6

PY-6

PY-6

PY-6

PY-6

PY-6

PY-6

PY-6

PY-6

PY-6

PY-6

PY-6

PY-6
SHORELINE EVALUATION

SEGMENT ST/ PY-06 SUBDIVISION A (1 OF 4) DATE 4/1/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
Bald eagle nest (5T) - 3/1 to 6/1; Seabird colony (5R) - 5/1 to 9/1; National Wildlife Refuge (4QQ). Restrict air traffic to essential minimum. Approach and takeoff from and to seaward only. Contact ADF&G and USFWS prior to treatment.

SUBDIVISION ECOLOGICAL CONSTRAINTS: Avoid unnecessary disturbance/damage to unoiled biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS: Consultation and inspection with an Exxon archaeologist is required prior to treatment. Specific on-site monitoring requirements will be determined at that time.

ARCHAEOLOGICAL CONSTRAINTS: An Exxon archaeological monitor is required on-site during shoreline treatment.

SHPO SIGNATURE: [Signature] DATE: April 14, 1990

OILING CATEGORIZATION:
Wide 0 m: Medium 47 m: Narrow 0 m: Medium 47 m: No Oil 0 m
Subsurface Oil Observed: Yes X No Maximum Depth 15 cm

RECOMMENDATIONS:
X No Treatment Recommended
X Treatment Recommended
X Manual Pickup
X Bioremediation

---
X Tarmat: Breakup
X Removal

---
X Snare/Absorbent Booms
X Oil Snares (pom poms)
X Absorbents (pads, rolls, etc)
X Spot Washing: Wands
X Beach Cleaner
X Other (see comments)

COMMENTS: Manual removal of pooled oil, oily trash and debris, bioremediate. Should be done before 5/1, weather and safe access permitting. No air traffic or work crew access from 5/1 to 9/1.

TAG COMMENTS: DUE TO LAND MANAGER COMMENTS (USFWS) ON BIOREMEDIATION, ANPCL MAY NOT BE APPROVED BY THE LAND MANAGER. SHOULD THAT BE THE CASE WE RECOMMEND THE USE OF CUSTOMER FOR THE BIOREMEDIATION APPLICATION.

TAG APPROVAL DATE: 4/13/90
ADEC [Signature] DATE: 4-20-90
EXXON [Signature] DATE: 4-20-90
NOAA [Signature] DATE: 4-20-90
USCG [Signature] DATE: 4-20-90

Do not bioremediate
Sensitive Sites

PY-05

due to convoluted shoreline, it is impossible to show boundaries of Subdiv. A & B.

I suggest you enter this to GIS as 100 of "medium" somewhere in this cove.

PY-6

ADEC Segment Length: 15052m

Map Key: KEH-1010
Name: Mann
Date: ___
subdivisions A and B are enclosed in this box. Due to the convoluted shoreline, it is impossible to show boundaries of subdivisions A and B on this map. I suggest you enter 100m of "medium" oiling to your GIS map.
SEGMENT ST/ PY-06 SUBDIVISION B (2 OF 4) DATE 4/1/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
Bald eagle nest (5T1) - 3/1 to 6/1; Seabird colony (5R) - 5/1 to 9/1; National Wildlife Refuge (400). Restrict air traffic to essential minimum. Approach and takeoff from and to seaward only. Contact ADF&G and USFWS prior to treatment.

SUBDIVISION ECOLOGICAL CONSTRAINTS: Avoid unnecessary disturbance/damage to unoiled biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS: If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO SIGNATURE: [Signature] DATE: April 14, 1990

OILING CATEGORIZATION:
Wide 0 m; Medium 42 m; Narrow 0 m; V.Light 0 m; No Oil 0 m Subsurface Oil Observed: Yes No X Maximum Depth ______

RECOMMENDATIONS:
X No Treatment Recommended _____ Snare/Absorbent Booms
_____ Treatment Recommended _____ Oil Snares (pom poms)
_____ Manual Pickup _____ Absorbents (pads, rolls, etc)
_____ Bioremediation _____ Spot Washing: _____ Wands
_____ Tarmat: _____ Breakup _____ Spot Washing: Beach Cleaner
_____ Removal _____ Other (see comments)

COMMENTS: __________________________________________

TAG COMMENTS: _______________________________________

TAG APPROVAL DATE: 4/12/90
ADEC [Signature] EXXON [Signature] NOAA [Signature] USCG [Signature]

FOSC: [Signature] DATE: 4/20/90
Sensitive Sites

PY-05

due to convoluted shoreline, it is impossible to show boundaries of subdiv. A + B.

I suggest you enter this to GIS as 100 "medium" somewhere in this cove.

data entry: pul 2" III's in this area somewhere

XX Wide
/// Medium
---- Narrow
TTTT Very Light

ADEC Segment Length: 15952m

Map Key: KEN-1010
Name: [Name]
Date: [Date]
subdivisions A and B are enclosed in this box. Due to the convoluted shoreline, it is impossible to show boundaries of subdiv.'s A and B on this map. I suggest you enter 100m of 'medium' oiling to your GIS map.
SHORELINE EVALUATION

SEGMENT ST/ PY-06 SUBDIVISION C (3 OF 4) DATE 4/1/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
Bald eagle nest (5T) - 3/1 to 6/1; Seabird colony (5R) - 5/1 to 9/1; National Wildlife Refuge (400). Restrict air traffic to essential minimum. Approach and takeoff from and to seaward only. Contact ADF&G and USFWS prior to treatment.

SUBDIVISION ECOLOGICAL CONSTRAINTS: Avoid unnecessary disturbance/damage to uncoiled biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS: If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO SIGNATURE: [Signature] DATE: April 17, 1990

OILING CATEGORIZATION:
Wide 0 m; Medium 0 m; Narrow 0 m; V.Light 0 m; No Oil 785 m
Subsurface Oil Observed: Yes____ No X____
Maximum Depth

RECOMMENDATIONS:
X___ No Treatment Recommended ____ Snare/Absorbent Booms
_____ Treatment Recommended ____ Oil Snares (pom poms)
_____ Manual Pickup ____ Absorbents (pads, rolls, etc)
_____ Bioremediation ____ Spot Washing: ___ Wands
_____ Tarmat: ___ Breakup ____ Beach Cleaner
_____ Removal ____ Other (see comments)

COMMENTS:

TAG COMMENTS:

TAG APPROVAL DATE: 4/13/90
ADEC [Signature] DATE: 4-20-90
EXXON [Signature] FOSSC: [Signature]
NOAA [Signature] DATE: 4-20-90
USCG [Signature]
Sensitive Sites

PY-05

due to convoluted shoreline, it is impossible to show boundaries of Subdiv. A+B.

I suggest you enter this to GIS as 100 of "medium" somewhere in this cove.

PY-6

Map Key: REX-1010
Name: Mann

Wide
Medium
Narrow
Very light
subdivisions A and B are enclosed in this box. Due to the convoluted shoreline, it is impossible to show boundaries of subdiv's A and B on this map. I suggest you enter 100m of "medium" oiling to your GIS map.
SHORELINE EVALUATION

SEGMENT ST/ PY-06 SUBDIVISION D (4 OF 4) DATE 4/5/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:

Bald eagle nest (5T) - 3/1 to 6/1; Seabird colony (5R) - 5/1 to 9/1; National Wildlife Refuge (400). Restrict air traffic to essential minimum. Approach and takeoff from and to seaward only. Contact ADF&G and USFWS prior to treatment.

SUBDIVISION ECOLOGICAL CONSTRAINTS: Avoid unnecessary disturbance/damage to unoiled biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS: If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO SIGNATURE: [Signature] DATE: April 14, 1990

OILING CATEGORIZATION:
Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 0 m: No Oil 2611 m
Subsurface Oil Observed: Yes No X Maximum Depth

RECOMMENDATIONS:
X No Treatment Recommended Snare/Absorbent Booms
____ Treatment Recommended Oil Snare (pom poms)
____ Manual Pickup Absorbents (pads, rolls, etc)
____ Bioremediation Spot Washing: Wands
____ Tarmat: Breakup Beach Cleaner
____ Removal Other (see comments)

COMMENTS:

__________________________________________________

TAG COMMENTS:

TAG APPROVAL DATE: 4/13/90
ADEC [Signature] DATE: 4/20/90
EXXON [Signature]
NOAA [Signature]
USCG [Signature]
Subdivisions A and B are enclosed in this box. Due to the convoluted shoreline, it is impossible to show boundaries of subdivs A and B on the map. I suggest you enter 100m of "medium" oiling to your GIS map.
subdivisions A and B are enclosed in this box. Due to the convoluted shoreline, it is impossible to show boundaries of subdiv. A and B on this map. I suggest you enter 100m of "medium" oiling to your GIS map.

XXX Wide
/// Medium
--- Narrow  

PY-6

Map Key: KEN-101o
Name: Momr
Date: 4/1/90
1991 MAYSAP EVALUATION

SEGMENT: PY 006  SUB: A  REGION: KEN  SURVEY DATE: 5/13/91

ENVIRONMENTAL SENSITIVITIES:
Work Window(s)  RESTRICTED 5/15 - 9/1

Ecological/Constraints (see page two for details)  Seabird colony

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO Signature: _________________________ Date: _____________________

RECOMMENDATIONS:

<table>
<thead>
<tr>
<th>TREATMENT REQUIRED (Y or N)</th>
<th>INITIAL</th>
<th>TAG</th>
<th>FOSC</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Manual Pickup (Check as Req.)
Spot Washing
Bio-Customblen Only
Bio-Inipol/Customblen
Other
Other

COMMENTS:

INITIAL:

TAG:

FOSC:

TAG APPROVAL DATE: __________  FOSC APPROVAL DATE: __________

ADEC____________________  FOSC____________________

EXXON__________________

USCG___________________

NOAA__________________
ECOLOGICAL CONSTRAINTS
1991 FIELD ACTIVITIES

TEAM NO. 4   SEGMENT P4006   SUBDIVISION A   DATE MAY 13 91

ADEC NAME: Claibor S. Crosby          SIGNATURE: Claib S. Crosby
TREATMENT RECOMMENDED - Although this subsequent has a substantial amount of NPS/0il remaining - a consistent band under LG B & &10 cm in depth - I am at a loss to recommend treatment for this site. Vessel access from the East would have to be under ideal conditions & cutting overland from the West would result in impact to the uplands - manual removal. If performed would be superficial.

EXXON NAME: George P. Shiles          SIGNATURE: George P. Shiles 5/14/91
TREATMENT RECOMMENDED - The MS remaining under the volkswagen size boulders is hard to estimate due to the size of the boulders. There is a lot of debris with some of it being oiled. A hard trowel would be very ineffective since the boulders cannot be moved.

LANDMANAGER NAME: John P. Harrister of USFWS          SIGNATURE: John P. Harrister
TREATMENT RECOMMENDED - The boulders that cover this segment would prevent a significant amount of oil from being removed. Thus a cleanup effort would be ineffective and is, therefore, not recommended.

USCG/NOAA NAME: R. McMahan          SIGNATURE: R. McMahan
TREATMENT RECOMMENDED - Clean-up deemed the impractical due to the light oiling of the segment.

DONNA A. Macdonald          DONALD A. Macdonald
MAJORITY OF OILS DOWN IN CRACKS AND UNDER HIGH BURIED, EXACT EXTENT OF OILSPILLS DIFFICULT TO DETERMINE.
MAYSAP SHORELINE OILING SUMMARY

TEAM NO. 4
BIO: J. Barry
LANDMANAGER: John Herdster
USCG/NOAA: John Hardster

DATE: May 13, 1991
TIME: 17:10 to 18:00
TIDE LEVEL: 4.8 ft to 3.2 ft
ENERGY LEVEL: □ H □ M □ L
SURVEYED FROM: □ FOOT □ BOAT □ HELO
WEATHER: □ SUN □ CLOUDS □ FOG □ RAIN □ SNOW
TOTAL LENGTH SHORELINE SURVEYED: 47 m
NEAR SHORE SHEEN: □ BR □ RB □ SL □ NONE
EST. OIL CATEGORY LENGTH:
W _ m M 35 m N _ m V _ m L _ m US _ m

<table>
<thead>
<tr>
<th>SURFACE OIL CHARACTER</th>
<th>SURFACE SEDIMENT</th>
<th>AREA Width LENGTH m m</th>
<th>ZONE</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SURFACE OIL CHARACTER</th>
<th>SURFACE SEDIMENT</th>
<th>AREA Width LENGTH m m</th>
<th>ZONE</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

DISTRIBUTION: C = 81-100%; B = 61-80%; P = 41-60%; S = 1-40%; T < 1%
SLOPE: V = VERTICAL; H = HIGH ANGLE; M = MEDIUM ANGLE; L = LOW ANGLE

<table>
<thead>
<tr>
<th>PIT NO.</th>
<th>DEPTH (cm)</th>
<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED ZONE CLEAN BELOW H2O LEVEL SHEEN COLOR</th>
<th>PIT ZONE</th>
<th>SURFACE-SUBSURFACE SEDIMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

OG COMMENTS:

See note on map.
Very difficult case to work also very difficult to estimate accuracy and type of oil because of large size of surface sheen. Lot of debris near oiled areas.

[Diagram and table details omitted for brevity]
**Digi Sketch Map**

<table>
<thead>
<tr>
<th>Legend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Py 106 A</td>
</tr>
<tr>
<td>1 M Samples</td>
</tr>
<tr>
<td>May 13, 1991</td>
</tr>
<tr>
<td>1710 - 1800</td>
</tr>
</tbody>
</table>

Pocket of large boulders bounded by steep and high bedrock cliffs and a backstone of gravel hill. Birch area A1. An area of heavy tundra partially removed on left side (200 m). CV on more sheltered bed surfaces and MS between boulders. Area A2 is generally similar except it has a higher proportion of CV and MS. Also much more dense, some woodland, as shown on map.

**Legend**

- CT: Cliff
- CV: Bedrock
- MS: Malignant Bedrock

**Map Details**

- Area A1
- Area A2
- Bedrock cliffs
- Vegetation

**Notes**

- See note 2

**Scale**

- 15 m

**Meters**

- 30
COMMENTS / OBSERVATIONS - OILED SUBDIVISIONS

This beach is exposed to very high waves. The boulder and cobble beach is bounded by bedrock cliffs on either side and deep water offshore. Oiling is largely or entirely restricted to the high intertidal zone and supratidal zone. Because of the very high exposure these zones are expanded above sea level to higher levels than on less exposed beaches.

Location A1, A2

This entire beach has some oil in the upper zone. At this level there are few live organisms. Occasional spots of black lichen are was the only organisms observed. Towards the middle intertidal zone, boulders and cobble are generally nearly totally covered by thin filamentous or fast growing bladelike green (Urospora, Enteromorpha) and red (Porphyra) algae. These species cover the surfaces of most boulders which clearly are scoured by cobble and debris during heavy wave episodes. From this level, there is a general zonation of algae and invertebrates into the subtidal. This general pattern is characterized below:

WILDLIFE OBSERVATIONS - Completed on all subdivisions

<table>
<thead>
<tr>
<th>BIRDS</th>
<th># OF SPECIES</th>
<th>TOTAL BIRDS</th>
<th>FISH OBSERVED SPECIES PRESENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eagles</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Seabirds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waterfowl</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gulls/Kittiwakes</td>
<td>2</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Shorebirds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corvids</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Other Birds</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MARINE MAMMALS</th>
<th># OBSERVED</th>
<th>SPECIES</th>
<th># OBSERVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sea Otters</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pinnipeds (specify)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whales (specify)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Shoreline subdivision map showing important biological features attached.
PY006-A Biology Report, continued

Intertidal zonation at PY006-A

Biota - Tidal Level Supratidal High Middle Low Subtidal

Oil

---************---

Black Lichen

Logs/Debris

Thin Green Algae

Thin Red Algae

Limpets

Littorines

Barnacles

Mussels

Fucus

Kelps/Brown Algae

---************---

---************---

---************---

---************---

---************---

---************---

---************---

---************---

Owing to the harsh physical conditions at this location, most biota are killed before they reach large size or old age. Thus, the biota are generally small, comprising the recent recruits to the site. Small individuals of many species were present, including, mussels, barnacles, algae, littorine snails, limpets. The high tide prevented observation of the extreme low zones.

Cleanup operations, if performed will have no negative impacts to the biota of the subdivision.

List of Common Species from PY006-A

A. Marine Plants
1. Diatoms, Blue Greens
2. Green Algae - Chlorophyta
   Enteromorpha sp., Prasiola meridionalis, Ulva sp., Urospora sp.
3. Brown Algae - Phaeophyta
   Alaria marginata, Ectocarpus spp., Fucus distichus, Hildenbrandia sp., Ralfsia sp., Syctosiphon lomentaria
4. Red Algae - Rhodophyta
   Endocladia muricata, Halosaccion glandiforme, Membranoptera dimorpha, Odonthalia floccosa, Palmaria palmata, Petrocelis sp., Porphyra sp., Ptilota filicina, Rhodomela larix
5. Higher Plants - Leymus mollis (beach rye grass)

B. Marine Animals
1. Anemones - Anthopleura artemesia, A. xanthogrammica, Metridium senile, Urticina crassicornis, Stomphia sp.
2. Flatworms - Platyhelminthes - Polyclads
3. Polychaete Worms
   Serpulidae - Serpula sp., Crucigera sp., Eudistylia polymorpha
   Scolopendraidae - Spirorbis sp.
4. Crustaceans
   a. Amphipods - Orchestia sp.?
   b. Barnacles - Balanus glandula, Semibalanus cariosus
   c. Crabs - Hermit Crabs (Pagiidae)
   d. Isopods - Cirdana harfordi, Idotea wosnesenskii, Gnemus sp.
5. Mollusca
   a. Chitons - Katharina tunicata
b. Snails - Gastropods
   Littorina sp., Nucella lamellosa.

c. Limpets - Lottia digitalis, L. persona, Tectura persona, T. scutum,
    Siphonaria thersites

e. Mussels and Clams - Mytilus edulis

12. Echinoderms
   a. Brittle Stars - Ophiolus sp., ?
   b. Sea stars - Orthasterias keohleri, Pisaster ochraceus, Pycnopodia
      helianthoides, Solaster sp.
   c. Sea Cucumbers - Holothurians - Eupentacta sp.
   d. Urchins - Strongylocentrotus droebachiensis


Birds: Eagles (1 immature, carrying kittiwake), Glaucous-winged gull (5), Black
       legged Kittiwake (5).
1991 MAYSAP EVALUATION

SEGMENT: PY 006  SUB: C  REGION: KEN  SURVEY DATE: 5/13/91

ENVIRONMENTAL SENSITIVITIES:
Work Window(s) RESTRICTED 5/15 - 9/1

Ecological/Constraints (see page two for details) Seabird colony

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO Signature: ____________________ Date:________________

RECOMMENDATIONS:

<table>
<thead>
<tr>
<th>TREATMENT REQUIRED (Y or N)</th>
<th>INITIAL</th>
<th>TAG</th>
<th>FOSC</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Manual Pickup (Check as Req.)
Spot Washing
Bio-Customblen Only
Bio-Inipol/Customblen
Other______________________
Other______________________

COMMENTS:
INITIAL: Subdivision surveyed by skiff. No oil observed.

TAG:

FOSC:

TAG APPROVAL DATE: FOSC APPROVAL DATE:

ADEC______________________ FOSC ________________________

EXXON______________________

USCG______________________

NOAA______________________
Past oiling data indicated no oil within subdivision. Access is very limited & a
safety hazard.

Past surveys found very little oiling. I would not recommend treatment due
to the safety hazard of getting on
and off the beach.

Please see as P006 B

[Signatures]
MAYSAP SHORELINE OILING SUMMARY

TEAM NO. 11
OG Samples
ADEC Crosby
EXXON Stiles

BIO Berry
LANDMANAGER Headster
USCG/NOAA McManus/Neptudol

DATE 7/19/91
SEGMENT Py 306
SUBDIVISION C

TIME 11:50 to 12:10
TIDE LEVEL 2-6 ft. to 3-7 ft.
ENERGY LEVEL: □ H □ M □
SURVEYED FROM: □ FOOT □ BOAT □ HELO
WEATHER: □ SUN □ CLOUDS □ FOG □ RAIN □ SNOW
TOTAL LENGTH SHORELINE SURVEYED: 785 m
NEAR SHORE SHEEN: □ BR □ RB □ SL □ NONE
EST. OIL CATEGORY LENGTH: W—m M—m N—m VL—m NO 785 m US—m

<table>
<thead>
<tr>
<th>LO</th>
<th>SURFACE OIL CHARACTER</th>
<th>SURFACE SEDIMENT</th>
<th>SHORE SLOPE</th>
<th>AREA</th>
<th>ZONE</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>AP MS TB SOR CV CT ST FL DB NO</td>
<td>V H M L</td>
<td>WIDTH m</td>
<td>LENGTH m</td>
<td>S UI MI LI</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>L O</th>
<th>SURFACE OIL CHARACTER</th>
<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED ZONE</th>
<th>CLEAN ZONE BELOW</th>
<th>H2O LEVEL</th>
<th>SHEEN COLOR</th>
<th>PIT ZONE</th>
<th>SURFACE- SUBSURFACE SEDIMENTS</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIT</td>
<td>PIT NO. DEPTH (cm)</td>
<td>OP HOR MOR LOR OF TR NO</td>
<td>cm-cm</td>
<td>Y/N (cm)</td>
<td>B R S N</td>
<td>S UI MI LI</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

DISTRIBUTION: C = 91-100%; B = 51-90%; P = 11-50%; S = 1-10%; T = <1%
SLOPE: V = VERTICAL; H = HIGH ANGLE; M = MEDIUM ANGLE; L = LOW ANGLE

OG COMMENTS: Unable to land because swell was on too rough, observed from helicopter. No oil seen from the boat that we were unable to get close enough for useful observation.

Reviewed: F.W. 5/25/91
COMMENTS / OBSERVATIONS - OILED SUBDIVISIONS

General Features of PY006-C

This subdivision report is identical to that for PY006-D. Both subdivisions were surveyed by skiff from 100 or more meters distance. The shore was inaccessible due to the high surf. The shores are mostly moderately to highly exposed sloping bedrock. Little oil was reported from the subdivision. Observable areas on the subdivision appear to have floral and faunal assemblages typical of exposed coasts. Black lichen is visible in the supratidal zone, with green and red filamentous algae abundant in the upper to middle zone, moderate to dense cover of Fucus below, and patchy, but generally continuous cover of Mytilus along sections of the subdivision. Brown algae cover the lowest zones and subtidal. Cleanup will probably not be required, but would probably not impact the biota unless hot water cleaning was performed.

A seabird colony is located in PY006, and many marine birds were observed along the segment, including marbled murrelets, red faced cormorants, pelagic cormorants, common murres, tufted puffins, horned puffins, red necked phalaropes, glaucous-winged gulls, black-legged kittiwakes, fork tailed petrels, harlequin ducks, common mergansers, rhinoceros auklets, pigeon guillemots, Boneparte’s gull, aleutian tern, arctic tern, and others. Two eagle nests were sighted at the locations marked on the ecology map near the northern and southern ends of the segment. We were unable to identify whether the nests were active, but did observe one adult eagle near each nest.

(continued)

WILDLIFE OBSERVATIONS - Completed on all subdivisions

<table>
<thead>
<tr>
<th>BIRDS</th>
<th># OF SPECIES</th>
<th>TOTAL BIRDS</th>
<th>FISH OBSERVED SPECIES PRESENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eagles</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Seabirds</td>
<td>many</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waterfowl</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gulls/Kittiwakes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shorebirds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corvids</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Other Birds</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MARINE MAMMALS</th>
<th># OBSERVED</th>
<th>LAND MAMMALS SPECIES</th>
<th># OBSERVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sea Otters</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pinnipeds (specify)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whales (specify)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Shoreline subdivision map showing important biological features attached.
List of Species Expected along PY006-C

A. Marine Plants
1. Diatoms, Blue Greens
   Acrosiphonia sp., Cladophora sp., Enteromorpha sp., Prasiola meridionalis.
   Ulva sp., Urospora sp.
2. Green Algae - Chlorophyta
   Alaria marginata, Ectocarpus spp., Fucus distichus, Hedophyllum sessile, Hildenbrandia sp., Laminaria groenlandica, Nereocystis leutkeana, Ralfsia sp.
   Sycatosiphon lomentaria
3. Brown Algae - Phaeophyta
   Acrosiphonia sp., Cladophora sp., Enteromorpha sp., Prasiola meridionalis.
   Ulva sp., Urospora sp.
4. Red Algae - Rhodophyta
   Anfeltia plicata, Bossiella sp., Calliarthron sp., Corallina sp.
   Cryptosiphonia woodii, Cumagloia andersonii, Endocladiya muricata, Halosaccinium glandiforme, Iridaea sp., Lithothamnion sp., Membranoptera dimorpha, Palmaria palmata, Petrocelis sp., Porphyra sp., Ptilota filicina, Rhodomela larix
5. Higher Plants - Leymus mollis (beach rye grass)

II. Marine Animals
1. Sponges - Porifera
   Halichondria sp., Halichondria panicea, Ophlitaspongia pennata, Tethys sp.
3. Hydroids - Sertulariidae - Sertularella?, Abietinaria sp.
5. Flatworms - Platyhelminthes - Polyclads
6. Nemertean Worms - Ribbon Worms
   Emplectonema gracile, Tubulanus polymorphus
8. Polychaete Worms
   Glyceridae
   Nephtyidae
   Nereidae - Nereis spp.
   Serpulidae - Serpula sp., Crucigera sp., Eudistylia polymorpha
   Spriorbidae - Spirobranchus sp.
9. Peanut worms - Sipunculids - Phascolosoma aequalisii
10. Crustaceans
    a. Amphipods - Orchestia sp.?, Traskorchestia traskiana
    b. Barnacles - Balanus glandula, Chthamalus dalli, Semibalanus cariosus
    c. Crabs
       Acantholithodes hispidus, Haplogaster sp., Paguridae (hermit crabs), Oregonia gracilis, Pugettia sp.,
    d. Isopods - Cidrana harfordi, Idotea wosnesenskii, Gnorimorsphaeroma oregonensis
11. Mollusca
   a. Chitons - Cryptochiton stelleri, Mopalia sp., M. mucosa, Katharina tunicata, Tonicella lineata.
   b. Snails - Gastropods
      Amphissa columbiana, Fusitriton oregonensis, Littorina scutulata, L. sitkana, L. keenae, Nucella lamellosa, N. lima, Tachyrhynchus sp.
   c. Limpets - Acmaea mitra, Diadoma aspera, Lottia digitalis, L. persona, Tectura fenestrata, T. persona, T. scutum, Siphonaria thersites
   d. Nudibranches - Lamelladoris fusca, Onchidella sp.
   e. Bivalves - Mytilus edulis, Pododesmus ceoio
   f. Cephalopods - Octopus dofleini

12. Echinoderms
   a. Brittle Stars - Ophiolus sp., ?
   b. Sea stars
      Dermasterias imbricata, Evasterias truscheli, Henricia leviuscula, H. sanquinolenta, Leptasterias hexactis, Orthasterias keohleri, Pisaster ochraceus, Pycnopodia helianthoides, Solaster sp.
   c. Sea Cucumbers - Holothurians
      Cucumaria miniata, C. vegae, Eupentacta sp., Leptosynapta sp.
   d. Urchins - Strongylocentrotus droebachiensis


15. Fishes
   Cottidae - Artedius harringtoni, Oligocottus sp. (bright green), Rhanphocottus richardsonii
   Liparidae - Liparis callyodon
   Stichaeidae - Xiphister atropurpureus, X. mucosus
1991 MAYSAPE EVALUATION

SEGMENT: PY 006 SUB: B REGION: KEN SURVEY DATE: 5/13/91

ENVIRONMENTAL SENSITIVITIES:
Work Window(s) OPEN

Ecological/Constraints (see page two for details) NONE

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO Signature: Timothy O. Smith Date: 6/07/91

RECOMMENDATIONS:

TREATMENT REQUIRED (Y or N) N

Manual Pickup (Check as Req.)
Spot Washing
Bio-Customblen Only
Bio-Inipol/Customblen
Other
Other

COMMENTS:

INITIAL:

TAG:

FOSC:

TAG APPROVAL DATE: June 6, 1991 FOSC APPROVAL DATE: 6/18/91

ADEC

EXXON

USCG

NOAA
ADEC
NAME: Claro S. Crosby
SIGNATURE: Claro S. Crosby

NTR
Past oiling data indicated Pooled oil/5, coarse/8, cont/8. Due to the exposure of this Subdivision & the safety hazard it poses, I would not recommend treatment at this site. Survey crew could not gain access to shore.

EXXON
NAME: George P. Stiles
SIGNATURE: George P. Stiles

NTR
Concur with ADEC. The safety hazard of getting on and off the beach is not worth the risk.

USCG/NOAA
NAME: Eddie L. McKinley
SIGNATURE: Eddie L. McKinley

NTR
Need from AWC as it became a safety concern to beach.
<table>
<thead>
<tr>
<th>ADEC</th>
<th>NAME: Clara S. Crosby</th>
<th>SIGNATURE: Clara S. Crosby</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Factoring data indicated Fused oil/s, crude, coal tar, and was due to the exposure of this subdivision to the safety hazard. it was of I would not recommend treatment at this site. Survey crew could not gain access to shore.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EXXON</th>
<th>NAME: George C. Still</th>
<th>SIGNATURE: George C. Stililan, 5/19/91</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Concur with ADEC. The safety hazard of setting on and off the beach is not worth the risk.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FNDMANAGER</th>
<th>NAME: John W. Shadrake of USFWS</th>
<th>SIGNATURE: John P. Shadrake</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Concur with ADEC and other team members.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>USCG/NOAA</th>
<th>NAME: W.O. McMillon</th>
<th>SIGNATURE: W.O. McMillon</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Moved from ADEC as it became a safety concern to beach.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Dated: 5/19/91</th>
<th>Signature: Donald A. MacDonald</th>
</tr>
</thead>
</table>
## MAYSAP SHORELINE OILING SUMMARY

**Team No.** 4  
**Og:** M. Semple  
**Bio:** J. Barry  
**ADEC:** Crosby  
**ON:** 5/16/95  
**Time:** 18:00 to ___:___  
**Segment:** PY: 006  
**Subdivision:** B  
**Date:** 5/11/91  
**USCG/NOAA:**  
**McBride/K. Baistad**  
**Date/Tide Level:** 5/11/91  
**Energy Level:** □ H □ M □ L  
**Surveyed from:** □ Foot □ Boat □ Helo  
**Weather:** □ Sun □ Clouds □ Fog □ Rain □ Snow  
**Tide Level:** +2.5 to +4.5 ft.  
**Total Length Shoreline Surveyed:** 4.5 m  
**Near Shore Sheen:** □ BR □ RB □ SL □ NONE  
**Est. Oil Category Length:** W - _ m M - _ m N. - _ m VL - _ m NO. 45 _ m US. - _ m

### Surface Oil Character

<table>
<thead>
<tr>
<th>C</th>
<th>AP</th>
<th>MS</th>
<th>TB</th>
<th>BOR</th>
<th>CV</th>
<th>CT</th>
<th>ST</th>
<th>FL</th>
<th>DB</th>
<th>NO</th>
<th>TYPE</th>
<th>SLOPE</th>
<th>WIDTH</th>
<th>LENGTH</th>
<th>ZONE</th>
<th>NOTES</th>
</tr>
</thead>
</table>

### Subsurface Oil Character

<table>
<thead>
<tr>
<th>PIT NO.</th>
<th>DEPTH (cm)</th>
<th>OILED ZONE</th>
<th>CLEAN BELOW</th>
<th>HYDRO</th>
<th>SHEEN COLOR</th>
<th>CHROMOSCOPE</th>
<th>SUBSURFACE OILED</th>
<th>SEDIMENTS</th>
<th>NOTES</th>
</tr>
</thead>
</table>

### Og Comments:

Note: Observed from Zodiac, wave energy too high to be able to land. No oil seen. Only some oil spots on piers, but were unable to come close to zone.
Note: Sorry but this map is wrong. It should be like this.

QC note: original boundaries are correct - subdivisions A + B are in the same cove. Disregard changes.
QC note: Disregard boundary changes. Original "B" subdivision boundaries are correct.
Subdivisions A and B are enclosed in this box. Due to the convoluted shoreline, it is impossible to show boundaries of subdiv. A and B on this map. I suggest you enter 100m of "medium" oiling to your GIS map.
Due to high waves, this subdivision was not accessible for survey. The subdivision is, however, adjacent to PY006-A, and is likely very similar with regard to biological features. The description of the biota from PY006-A is repeated below.

This beach is exposed to very high waves. The boulder and cobble beach is bounded by bedrock cliffs on either side and deep water offshore. Previous surveys report that oil is largely or entirely restricted to the high intertidal and supratidal zones. Because of the very high exposure these zones are expanded above sea level to higher levels than on less exposed beaches.

**WILDLIFE OBSERVATIONS** - Completed on all subdivisions

<table>
<thead>
<tr>
<th>BIRDS</th>
<th># OF SPECIES</th>
<th>TOTAL BIRDS</th>
<th>FISH OBSERVED SPECIES PRESENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eagles</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Seabirds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waterfowl</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gulls/Kittiwakes</td>
<td>2</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Shorebirds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corvids</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Birds</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MARINE MAMMALS</th>
<th># OBSERVED</th>
<th>SPECIES</th>
<th># OBSERVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sea Otters</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pinnipeds (specify)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whales (specify)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Shoreline subdivision map showing important biological features attached.
Intertidal zonation at PY006-B

Biota - Tidal Level

<table>
<thead>
<tr>
<th></th>
<th>Supratidal</th>
<th>High</th>
<th>Middle</th>
<th>Low</th>
<th>Subtidal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil</td>
<td><strong>+</strong>******+---</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black Lichen</td>
<td>***+--- - -</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Logs/Debris</td>
<td>-- ++++++++---</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thin Green Algae</td>
<td>++++--- + ++++++++---</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thin Red Algae</td>
<td>++++-+++++-++-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Limpets</td>
<td>--- +++++-+--+</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barnacles</td>
<td>++++++++-----++-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mussels</td>
<td>+ + + + + +</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fucus</td>
<td>+++++-+-+---</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kelps/Brown Algae</td>
<td>--- ++++++++</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Owing to the harsh physical conditions at this location, most biota are killed before they reach large size or old age. Thus, the biota are generally small, comprising the recent recruits to the site. Small individuals of many species were present, including, mussels, barnacles, algae, littorine snails, limpets. The high tide prevented observation of the extreme low zones.

List of Common Species from PY006-A

A. Marine Plants
   1. Diatoms, Blue Greens
   2. Green Algae - Chlorophyta
      Enteromorpha sp., Prasiola meridionalis, Ulva sp., Urolepsora sp.
   3. Brown Algae - Phaeophyta
      Alaria marginata, Ectocarpus spp., Fucus distichus, Hildenbrandia sp., Ralfsia sp., Syctosiphon lomentaria
   4. Red Algae - Rhodophyta
      Endocladium muricata, Halosaccion glandiforme, Membranoptera dimorpha, Odonthalia floccosa, Palmaira palmata, Petrocelis sp., Porphyra sp., Ptilota filicina, Rhodomela larix
   5. Higher Plants - Leymus mollis (beach rye grass)

II. Marine Animals
   1. Anemones - Anthopleura artemesia, A. xanthogrammica, Metridium senile, Urticina crassicornis, Stomphia sp.
   2. Flatworms - Platyhelminthes - Polyclads
   8. Polychaete Worms
      Serpulidae - Serpula sp., Crucigera sp., Eudistylia polymorpha
      Spioorbidae - Spirorbis sp.
   10. Crustaceans
      a. Amphipods - Orchestia sp.? 
      b. Barnacles - Balanus glandula, Semibalanus cariosus 
      c. Crabs - Hermit Crabs (Paguridae) 
      d. Isopods - Cirdana harfordi, Idotea wosnesenskii, Gnorimorsphaeroma oregonensis
   11. Mollusca
      a. Chitons - Katharina tunicata, 
      b. Snails - Gastropods
         Littorina sp., Nucella lamellosa, 
      c. Limpets - Lottia digitalis, L. persona, Tectura persona, T. scutum, Siphonaria thersites
Mussels and Clams - *Mytilus edulis*

12. Echinoderms
   a. Brittle Stars - *Ophiolus* sp.. ?
   b. Sea stars - *Orthasterias keohleri*, *Pisaster ochraceus*, *Pycnopodia helianthoides*, *Solaster* sp.
   c. Sea Cucumbers - Holothurians - *Eupentacta* sp.
   d. Urchins - *Strongylocentrotus droebachiensis*

1991 MAYSAP EVALUATION

SEGMENT: PY 006  SUB:  A  REGION: KEN  SURVEY DATE: 5/13/91

ENVIRONMENTAL SENSITIVITIES:
Work Window(s)  RESTRICTED 5/15 - 9/1

Ecological/Constraints (see page two for details)  Seabird colony

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO Signature: [Signature] Date: 5/24/91

RECOMMENDATIONS:

<table>
<thead>
<tr>
<th>TREATMENT REQUIRED (Y or N)</th>
<th>INITIAL</th>
<th>TAG</th>
<th>FOSC</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
</tbody>
</table>

Manual Pickup (Check as Req.)
Spot Washing
Bio-Customblen Only
Bio-Inpol/Customblen
Other
Other

COMMENTS:

INITIAL: ____________________________

TAG: __________________________________

FOSC: __________________________________

TAG APPROVAL DATE: 5/24/91  ADEC

FOSC APPROVAL DATE: 5/29/91  E. E. PAGE, CDR, USCG
CHIEF OF STAFF, FOSC

EXXON
USCG
NOAA
TEAM NO._ 4_ SEGMENT PY006 SUBDIVISION A DATE MAY 13 1991

ADEC NAME Clara S. Croxby SIGNATURE Clara S. Croxby
TREATMENT RECOMMENDED - Although this subsegment has a substantial amount of USL/OL remaining - a consistent band under LG 8 & >10 cm in depth - I am at a loss to recommend treatment for this site. Vessel access from the East would have to be under ideal conditions & cutting overland from the west would result in impact to the uplands - manual removal if performed would be superficial.

EXXON NAME George L. Stiles SIGNATURE George L. Stiles 5/15/91
TREATMENT RECOMMENDED - The MS remaining under the Volkswagen size boulders is hard to estimate due to the size of the boulders. There is a lot of debris with some of it being oiled. A hand shovel would be very ineffective since the boulders cannot be moved.

HANDMANAGER NAME John P. Hardister OF USFWS SIGNATURE John P. Hardister
TREATMENT RECOMMENDED - The boulders that cover the segment would prevent a significant amount of oil from being removed. This a cleaning effort would be ineffective and is, therefore, not recommended.

USCG/NOAA NAME CA02 J. McMahon SIGNATURE J. McMahon
TREATMENT RECOMMENDED - Clean-up insured be impractical due to the light oiling of the segment.

John/ Donald A. MacDonald
DONALD A. MACDONALD
Majority of oil runs down in crevices and under large boulders, exact extent of injuries difficult to determine.
**MAYSAP SHORELINE OILING SUMMARY**

**TEAM NO.** 4  
**OCCUPANT:** J. Ramsey  
**LANDMANAGER:** John Hardister  
**USCG/NOAA:** John Hardister  
**DATE:** May 13, 1991

**SEGMENT:** P4  
**SUBDIVISION:** A

**TIME:** 17:10 to 18:10  
**TIDE LEVEL:** +4.8 ft. to +3.2 ft.  
**ENERGY LEVEL:** H

**SURVEYED FROM:** FOOT

**WEATHER:** SUN, CLOUDS

**TOTAL LENGTH SHORELINE SURVEYED:** 47 m  
**NEAR SHORE SHEEN:** BR, RB, SL

**EST. OIL CATEGORY LENGTH:** W - m M - m N - m VL - m NO - m US - m

---

**SURFACE OIL CHARACTER**

<table>
<thead>
<tr>
<th>LOC</th>
<th>LO</th>
<th>OIL CHARACTER</th>
<th>SEDIMENT Type</th>
<th>SLOPE</th>
<th>WIDTH</th>
<th>LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**AREA**

<table>
<thead>
<tr>
<th>ZONE</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**DISTRIBUTION:** C = 91-100%; B = 81-90%; P = 71-80%; S = 1-10%; T < 1%

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

---

**PIT**

<table>
<thead>
<tr>
<th>NO.</th>
<th>DEPTH (cm)</th>
<th>OILED ZONE</th>
<th>CLEAN BELOW</th>
<th>SHEEN COLOR</th>
<th>PIT ZONE</th>
</tr>
</thead>
</table>

---

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

---

**OG COMMENTS:**

See notes on map.

Very difficult areas to work, also very difficult to estimate accurately extent and type of oil because of large size of boulders present. Lot of debris, some oiled ones.

---

*Revised 5/14/91 KG  
Revised CG 16 May*
Pit K cover of large boulders bounded by steep and high bedrock cliffs, and a blanket of grey soil. Occasional area A1 is ct (very tenuous and partly removed on bed surfaces) cv on non-sheltered bed surfaces and ms between boulders. Area A2 is generally similar except it has a higher proportion of cv and ms. Also much more debris, some calcrete, as shown on map.

Legend

- Area of concentration of debris and driftwood

<table>
<thead>
<tr>
<th>Orig Shield Map</th>
<th>Legend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Py. 106 A</td>
<td></td>
</tr>
<tr>
<td>JM Sample:</td>
<td></td>
</tr>
<tr>
<td>May 13, 1991</td>
<td></td>
</tr>
<tr>
<td>1700 - 1800</td>
<td></td>
</tr>
</tbody>
</table>

See note 2

- Bedrock cliffs

- Vegetated dunefield

Maysap 4.3
Fl. To.
Clockwise phenomenon

Reviewed 6/10/91 KG
Reviewed CO 16 May
MAYSAP BIOLOGICAL SUMMARY FORM

TEAM #: 4
SEGMENT #: PY006
SUBDIVISION #: A
SEA STATE: Calm

DATE/TIME: May 13, 1991 1730 - 1815
TIDAL HEIGHT (Range): +4.8 → +3.2

BIOLGIST: JIM BARRY
WIND SPEED/DIRECTION: Calm

COMMENTS / OBSERVATIONS - OILED SUBDIVISIONS

This beach is exposed to very high waves. The boulder and cobble beach is bounded by bedrock cliffs on either side and deep water offshore. Oiling is largely or entirely restricted to the high intertidal zone and supratidal zone. Because of the very high exposure these zones are expanded above sea level to higher levels than on less exposed beaches.

Location A1, A2
This entire beach has some oil in the upper zone. At this level there are few live organisms. Occasional spots of black lichen are was the only organisms observed. Towards the middle intertidal zone, boulders and cobble are generally nearly totally covered by thin filamentous or fast growing bladelike green (Urospora, Enteromorpha) and red (Porphyra) algae. These species cover the surfaces of most boulders which clearly are scoured by cobble and debris during heavy wave episodes. From this level, there is a general zonation of algae and invertebrates into the subtidal. This general pattern is characterized below:

WILDLIFE OBSERVATIONS - Completed on all subdivisions

<table>
<thead>
<tr>
<th>BIRDS</th>
<th># OF SPECIES</th>
<th>TOTAL BIRDS</th>
<th>FISH OBSERVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eagles</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Seabirds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waterfowl</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gulls/Kittiwakes</td>
<td>2</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Shorebirds</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Corvids</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Other Birds</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MARINE MAMMALS</th>
<th># OBSERVED</th>
<th>LAND MAMMALS</th>
<th># OBSERVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sea Otters</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pinnipeds (specify)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whales (specify)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Shoreline subdivision map showing important biological features attached.
PY006-A Biology Report, continued

Intertidal zonation at PY006-A

<table>
<thead>
<tr>
<th>Biota - Tidal Level</th>
<th>Supratidal</th>
<th>High</th>
<th>Middle</th>
<th>Low</th>
<th>Subtidal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil</td>
<td>-++------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black Lichen</td>
<td>-+-------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Logs/Debris</td>
<td>-+------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thin Green Algae</td>
<td>-+------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thin Red Algae</td>
<td>-+-------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Limpets</td>
<td>-+-------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Littorines</td>
<td>-+-------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barnacles</td>
<td>-+-------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mussels</td>
<td>-++------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fucus</td>
<td>-++------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kelps/Brown Algae</td>
<td>-+------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Owing to the harsh physical conditions at this location, most biota are killed before they reach large size or old age. Thus, the biota are generally small, comprising the recent recruits to the site. Small individuals of many species were present, including, mussels, barnacles, algae, littorine snails, limpets. The high tide prevented observation of the extreme low zones.

Cleanup operations, if performed will have no negative impacts to the biota of the subdivision.

List of Common Species from PY006-A

A. Marine Plants
1. Diatoms, Blue Greens
2. Green Algae - Chlorophyta
   Enteromorpha sp., Prasiola meridionalis, Ulva sp., Urospora sp.
3. Brown Algae - Phaeophyta
   Alaria marginata, Ectocarpus spp., Fucus distichus, Hildenbrandia sp., Ralfsia sp., Sycosiphon lomentaria
4. Red Algae - Rhodophyta
   Endocladia muricata, Halosaccion glandiforme, Membranoptera dimorpha, Odonthalia floccosa, Palmaria palmata, Petrocelis sp., Porphyra sp., Ptilota filicina, Rhodomela larix
5. Higher Plants- Leymus mollis (beach rye grass)

II. Marine Animals
1. Anemones - Anthopleura artemesia, A. xanthogrammica, Metridium senile, Urticina crassicornis, Stomphia sp.
2. Flatworms - Platyhelminthes - Polyclads
3. Polychaete Worms
   Serpulidae - Serpula sp., Crucigera sp., Eudistylia polymorpha
   Spirorbidae - Spirorbis sp.
4. Crustaceans
   a. Amphipods - Orchestia sp.?
   b. Barnacles - Balanus glandula, Semibalanus cariosus
   c. Crabs - Hermit Crabs (Paugridae)
   d. Isopods - Cirdana harfordi, Idotea wosnesenskii, Gnorimorsphaeroma oregonensis
5. Mollusca
   a. Chitons - Katharina tunicata,
b. Snails - Gastropods
   Littorina sp., Nucella lamellosa,
   c. Limpets - Lottia digitalis, L. persona, Tectura persona, T. scutum, Siphonaria thersites
   e. Mussels and Clams - Mytilus edulis
12. Echinoderms
   a. Brittle Stars - Ophiolus sp., ?
   b. Sea stars - Orthasterias keohleri, Pisaster ochraceus, Pycnopodia helianthoides, Solaster sp.
   c. Sea Cucumbers - Holothurians - Eupentacta sp.
   d. Urchins - Strongylocentrotus droebachiensis

Birds Eagles (1 immature, carrying kittiwake), Glaucous-winged gull (5), Black legged Kittiwake (5).
1991 MAYSAP EVALUATION

SEGMENT: PY 006  SUB:  C  REGION: KEN  SURVEY DATE: 5/13/91

ENVIRONMENTAL SENSITIVITIES:
Work Window(s):  RESTRICTED 5/15 - 9/1

Ecological/Constraints (see page two for details) seabird colony

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO Signature: Timothy J. Smith  Date: 6/04/91

RECOMMENDATIONS:

<table>
<thead>
<tr>
<th>TREATMENT REQUIRED (Y or N)</th>
<th>INITIAL</th>
<th>TAG</th>
<th>FOSC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manual Pickup (Check as Req.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spot Washing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bio-Customblen Only</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bio-Inipol/Customeblen</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

COMMENTS:
INITIAL: Subdivision surveyed by skiff. No oil observed.

TAG:

FOSC: ____________________________

TAG APPROVAL DATE: June 4 1991  FOSC APPROVAL DATE: June 21 1991

ADEC  E. E. PAGE, SDR, USCG
EXXON  CHIEF OF STAFF, FOSC
USCG  NOAA
Fast oiling data indicated no oil within subdivisions. Access is very limited & a safety hazard.

Fast surveys found very little oiling. I would not recommend treatment due to the safety hazards of getting on and off the beach.

Concur with ADEC representative.

Same as PY 006 B.
MAYSAP SHORELINE OILING SUMMARY

TEAM NO. 4

OG Samples

BIO: Barry

ADEC: Crosby

LANDMANAGER: Headisor for USFWS

USCG/NOAA: McMahan/McFarland

CON Selles

DATE: MAY 13 1991

TIME: 11:50 to 12:10

TIDE LEVEL: 2.8 ft. to 3.7 ft.

ENERGY LEVEL: H M L

SURVEYED FROM: FOOT X BOAT HELO

WEATHER: SUN CLOUDS FOG RAIN SNOW

TOTAL LENGTH SHORELINE SURVEYED: 285 m

NEAR SHORE SHEEN: BR RB SL X NONE

EST. OIL CATEGORY LENGTH:

<table>
<thead>
<tr>
<th>L</th>
<th>O</th>
<th>M</th>
<th>N</th>
<th>V</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>m</td>
<td>m</td>
<td>m</td>
<td>m</td>
<td>m</td>
<td>m</td>
</tr>
</tbody>
</table>

SURFACE OIL CHARACTER

<table>
<thead>
<tr>
<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED ZONE</th>
<th>OILED ZONE</th>
<th>SHEEN COLOR</th>
<th>PIT ZONE</th>
<th>SUBSURFACE SEDIMENTS</th>
<th>NOTES</th>
</tr>
</thead>
</table>

DISTRIBUTION: C = 91-100%; B = 61-90%; P = 51-60%; S = 1-10%; T = <1%

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

PHOTO ROLL # MAYSAP

FRAMES

OG COMMENTS:

Unable to land because small waves and too high.

Observed from boat. No oil seen from the boat but we were unable to get close enough for useful observation.

REVIEWED: F.W. 5/25/94
General Features of PY006-C

This subdivision report is identical to that for PY006-D. Both subdivisions were surveyed by skiff from 100 or more meters distance. The shore was inaccessible due to the high surf. The shores are mostly moderately to highly exposed sloping bedrock. Little oil was reported from the subdivision. Observable areas on the subdivision appear to have floral and faunal assemblages typical of exposed coasts. Black lichen is visible in the supratidal zone, with green and red filamentous algae abundant in the upper to middle zone, moderate to dense cover of Fucus below, and patchy, but generally continuous cover of Mytilus along sections of the subdivision. Brown algae cover the lowest zones and subtidal. Cleanup will probably not be required, but would probably not impact the biota, unless hot water cleaning was performed.

A seabird colony is located in PY006, and many marine birds were observed along the segment, including marbled murrelets, red faced cormorants, pelagic cormorants, common murres, tufted puffins, horned puffins, red necked phalaropes, glaucous-winged gulls, black-legged kittiwakes, fork tailed petrels, harlequin ducks, common mergansers, rhinoceros auklets, pigeon guillemots, Boneparte's gull, aleutian tern, arctic tern, and others. Two eagle nests were sighted at the locations marked on the ecology map near the northern and southern ends of the segment. We were unable to identify whether the nests were active, but did observe one adult eagle near each nest.

(continued)

WILDLIFE OBSERVATIONS - Completed on all subdivisions

<table>
<thead>
<tr>
<th>BIRDS</th>
<th># OF SPECIES</th>
<th>TOTAL BIRDS</th>
<th>FISH OBSERVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eagles</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seabirds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waterfowl</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gulls/Kittiwakes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shorebirds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corvids</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Birds</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MARINE MAMMALS</th>
<th># OBSERVED</th>
<th>LAND MAMMALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sea Otters</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pinnipeds (specify)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whales (specify)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Shoreline subdivision map showing important biological features attached.
PY006-C Biology Report, continued

List of Species Expected along PY006-C

A. Marine Plants
1. Diatoms, Blue Greens
   Acrosiphonia sp., Cladophora sp., Enteromorpha sp., Prasiola meridionalis, Ulva sp., Uropora sp.
2. Green Algae - Chlorophyta
   Alaria marginata, Ectocarpus spp., Fucus distichus, Hedophyllum sessile, Hildenbrandia sp., Laminaria groenlandica, Nereocystis leutkeana, Ralfsia sp., Syctosiphon lomentaria
3. Brown Algae - Phaeophyta
   Acrosiphonia sp., Cladophora sp., Enteromorpha sp., Prasiola meridionalis, Ulva sp., Urospora sp.
4. Red Algae - Rhodophyta
5. Higher Plants - Leymus mollis (beach rye grass)

II. Marine Animals
1. Sponges - Porifera
   Halichondria sp., Halichondria panicea, Ophlitaspongia pennata, Tethys sp.
3. Hydroids - Sertularidae - Sertularella?, Abietinaria sp.
4. Flatworms - Platyhelminthes - Polyclads
5. Nemertean Worms - Ribbon Worms
   Emplectonema gracile, Tubulanus polymorphus
6. Polychaete Worms
   Glyceridae
   Nephthyidae
   Nereidae - Nereis spp.
   Serpulidae - Serpula sp., Crucigeria sp., Eudistylia polymorpha
   Spiorbidae - Spiorbis sp.
7. Peanut Worms - Sipunculids - Phascolosoma agassizii
8. Crustaceans
   a. Amphipods - Orchestia sp.?, Traskorchestia traskiana
   b. Barnacles - Balanus glandula, Chthamalus dalli, Semibalanus cariosus
   c. Crabs
   Acantholithodes hispidus, Haplogaster sp., Paguridae (hermit crabs), Oregonia gracilis, Pugettia sp.,
   d. Isopods - Cirdana harfordi, Idotea wosnesenskii, Gnorimorsphaeroma oregonensis
11. Mollusca
a. Chitons - Cryptochiton stelleri, Mopalia sp., M. mucosa, Katharina tunicata, Tonicella lineata.
b. Snails - Gastropods
   Amphissa columbiana, Fusitriton oregonensis, Littorina scutulata, L. sitkana, L. keenae, Nucella lamellosa, N. lina, Tachyrhynchus sp.
c. Limpets - Acmaea mitra, Diadora aspera, Lottia digitalis, L. persona, Tectura fenestrata, T. persona, T. scutum, Siphonaria thersites
d. Nudibranches - Lamellidoris fusca, Onchidela sp.
e. Bivalves - Mytilus edulis, Pododesmus cepio
f. Cephalopods - Octopus dofleini

12. Echinoderms
a. Brittle Stars - Ophiolus sp., ?
b. Sea stars
   Dermasterias imbricata, Evasterias truscheli, Henricia leviuscula, H. sanguinolenta, Leptasterias hexactis, Orthasterias keohleri, Pisaster ochraceus, Pycnopodia helianthoides, Solaster sp.
c. Sea Cucumbers - Holothurians
   Cucumaria miniata, C. vegae, Eupentacta sp., Leptosynapta sp.
d. Urchins - Strongylocentrotus droebachiensis


15. Fishes
   Cottidae - Arctedius harringtoni, Oligocottus sp. (bright green), Rhanphocottus richardsonii
   Liparidae - Liparis callyodon
   Stichaeidae - Xiphister atropurpureus, X. mucosus
1991 MAYSAP EVALUATION

SEGMENT: PY 006  SUB:  B  REGION: KEN  SURVEY DATE: 5/13/91

ENVIRONMENTAL SENSITIVITIES:
Work Window(s) OPEN

Ecological/Constraints (see page two for details) NONE

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO Signature: __________________________ Date: __________

RECOMMENDATIONS:
TREATMENT REQUIRED (Y or N)  N

Manual Pickup (Check as Req.)  
Spot Washing  
Bio-Customblen Only  
Bio-Inipol/Customblen  
Other  
Other

COMMENTS:
INITIAL: __________________________

TAG:

FOSC: __________________________

TAG APPROVAL DATE: ____________  FOSC APPROVAL DATE: ____________

ADEC __________________________

EXXON __________________________

USCG __________________________

NOAA __________________________
ADEC
NAME: Clara S. Crosby
SIGNATURE: Clara S. Crosby

☑ NTR
Past boring data indicated pool oil/s, cont./b. - Due to the exposure of this Subdivision & the safety hazard it poses - I would not recommend treatment at this site. Survey crew could not gain access to show.

EXXON
NAME: George R. Stiles
SIGNATURE: George R. Stiles

☑ NTR
Concur with ADEC. The safety hazard of getting on and off the beach is not worth the risk.

ANDMANAGER
NAME: John Hendik
OF USFWS
SIGNATURE:

☐ NTR

See next page

USCG/NOAA
NAME: CWO2 L. McFadden
SIGNATURE: J. McFadden

☑ NTR
Waded from AWD as it became a safety concern to beach.

[Signature]

[Signature]
Part sailing data indicated Packed oil/s, cond./oil. Due to the expense of this Subdivision & the safety hazard it poses, I would not recommend treatment at this site. Survey crew could not gain access to shore.

Concur with ADEC. The safety hazard of getting on and off the beach is not worth the risk.

Concur with ADEC and other team members.

Travel from AWD as it becomes a safety concern to beach.
<table>
<thead>
<tr>
<th>OG COMMENTS:</th>
<th>SHORELINE SURVEYED:</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHEEN COLOR: B = BROWN; R = RAINBOW; G = GREEN</td>
<td></td>
</tr>
<tr>
<td>MAYSAP SHORELINE OILING SUMMARY</td>
<td></td>
</tr>
<tr>
<td>DIST: N</td>
<td>VERTICAL: N</td>
</tr>
<tr>
<td>SUBSURFACE OIL CHARACTER:</td>
<td></td>
</tr>
<tr>
<td>OIL SHAPE: M</td>
<td></td>
</tr>
<tr>
<td>OIL SITE: R</td>
<td></td>
</tr>
<tr>
<td>OIL COLOR:</td>
<td></td>
</tr>
<tr>
<td>OIL DISTRIBUTION:</td>
<td></td>
</tr>
<tr>
<td>OIL DEPTH:</td>
<td></td>
</tr>
<tr>
<td>OIL AUTOMORPHIC TR NO.</td>
<td></td>
</tr>
<tr>
<td>OIL TYPE:</td>
<td></td>
</tr>
<tr>
<td>OIL AREA:</td>
<td></td>
</tr>
<tr>
<td>TOTAL LENGTH SURVEYED:</td>
<td></td>
</tr>
<tr>
<td>SURFACE SHORE OIL CHARACTER:</td>
<td></td>
</tr>
<tr>
<td>SURFACE OIL AREA:</td>
<td></td>
</tr>
<tr>
<td>SURFACE OIL LENGTH:</td>
<td></td>
</tr>
<tr>
<td>SURFACE OIL WIDTH:</td>
<td></td>
</tr>
<tr>
<td>SURFACE OIL CATEGORY:</td>
<td></td>
</tr>
<tr>
<td>SUBSURFACE OIL CHARACTER:</td>
<td></td>
</tr>
<tr>
<td>SUBSURFACE OIL WIDTH:</td>
<td></td>
</tr>
<tr>
<td>SUBSURFACE OIL LENGTH:</td>
<td></td>
</tr>
<tr>
<td>SUBSURFACE OIL CATEGORY:</td>
<td></td>
</tr>
<tr>
<td>WATER OIL CHARACTER:</td>
<td></td>
</tr>
<tr>
<td>WATER OIL AREA:</td>
<td></td>
</tr>
<tr>
<td>WATER OIL LENGTH:</td>
<td></td>
</tr>
<tr>
<td>WATER OIL WIDTH:</td>
<td></td>
</tr>
<tr>
<td>WATER OIL CATEGORY:</td>
<td></td>
</tr>
<tr>
<td>SEDIMENTS:</td>
<td></td>
</tr>
<tr>
<td>SEDIMENT SHAPE:</td>
<td></td>
</tr>
<tr>
<td>SEDIMENT AREA:</td>
<td></td>
</tr>
<tr>
<td>SEDIMENT LENGTH:</td>
<td></td>
</tr>
<tr>
<td>SEDIMENT WIDTH:</td>
<td></td>
</tr>
<tr>
<td>SEDIMENT CATEGORY:</td>
<td></td>
</tr>
<tr>
<td>WEATHER:</td>
<td></td>
</tr>
<tr>
<td>TIDE LEVEL:</td>
<td></td>
</tr>
<tr>
<td>ENERGY LEVEL:</td>
<td></td>
</tr>
<tr>
<td>DATE:</td>
<td></td>
</tr>
<tr>
<td>TIME:</td>
<td></td>
</tr>
<tr>
<td>SEGMENT:</td>
<td></td>
</tr>
<tr>
<td>SITE:</td>
<td></td>
</tr>
<tr>
<td>SUBDIVISION:</td>
<td></td>
</tr>
<tr>
<td>MAYSAP</td>
<td>SHORELINE</td>
</tr>
<tr>
<td>TEAM NO.</td>
<td>LANDMANAGER</td>
</tr>
<tr>
<td>MAYSAP</td>
<td>SHORELINE</td>
</tr>
<tr>
<td>TEAM NO.</td>
<td>LANDMANAGER</td>
</tr>
<tr>
<td>MAYSAP</td>
<td>SHORELINE</td>
</tr>
<tr>
<td>TEAM NO.</td>
<td>LANDMANAGER</td>
</tr>
</tbody>
</table>
Note: Sorry but this map is wrong. It should be like this.

QC note: original boundaries are correct - subdivisions A + B are in the same cave. Disregard changes.
QC note: Disregard boundary changes. Original "B" subdivision boundaries are correct.

PY006 B

Subdivision Field Map

Map Key: KENPY006

Name:

Date: May 13, 19

Data Entered:
SSAT MAP

Inclu... for clarification of boundaries

PY

PY-05

Subdivisions A and B are enclosed in this box. Due to the convoluted shoreline, it is impossible to show boundaries of subdivisions A and B on this map. I suggest you enter 100m of "medium" oiling to your GIS map.

XXX Wide
/// Medium
---- Narrow
TTTT Very light

PY-6

Map Key: KEN-101a
Name: Mann
Date: 4/1/90
Due to high waves, this subdivision was not accessible for survey. The subdivision is, however, adjacent to PY006-A, and is likely very similar with regard to biological features. The description of the biota from PY006-A is repeated below.

This beach is exposed to very high waves. The boulder and cobble beach is bounded by bedrock cliffs on either side and deep water offshore. Previous surveys report that oil is largely or entirely restricted to the high intertidal and supratidal zones. Because of the very high exposure these zones are expanded above sea level to higher levels than on less exposed beaches.

**WILDLIFE OBSERVATIONS** - Completed on all subdivisions

<table>
<thead>
<tr>
<th>BIRDS</th>
<th># OF SPECIES</th>
<th>TOTAL BIRDS</th>
<th>FISH OBSERVED SPECIES PRESENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eagles</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Seabirds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waterfowl</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gulls/Kittiwakes</td>
<td>2</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Shorebirds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corvids</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Birds</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**MARINE MAMMALS**

<table>
<thead>
<tr>
<th>SPECIES</th>
<th># OBSERVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sea Otters</td>
<td></td>
</tr>
<tr>
<td>Pinnipeds (specify)</td>
<td></td>
</tr>
<tr>
<td>Whales (specify)</td>
<td></td>
</tr>
</tbody>
</table>

Shoreline subdivision map showing important biological features attached.
Intertidal zonation at PY006-B

Biota - Tidal Level  Supratidal  High  Middle  Low  Subtidal

Oil

Black Lichen   ***+++-- - -
Loos/Debris    -- - ++++++++--
Thin Green Algae  -+++++++-- -+-+++-- - -+-+++++++--
Thin Red Algae  -+-++- - - - ++++++++--
Limpets         -+-+ - -+-++--
Littorines      -+-+++-- -++-++-+--+-
Barnacles       -++-+++-- -++-++-+--+-
Mussels         -+-++- - ++-++--
Fucus           -+-++- - ++-++--
Kelps/Brown Algae   -- - ++++++++--

Owing to the harsh physical conditions at this location, most biota are killed before they reach large size or old age. Thus, the biota are generally small, comprising the recent recruits to the site. Small individuals of many species were present, including, mussels, barnacles, algae, littorine snails, limpets. The high tide prevented observation of the extreme low zones.

List of Common Species from PY006-A

A. Marine Plants
1. Diatoms, Blue Greens
2. Green Algae - Chlorophyta
   Enteromorpha sp., Prasiola meridionalis, Ulva sp., Urospora sp.
3. Brown Algae - Phaeophyta
   Alaria marginata, Ectocarpus spp., Fucus distichus, Hildenbrandia sp., Ralfsia sp., Sycosiphon lomentaria
4. Red Algae - Rhodophyta
   Endocladia auricata, Halosaccion glandiforme, Membranoptera dimorpha, Odonthalia floccosa, Palmaria palmata, Petrocelis sp., Porphyra sp., Ptilota filicina, Rhodomela lari
5. Higher Plants - Leymus mollis (beach rye grass)

II. Marine Animals
1. Anemones - Anthopleura artemesia, A. xanthogrammica, Metridium senile, Urticina crassicornis, Stomphia sp.
2. Flatworms - Platyhelminthes - Polyclads
3. Polychaete Worms
   Serpulidae - Serpula sp., Crucigera sp., Eudistylia polymorpha
   Spirorbidae - Spirorbis sp.
4. Crustaceans
   a. Amphipods - Orchestia sp.?
   b. Barnacles - Balanus glandula, Semibalanus cariosus
   c. Crabs - Hermit Crabs (Pacuridae)
   d. Isopods - Cirdana harfordi, Idotea wosnesenskii, Gnorimorpha oregonensis
5. Mollusca
   a. Chitons - Katharina tunicata,
   b. Snails - Gastropods
      Littorina sp., Nucella lamellosa,
   c. Limpets - Lottia digitalis, L. persona, Tectura persona, T. scutum, Siphonaria thersites
12. Echinoderms
   a. Brittle Stars - Ophiolus sp., ?
   b. Sea stars - Orthasterias keohleri, Pisaster ochraceus, Pycnopodia helianthoides, Solaster sp.
   c. Sea Cucumbers - Holothurians - Eupentacta sp.
   d. Urchins - Strongylocentrotus droebachiensis

1991 MAYSAP EVALUATION

SEGMENT: PY 006 SUB: D REGION: KEN SURVEY DATE: 5/13/91

ENVIRONMENTAL SENSITIVITIES:
Work Window(s) RESTRICTED 5/15 - 9/1

Ecological/Constraints (see page two for details) Seabird colony

ARCHEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO Signature: ________________________ Date: ____________________

RECOMMENDATIONS:

<table>
<thead>
<tr>
<th>TREATMENT REQUIRED (Y or N)</th>
<th>INITIAL</th>
<th>TAG</th>
<th>FOSC</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Manual Pickup (Check as Req.)
Spot Washing
Bio-Customblen Only
Bio-Inipol/Customblen
Other
Other

COMMENTS:
INITIAL: Subdivision surveyed by skiff. No oil observed.

TAG:

FOSC:

TAG APPROVAL DATE: __________ FOSC APPROVAL DATE: __________

ADEC ________________________ FOSC ________________________
EXXON ________________________
USCG ________________________
NOAA ________________________
ECOLOGICAL CONSTRAINTS
1991 FIELD ACTIVITIES

TEAM NO.: 4
SEGMENT: P4.006
SUBDIVISION: D
DATE: 13/1/91

ADEC
NAME: Clarence Crosby
SIGNATURE: Clarence Crosby

NTR
Due to the inaccessibility & safety hazard involved by this segment:
Past oiling indicated no oil observed.

EXXON
NAME: George R. Steiler
SIGNATURE: George R. Steiler 960/96

NTR
Little oil remains based on historical surveys. Any treatment would not be worth the risk (safety) setting on and off the segment.

LANDMANAGER
NAME: John Hardisty of USFWS
SIGNATURE: John P. Hardisty

NTR
Inaccessible... safety risk... no treatment recommended.

USCG/NOAA
NAME: John Huskisson
SIGNATURE: John Huskisson

NTR
Same as P4.006 D

MARK: Donald A. McDermott

DATE: 12/1/91
**MAYSAP SHORELINE OILING SUMMARY**

- **Team No.:** 4
- **OG:** J.M. Segal
- **ADEC:** Cassady
- **EXXON:** Bruce L. Stiles
- **BIO:** J. Barry
- **USCG/NOAA:** M. Hande
- **DATE:** May 13, 1991

### Survey Information
- **Segment:** 24.006
- **Subdivision:** D
- **Tide Level:** 2.6 ft. to 3.7 ft.
- **Energy Level:** ☑️ H ☑️ M
- **Surveyed From:** ☑️ Foot ☑️ Boat ☑️ Helo
- **Weather:** ☑️ Sun ☑️ Clouds ☑️ Fog ☐️ Rain ☑️ Snow
- **Total Length Shoreline Surveyed:** 26.11 m
- **Near Shore Sheen:** ☐️ BR ☑️ RB ☐️ SL ☑️ None
- **Est. Oil Category Length:** W — m M — m N — m V — m L — m US 26.11 m

### Surface Oil Character

<table>
<thead>
<tr>
<th>PC</th>
<th>AP</th>
<th>MS</th>
<th>TB</th>
<th>OR</th>
<th>CV</th>
<th>CT</th>
<th>ST</th>
<th>FL</th>
<th>DB</th>
<th>NO</th>
<th>Type</th>
<th>Length</th>
<th>Width</th>
<th>Zone</th>
</tr>
</thead>
</table>

### Subsurface Oil Character

<table>
<thead>
<tr>
<th>PC</th>
<th>OP</th>
<th>HOR</th>
<th>MOR</th>
<th>LOR</th>
<th>OF</th>
<th>TR</th>
<th>NO</th>
<th>Zone</th>
<th>Oil Character</th>
</tr>
</thead>
</table>

### Other Information

- **Distribution:** C = 91-100%; B = 81-90%; P = 71-80%; S = 1-10%; T < 1%
- **Slope:** V = Vertical; H = High Angle; M = Medium Angle; L = Low Angle
- **Photo Roll # Mayfas-** FRAMES
- **Sheen Color:** B = Brown; R = Rainbow; S = Silver; N = None

### OG Comments:

Unable to reach subdivision because well waves too high. No map available for this subdivision at time of survey.

Revised: F/W. 5/26/91
MAYSAP BIOLOGICAL SUMMARY FORM

<table>
<thead>
<tr>
<th>TEAM #</th>
<th>4</th>
<th>DATE/TIME</th>
<th>May 15, 1991 1150 - 1210</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEGMENT #</td>
<td>PY006</td>
<td>TIDAL HEIGHT (Range)</td>
<td>+2.6 =&gt; +3.7</td>
</tr>
<tr>
<td>SUBDIVISION</td>
<td>D</td>
<td>BIOLOGIST</td>
<td>JIM BARRY</td>
</tr>
<tr>
<td>SEA STATE</td>
<td>Calm</td>
<td>WIND SPEED/DIRECTION</td>
<td>Calm</td>
</tr>
</tbody>
</table>

COMMENTS / OBSERVATIONS - OILED SUBDIVISIONS

General Features of PY006-D

This subdivision report is identical to that for PY006-C. Both subdivisions were surveyed by skiff from 100 or more meters distance. Due to high surf we were unable to land at these shores. The shores are mostly moderately to highly exposed sloping bedrock. Little oil was reported from the subdivision. Observable areas on the subdivision appear to have floral and faunal assemblages typical of exposed coasts. Black lichen is visible in the supratidal zone, with green and red filamentous algae abundant in the upper to middle zone, moderate to dense cover of Fucus below, and patchy, but generally continuous cover of Mytilus along sections of the subdivision. Brown algae cover the lowest zones and subtidal. Cleanup will probably not be required, but would probably not impact the biota, unless hot water cleaning was performed.

A seabird colony is located in PY006, and many marine birds were observed along the segment, including marbled murrelets, red faced cormorants, pelagic cormorants, common murres, tufted puffins, horned puffins, red necked phalaropes, glaucous-winged gulls, black-legged kitiwakes, fork tailed petrels, harlequin ducks, common mergansers, rhinoceros auklets, pigeon guillemots, Boneparte’s gull, aleutian tern, arctic tern, and others? Two eagle nests were sighted at the locations marked on the ecology map near the northern and southern ends of the segment. We were unable to identify whether the nests were active, but did observe one adult eagle near each nest.

(continued)

WILDLIFE OBSERVATIONS - Completed on all subdivisions

<table>
<thead>
<tr>
<th>BIRDS</th>
<th># OF SPECIES</th>
<th>TOTAL BIRDS</th>
<th>FISH OBSERVED</th>
<th>SPECIES PRESENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eagles</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seabirds</td>
<td>many</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waterfowl</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gulls/Kitiwakes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shorebirds</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corvids</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Birds</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MARINE MAMMALS</th>
<th># OBSERVED</th>
<th>SPECIES</th>
<th># OBSERVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sea Otters</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pinnipeds (specify)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whales (specify)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Shoreline subdivision map showing important biological features attached.
List of Species Expected along PY006-D

A. Marine Plants
1. Diatoms, Blue Greens
   Acrosiphonia sp., Cladophora sp., Enteromorpha sp., Prasiola meridionalis, Ulva sp., Urospora sp.
2. Green Algae - Chlorophyta
   Hildenbrandia sp., Laminaria groenlandica, Nereocystis leutkeana, Ralfsia sp., Syctosiphon lomentaria
3. Brown Algae - Phaeophyta
   Anfelia plicata, Bossiella sp., Calliarthron sp., Corallina sp., Cryptosiphonia woodii, Cumagloia andersonii, Endocladium muricata, Halosaccion glandiforme, Iridaea sp., Lithothamnion sp., Membranoptera dimorpha, floccos, Palmaria palmata, Petrocelis sp., Porphyra sp., Ptilota filicina, Rhodomela larix
4. Red Algae - Rhodophyta
   Calliarthron sp., Corallina sp., Cryptosiphonia woodii, Cumagloia andersonii, Endocladium muricata, Halosaccion glandiforme, Iridaea sp., Lithothamnion sp., Membranoptera dimorpha, floccos, Palmaria palmata, Petrocelis sp., Porphyra sp., Ptilota filicina, Rhodomela larix
5. Higher Plants - Leymus mollis (beach rye grass)

II. Marine Animals
1. Sponges - Porifera
   Halichondria sp., Halichondria panicea, Ophlitaspongia pennata, Tethys sp.
3. Hydroids - Sertulariidae - Sertularella?, Abietinaria sp.
4. Flatworms - Platyhelminthes - Polyclads
5. Nematode Worms - Ribbon Worms
   Emplectonema gracile, Tubulanus polymorphus
6. Polychaete Worms
   Glyceridae
   Nepthyidae
   Nereidae - Nereis spp.
   Serpulidae - Serpula sp., Crucigera sp., Eudistylia polymorpha
   Spirobranchidae - Spirobranchus sp.
7. Peanut worms - Sipunculids - Phascolosoma agassizii
8. Crustaceans
   a. Amphipods - Orchestia sp.?, Traskorchestia traskiana
   b. Barnacles - Balanus glandula, Chthamalus dalli, Semibalanus cariosus
   c. Crabs
   Acantholithodes hispidus, Haplogaster sp., Paguridae (hermit crabs), Oregonia gracilis, Pugettia sp.,
   d. Isopods - Cirdana harfordi, Idotea wosnesenskii, Gnorimorsphaeroma oregonensis
11. Mollusca
   a. Chitons - Cryptochiton stelleri, Mopalia sp., M. mucosa, Katharina tunicata, Tonicella lineata.
   b. Snails - Gastropods
      Amphissa columbiana, Fusitriton oregonensis, Littorina scutulata, L. sitkana, L. keenae, Nucella lamellosa, N. lima, Tachyrhynchus sp.
   c. Limpets - Acmaea mitra, Diadora aspera, Lottia digitalis, L. persona, Tectura fenestrata, T. persona, T. scutum, Siphonaria thersites
   d. Nudibranches - Lamellidoris fusca, Onchidela sp.
   e. Bivalves - Mytilus edulis, Pododesmus cepio
   f. Cephalopods - Octopus dofleini

12. Echinoderms
   a. Brittle Stars - Ophiolus sp., ?
   b. Sea stars
      Dermasterias imbricata, Evasterias truscheli, Henricia leviuscula, H. sanguinolenta, Leptasterias hexactis, Orthasterias keohleri, Pisaster ochraceus, Pycnopodia helianthoides, Solaster sp.
   c. Sea Cucumbers - Holothurians
      Cucumaria miniata, C. veqae, Eupentacta sp., Leptosynapta sp.
   d. Urchins - Strongylocentrotus droebachiensis


15. Fishes
   a. Cottidae - Arctedius harringtoni, Oligocottus sp. (bright green), Rhanphocottus richardsonii
   b. Liparidae - Liparis callyodon
   c. Stichaeidae - Xiphister atropurpureus, X. mucosus
PY006 D

Subdivision Field Map
Map Key: KENPY006Db
Name: Sempels
Date: 5/13/91
Data Entered: 

Revised: MC 5/18/91 R.E. C.D. Revised: F.W. 5/24/91

Wide
Medium
Narrow
Very Light
No Oil

ADEC Subsegment Length: 2611m
AK State Plane Zone 4

XXX

///

----

TTTT

0000
ENVIRONMENTAL SENSITIVITIES:
Work Window(s) RESTRICTED 5/15 - 9/1

Ecological/Constraints (see page two for details) Seabird colony

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO Signature: Timothy Smith Date: 6/04/91

RECOMMENDATIONS:

INITIAL TAG FOSC
TREATMENT REQUIRED (Y or N) N N N

Manual Pickup (Check as Req.)
Spot Washing
Bio-Customblen Only
Bio-Inipol/Customblen
Other
Other

COMMENTS:
INITIAL: Subdivision surveyed by skiff. No oil observed.

TAG:

FOSC:

TAG APPROVAL DATE: June 4 1991 FOSC APPROVAL DATE: 6/17/91
ADEC John Kane FOSC L. E. Page, CDR, USCG
EXXON Rea
USCG
NOAA
ECOLOGICAL CONSTRAINTS
1991 FIELD ACTIVITIES

Due to the inaccessibility & safety hazard involved by this segment -
Past oiling indicated no oil observed.

Little oil remains based on historical surveys. Any treatment would not be worth the risk (safety) getting on and off the segment.

Inaccessible... safety risk... no treatment recommended.

Same as PV006 A
**MAYSAP SHORELINE OILING SUMMARY**

**TEAM NO. 4**

OG: J. M. Bembe

ADEC: Cray

BIO: J. Bembe

LANDMANAGER: Hor

USCG/NOAA: H. M. M. M. D. D. D.

DATE: May 13, 1991

SEGMENT: P4.006

SUBDIVISION: D

**TIME:__ to __:**

TIDE LEVEL: +2.6 ft. to +3.7 ft.

ENERGY LEVEL: [ ] H [ ] M [ ] L

SURVEYED FROM: [ ] FOOT [ ] BOAT [ ] HELO

WEATHER: [ ] SUN [ ] CLOUDS [ ] FOG [ ] RAIN [ ] SNOW

TOTAL LENGTH SHORELINE SURVEYED: 7611 m

NEAR SHORE SHEEN: [ ] BR [ ] RB [ ] SL [ ] NONE

EST. OIL CATEGORY LENGTH: W [ ] m M [ ] m N [ ] m VL [ ] m NO 26111 m US 26110 m

---

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>SURFACE OIL CHARACTER</th>
<th>SURFACE SEDIMENT</th>
<th>SHORE SLOPE</th>
<th>AREA WIDTH</th>
<th>AREA LENGTH</th>
<th>ZONE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>m</td>
<td>m</td>
<td></td>
</tr>
</tbody>
</table>

---

**COMMENTS:**

Unable to read subdivision because of swell waves too big. No maps available for this subdivision at time of survey.

Revised: Ew. 5/12/91 out C.O.

---

**OG COMMENTS:**

Unable to read subdivision because of swell waves too big. No maps available for this subdivision at time of survey.

Revised: Ew. 5/12/91 out C.O.
MAYSAP BIOLOGICAL SUMMARY FORM

TEAM # 4  DATE/TIME May 15, 1991 1150 - 1210
SEGMENT # PY006  TIDAL HEIGHT (Range) +2.6 => +3.7
SUBDIVISION D  BIOLOGIST JIM BARRY
SEA STATE Calm  WIND SPEED/DIRECTION Calm

COMMENTS / OBSERVATIONS - OILED SUBDIVISIONS

General Features of PY006-D

This subdivision report is identical to that for PY006-C. Both subdivisions were surveyed by skiff from 100 or more meters distance. Due to high surf we were unable to land at these shores. The shores are mostly moderately to highly exposed sloping bedrock. Little oil was reported from the subdivision. Observable areas on the subdivision appear to have floral and faunal assemblages typical of exposed coasts. Black lichen is visible in the supratidal zone, with green and red filamentous algae abundant in the upper to middle zone, moderate to dense cover of Fucus below, and patchy, but generally continuous cover of Mytilus along sections of the subdivision. Brown algae cover the lowest zones and subtidal. Cleanup will probably not be required, but would probably not impact the biota, unless hot water cleaning was performed.

A seabird colony is located in PY006, and many marine birds were observed along the segment, including marbled murrelets, red faced cormorants, pelagic cormorants, common murres, tufted puffins, horned puffins, red necked phalaropes, glaucous-winged gulls, black-legged kittiwakes, fork tailed petrels, harlequin ducks, common mergansers, rhinoceros auklets, pigeon guillemots, Boneparte's gull, aletian tern, arctic tern, and others? Two eagle nests were sighted at the locations marked on the ecology map near the northern and southern ends of the segment. We were unable to identify whether the nests were active, but did observe one adult eagle near each nest.

(continued)

WILDLIFE OBSERVATIONS - Completed on all subdivisions

<table>
<thead>
<tr>
<th>BIRDS</th>
<th># OF SPECIES</th>
<th>TOTAL BIRDS</th>
<th>FISH OBSERVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eagles</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Seabirds</td>
<td>many</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waterfowl</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gulls/Kittiwakes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shorebirds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corvids</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Other Birds</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MARINE MAMMALS</th>
<th># OBSERVED</th>
<th>LAND MAMMALS</th>
<th>SPECFIES</th>
<th># OBSERVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sea Otters</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pinnipeds (specify)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whales (specify)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Shoreline subdivision map showing important biological features attached.
List of Species Expected along PY006-D

A. Marine Plants
1. Diatoms. Blue Greens
   Acrosiphonia sp., Cladophora sp., Enteromorpha sp., Prasiola meridionalis.
   Ulva sp., Uropsora sp.
2. Green Algae - Chlorophyta
   Diatoms, Blue Greens
   Acrosiphonia sp., Cladophora sp., Enteromorpha sp., Prasiola meridionalis.
   Ulva sp., Uropsora sp.
3. Brown Algae - Phaeophyta
   Alaria marginata, Ectocarpus spp., Fucus distichus, Hedophyllum sessile,
   Hildenbrandia sp., Laminaria groenlandica, Nereocystis leutkeana, Ralfsia sp.,
   Syctosiphon lomentaria
4. Red Algae - Rhodophyta
   Anfeltia plicata, Bossiella sp., Calliarthron sp., Corallina sp.,
   Cryptosiphonia woodii, Cumagloia andersonii, Endocladia muricata, Halosaccion glandiforme, Iridaea sp., Lithothamnion sp., Membranoptera dimorpha, floccosa,
   Palmaria palmata, Petrocelis sp., Porphyra sp., Pttilota filicina, Rhodomela larix
5. Higher Plants - Leymus mollis (beach rye grass)

II. Marine Animals
1. Sponges - Porifera
   Halichondria sp., Halichondria panicea, Ophlitaspongia pennata, Tethys sp.
2. Anemones - Anthopleura artemesia, A. elegantissama, A. xanthogrammica,
   Epiaclis ritteri, E. prolifera?, Metridium senile, Urticina crassicornis, Epizoanthus scotinus
3. Hydroids - Sertularidae - Sertularella?, Abietinaria sp.
4. Flatworms - Platyhelminthes - Polyclads
5. Nematode Worms - Ribbon Worms
   Emplectonema gracile, Tubulanus polymorphus
6. Polychaete Worms
   Glyceridae
   Nepthidae
   Nereidae - Nereis spp.
   Serpulidae - Serpula sp., Crucigera sp., Eudistylia polymorpha
   Spirorbidae - Spirorbis sp.
7. Peanut Worms - Sipunculids - Phascolosoma agassizii
8. Crustaceans
   a. Amphipods - Orchestia sp.?, Traskorchestia traskiana
   b. Barnacles - Balanus glandula, Chthamalus dalli, Semibalanus cariosus
   c. Crabs
      Acantholithodes hispidus, Haplogaster sp., Paguridae (hermit crabs),
      Oregonia gracilis, Pugettia sp.,
   d. Isopods - Cirdana harfordi, Idotea wosnesenskii, Gnorimorsphaeroma oregonensis
11. Mollusca
   a. Chitons - Cryptochiton stelleri, Mopalia sp., M. mucosa, Katharina tunicata, Tonicella lineata.
   b. Snails - Gastropods
      Amphissa columbiana, Fusitriton oregonensis, Littorina scutulata, L. sitkana, L. keenae, Nucella lamellosa, N. lima, Tachyrhynchus sp.
   c. Limpets - Acmaea mitra, Diadura aspera, Lottia digitalis, L. persona, Tectura fenestrata, T. persona, T. scutum, Siphonaria thersites.
   d. Nudibranches - Lamellidoris fusca, Onchidela sp.
   e. Bivalves - Mytilus edulis, Pododesmus cepio
   f. Cephalopods - Octopus dofleini

12. Echinoderms
   a. Brittle Stars - Ophiolus sp., ?
   b. Sea stars
      Dermasterias imbricata, Evasterias truscheli, Henricia leviuscula, H. sanguinolenta, Leptasterias hexactis, Orthasterias keohleri, Pisaster ochraceus, Pycnopodia helianthoides, Solaster sp.
   c. Sea Cucumbers - Holothurians
      Cucumaria miniata, C. vegae, Eupentacta sp., Leptosynapta sp.
   d. Urchins - Strongylocentrotus droebachiensis


15. Fishes
   Cottidae - Arctedius harringtoni, Oligocottus sp. (bright green), Rhanphocottus richardsonii
   Liparidae - Liparis callyodon
   Stichaeidae - Xiphister atropurpureus, X. mucosus
PY006 D

Subdivision Field Map
Map Key: KENPY006D

Name: Sempels
Date: 5/13/91

Data Entered:

ADEC Subsegment Length: 2611m

METERS

100 200

AK State Plane Zone 4

XXX Wide

/ / / Medium

--- Narrow

TTTT Very Light

0000 No Oil

Calculations:

Revised: MC 5/13/91 DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISI

E:\DATE REVISIONS
REGION: KENAI

SEGMENT: PY-07

SUBDIVISIONS: A (1 OF 3)
SHORELINE EVALUATION

SEGMENT ST/ PY-07 SUBDIVISION A (1 OF 3) DATE 4/5/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
Bald eagle nest (5T) - 3/1 to 7/1; Seabird colony (5R) - 5/1 to 9/1; National Wildlife Refuge (4QQ).

SUBDIVISION ECOLOGICAL CONSTRAINTS: Restrict air traffic to essential minimum. Air approach from and to seaward only. Contact USFWS prior to treatment for confirmation of dates and avoidance minimums.

ARCHAEOLOGICAL CONSTRAINTS: If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO SIGNATURE: __________________________ DATE: __________________________

OILING CATEGORIZATION:
Wide_0 m: Medium_0 m: Narrow_0 m: V.Light_0 m: No Oil_810 m
Subsurface Oil Observed: Yes No X Maximum Depth

RECOMMENDATIONS:
X No Treatment Recommended _____ Snare/Absorbent Booms
_____ Treatment Recommended _____ Oil Snares (pom poms)
_____ Manual Pickup _____ Absorbents (pads, rolls, etc)
_____ Bioremediation _____ Spot Washing: Wands
_____ Tarmat: Breakup _____ Beach Cleaner
______ Removal _____ Other (see comments)

COMMENTS:

TAG COMMENTS:

TAG APPROVAL DATE:
ADEC
EXXON
NOAA
USCG

FOSC: __________________________ DATE: __________________________
FIELD SHORELINE COMMENT SHEET

SUBDIVISION: A

DATE APRIL 1, 1990

NAME JACQUI MICHEL

SIGNATURE

NO TREATMENT RECOMMENDED

COMMENTS

None.

ADEC

NAME JOHN R. REED

SIGNATURE

NO TREATMENT RECOMMENDED

COMMENTS

No comments.

LAND MANAGER - USFWS

NAME Mary Partner

SIGNATURE

NO TREATMENT RECOMMENDED

COMMENTS

Weathering has occurred below the upper intertidal zone. Weathering has been more extensive above the upper intertidal zone. Weathering occurred in the upper intertidal zone in 1989 as standing waves 10 cm deep and heavy coated boulders are now covered with fresh rocky debris and snow and difficult to access.
SHORELINE OILING SUMMARY

OG: Mann  USCG/NAVE  Michael  SEGMENT ST: PY-3
BIO: Carr  LAND REP: Partner - Fws  SUBDIVISION: A
TEAM NO.: 18  TIDE LEVEL: r1.2 to +4.1  TIME: 1405 to 1420  DATE: 1/1/90
EST. SUBDIVISION LENGTH: 900 m
SURVEYED FROM:  ☐ Foot  ☐ Boat  ☐ Halo  WORKING DIRECTION: S to N
UPLANDS DESCRIPTION:  ☐ Grass  ☑ Forest  ☐ Rock
SURFACE SEDIMENTS:  ☐ 10%  ☐ 20%  ☐ 30%  ☐ 40%  ☐ 50%  ☐ 60%  ☐ 70%  ☐ 80%  ☐ 90%  ☐ 100%
SLOPE:  Lang: 5%  Hang: 35%  Vert: 60%
OIL CATEGORY LENGTH:  W 0 m  M 0 m  N 0 m  V 60 m  NO 840 m

SURFACE OIL

<table>
<thead>
<tr>
<th>CHARACTER</th>
<th>DISTRIBUTION</th>
<th>OIL / FILM COLOR</th>
<th>IMPACTED ZONES</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASPHALT PAVEMENT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>POOLED</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COVER</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>COAT</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>STAIN</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>MOUSSE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PATTIES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TARBALLS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FILM</td>
<td>☑</td>
<td>☑</td>
<td></td>
</tr>
<tr>
<td>NO OIL</td>
<td>☑</td>
<td>☑</td>
<td></td>
</tr>
</tbody>
</table>

PAVEMENT: H F S 0 sq. m by 0 cm
PATTIES / TARBALLS 0 BAGS
NEAR SHORE SHEEN? ☐ BR RW SL TL
OILED DEBRIS NO AMOUNT
Logs  ☐  YES ☐ NO
Vegetation  ☐
Trash  ☐
Debris  ☐

Photographs:
Roll No. none
Frames none

SUBSURFACE OIL
No pits possible due to bedrock/large boulder substrate.

<table>
<thead>
<tr>
<th>PIT NO.</th>
<th>PIT DEPTH (cm)</th>
<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED INTERVAL</th>
<th>OIL / FILM COLOR</th>
<th>OILED ZONE</th>
<th>A N A</th>
<th>SUBSURFACE SEDIMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

COMMENTS

Oiling on this segment consists of sparse spots of CV, CT, and ST. These spots show little evidence of wave erosion since their deposition last summer. The shoreline is high angled, inaccessible on foot, and exposed to heavy waves. Bedrock is granite making a vivid...
visited the core described as site A (during the August 1989 scat).

Much oil has disappeared through natural processes at this site
where it existed as CV and CT on boulder tops in the UITZ and
as pooled (mousse) on boulder interstices in the UITZ. This
area of boulders rests directly on bedrock and winter storm
waves have rolled and battered these stones, removing oil
but a <5% five. Above the UITZ, weathering has been
much less effective. I have included the northern bedrock
outcrop originally mapped in Site A (1989) in subdivision
B in this report. Here, in the supratidal zone, little or no
weathering of oil spots has occurred. At the SW end of

1989's site A, fresh rockfall debris and snow obscure the
previously oiled rocks. I suspect little oil is left here
(beyond CT/5, 57/5) because waves have eroded the front of
this gulley-debris deposit.

D.H.M.
No sketch provided
**SHORELINE ECOLOGICAL SUMMARY**

**Segment ST PY-7**  
**Subdivision A** (of A-C)  
**Date (mo/day/yr)** 4/1/90

**Biologist** M. CAR

---

**Time (24 hr)** 1:00

---

(A) **Substrate type and % of segment:**

1. Bedrock 90  
2. Boulder 10  
3. Cobble  
4. Pebble  
5. Sand  
6. Silt

(B) **Overall % cover of biota (% of segment):** Dense 70  Moderate 20  Low 10

(C) **Density, substrate preference (by number from A, above), & vertical zonation of major taxa:** (upper-U; mid-M; low tidal-L):

- Juveniles / adults (X)  
- New settlement (3)

---

**BARNACLES**

<table>
<thead>
<tr>
<th></th>
<th>Dense</th>
<th>Moderate</th>
<th>Sparse</th>
</tr>
</thead>
<tbody>
<tr>
<td>1U</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>1M</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>1L</td>
<td>6</td>
<td>5</td>
<td>4</td>
</tr>
</tbody>
</table>

**MYTILUS**

<table>
<thead>
<tr>
<th></th>
<th>Dense</th>
<th>Moderate</th>
<th>Sparse</th>
</tr>
</thead>
<tbody>
<tr>
<td>1U</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>1M</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>1L</td>
<td>6</td>
<td>5</td>
<td>4</td>
</tr>
</tbody>
</table>

**GASTROPODS**

<table>
<thead>
<tr>
<th></th>
<th>Dense</th>
<th>Moderate</th>
<th>Sparse</th>
</tr>
</thead>
<tbody>
<tr>
<td>1U</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>1M</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>1L</td>
<td>6</td>
<td>5</td>
<td>4</td>
</tr>
</tbody>
</table>

**FUCUS**

<table>
<thead>
<tr>
<th></th>
<th>Dense</th>
<th>Moderate</th>
<th>Sparse</th>
</tr>
</thead>
<tbody>
<tr>
<td>1U</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>1M</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>1L</td>
<td>6</td>
<td>5</td>
<td>4</td>
</tr>
</tbody>
</table>

---

**Wildlife Observations/General Comments:**

- Bald eagle (2)  
- Golden-eye (1)  
- Harlequin ducks (5)  
- Sea otter (1)  
- Common murre & red-faced (5) pelagic (1)

**Ecological Considerations:**

- Sensitivity code: 4-00 (National Wildlife Refuge), 5-T (Bald eagle nest), 5-R (Seabird colony)
REGION: KENAI

SEGMENT: PY-07

SUBDIVISIONS: B (2 OF 3)
SHORELINE EVALUATION

SEGMENT ST/ PY-07 SUBDIVISION B (2 OF 3) DATE 4/5/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
Bald eagle nest (5T) - 3/1 to 7/1; Seabird colony (5R) - 5/1 to 9/1; National Wildlife Refuge (400).

SUBDIVISION ECOLOGICAL CONSTRAINTS: Restrict air traffic to essential minimum. Air approach from and to seaward only. Contact USFWS prior to treatment for confirmation of dates and avoidance minimums.

ARCHAEOLOGICAL CONSTRAINTS: If cultural resources are uncovered during shoreline treatment, stop work in the vicinity, mark the location of the find and contact a member of Exxon's Cultural Resource Program immediately (564-3657; 564-3658 or 564-3276).

SHPO SIGNATURE: ______________________ DATE: ______________________

OILING CATEGORIZATION:
Wide 0 m: Medium 0 m: Narrow 63 m: V.Light 60 m: No Oil 0 m
Subsurface Oil Observed: Yes No X Maximum Depth ______

RECOMMENDATIONS:
X No Treatment Recommended _____ Snare/Absorbent Booms
X Treatment Recommended _____ Oil Snare (pom poms)
_____ Manual Pickup _____ Absorbents (pads, rolls, etc)
_____ Bioremediation _____ Spot Washing: _____ Wands
_____ Tarmat: _____ Breakup _____ Beach Cleaner
_____ Removal _____ Other (see comments)

COMMENTS: Manual removal of oiled trash and debris. Work done ASAP before 5/1 weather and safe access permitting.

TAG COMMENTS: ______________________

TAG APPROVAL DATE: __________
ADEC __________
EXXON __________
NOAA __________
USCG __________

FOSC: __________ DATE: ________
FIELD SHORELINE COMMENT SHEET

SEGMENT ST1 PY O7 SUBDIVISION: B DATE APRIL 1, 1990

NAME JACQUI MICHEL SIGNATURE J. Michel

☐ NO TREATMENT RECOMMENDED ☑ TREATMENT SUGGESTED

COMMENTS

Manual removal of oiled debris only. Most of the remaining shoreline oil is on the upper/supper itz on a vertical rock wall - not amenable to manual removal/bioremediation.

ADEC

NAME JOHN R. REED SIGNATURE John R. Reed

☐ NO TREATMENT RECOMMENDED ☑ TREATMENT SUGGESTED

COMMENTS

Manual removal of oiled debris. Due to the lack of oil removal technology and location of the oil at the site, the contamination will be very hard to remove.

LAND MANAGER - USFWS

NAME Mary Foster SIGNATURE Mary Foster

☐ NO TREATMENT RECOMMENDED ☑ TREATMENT SUGGESTED

COMMENTS

Remove oiled net, boom and debris. Due to the nature and location of the oil, current cleanup technology will not provide adequate treatment for oil on the boulders, bedrock and rock face.
### SHORELINE OILING SUMMARY

OG: Mann, USCG/NOSA  Michael  SEGMENT ST/ PY-7

Bio: Exxon ADEC  Partner - Fus  SUBDIVISION

Team No.: 18  Tide Level: +1.4 to +3.5  Date 1/1/90

Est. Subdivision Length: 100 m  Sun  Clouds  Fog  Rain  Snow

Uplands Description: Grass  Forest  Rock

Surveyed From: Foot  Boat  Helo  Working Direction: S to N

Surface Sediments: R 40% B 59% C 1% P 0% G 0% S 0% M 0% V 0% O

Slope: Lang 40% Hang 35% Ven 25%

Wave Exposure: Low  Med  High

Oil Category Length: W 0 m  M 30 m  N 450 m  VL 50 m  NO 10 m

### SURFACE OIL

<table>
<thead>
<tr>
<th>Character</th>
<th>Distribution</th>
<th>Oil/Film Color</th>
<th>Impacted Zones</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt Pavement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>POOLED</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>COVER</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>COAT</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>STAIN</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>MOUSSE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PATTIES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TARBALLS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FILM</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>NO OIL</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>

Pavement: H  F  S  NO  sq. m by _ cm

Patties/Tarballs: NO  BAGS

Near Shore Sheen?: NO  BR  RW  SL  TL

Oiled DEBRIS: AMOUNT

- Logs
- Vegetation
- Trash
- Debris

Debris Collected: YES  NO

Type: NA

Photographs:
- Roll No.: _
- Frames: _

### SUBSURFACE OIL

There are no pits, due to the substrate being bedrock and boulder.

<table>
<thead>
<tr>
<th>Pit No.</th>
<th>Pit Depth (cm)</th>
<th>Subsurface Oil Character</th>
<th>Oiled Interval</th>
<th>Below Oil/Film Color</th>
<th>Pit Zone</th>
<th>Ana</th>
<th>Subsurface Sediments</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Comments**

This subdivision is at the back of the shallow bay in PY-7. Its underlying footwears are splash marks from C7 to CV by black oil residue evident on boulder and bedrock surfaces in the upper and supertidal zones. Oily debris and trash are trapped between boulders. We noted little change in oiling conditions here from August 1989. Wave exposure of oil is slight.

Reviewed by: _

Date: _
HECKLIST
- B Anker
- Approx. Scale
- Geo Sub Indry
- Geo Dist.
- Align
- Length
- Core
- Substrate Character
  - Est. HW/MLW
  - SSL
- Profile Location(s)
- Core(s)
- Pit Location(s)
- Photo Location(s)

LEGEND

- No Subsurface Oil
- Subsurface Oil

CT/C
- Continuous Distribution
- CT/B
- Broken Distribution
- CT/P
- Patchy Distribution
- CT/S
- Plashed Distribution

Vegetation
- 1

Character Length (m): AP 0 PO 20 CV 35 CT 35 ST 35 MS 0 PT 0 TB 0 FL 0 NO 10
SHORELINE ECOLOGICAL SUMMARY

Segment ST PY-7 Subdivision B (of A-G) Date (mo/day/yr) 4/1/90

Time (24 hr) 1433 Biologist M. Carr

(A) Substrate type and % of segments:
   (1) Bedrock (2) Boulder (3) Cobble (4) Pebble (5) Sand (6) Silt

(B) Overall % cover of biota (% of segment): Dense — Moderate — Low 100%  

(C) Density, substrate preference (by number from A; above), & vertical zonation of major taxa: (upper-U; mid-M; low tidal-L); juveniles/adults (X), new settlement (G)

**BARNACLES**

<table>
<thead>
<tr>
<th></th>
<th>Dense</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 U</td>
<td>2</td>
<td>3 2</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>3 3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>4 4</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>5 5</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
<td>6 6</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>7</td>
<td>7 7</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

**MYTILUS**

<table>
<thead>
<tr>
<th></th>
<th>Dense</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 U</td>
<td>2</td>
<td>3 2</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>3 3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>4 4</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>5 5</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
<td>6 6</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>7</td>
<td>7 7</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

**GASTROPODS**

<table>
<thead>
<tr>
<th></th>
<th>Dense</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 U</td>
<td>2</td>
<td>3 2</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>3 3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>4 4</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>5 5</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
<td>6 6</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>7</td>
<td>7 7</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

**FUCUS**

<table>
<thead>
<tr>
<th></th>
<th>Dense</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 U</td>
<td>2</td>
<td>3 2</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>3 3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>4 4</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>5 5</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
<td>6 6</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>7</td>
<td>7 7</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

Wildlife Observations/ General Comments:

NONE!

Ecological Considerations:

Sensitivity codes: see PY-7-A sheet
REGION: KENAI

SEGMENT: PY-07

SUBDIVISIONS: C (3 OF 3)
## SHORELINE OILING SUMMARY

**Segment:** PY-7  
**Date:** 1/1/90  
**Team No.:** 18  
**Tide Level:** 0.2 to 1.4 ft  
**Surveyed From:** Foot, Boat, Helo  
**Surface Sediments:** R. 90 - B. 10 - C. 0 - O. 0 - P. 0 - G. 0 - S. 0 - M. 0 - V. 0 - O. 0  
**Slope:** Lang. 5% Hang. 35% Vert. 60%  
**Wave Exposure:** Low  
**Oil Category:**  
- **Surface Oil:**  
  - Character: Asphalt, Paved  
  - Distribution:盖, 膜  
  - Oil/Film Color:  
    - Piano  
    - Black  
  - Impacted Zones:  
    - SU  
    - VI  
    - MI  
    - US  
- **Patty/Tarballs:**  
  - Near Shore Sheen? No  
- **Sediments:** No Oil  
- **Subsurface Oil:** No pit because of inaccessible bedrock  

### Surface Oil

<table>
<thead>
<tr>
<th>Character</th>
<th>Distribution</th>
<th>Oil/Film Color</th>
<th>Impacted Zones</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt Pavement</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Pool</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cover</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Coat</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Stain</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mousse</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patties</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tarballs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Film</td>
<td></td>
<td></td>
<td>yes</td>
</tr>
<tr>
<td>No Oil</td>
<td></td>
<td></td>
<td>yes</td>
</tr>
</tbody>
</table>

### Subsurface Oil

No pit because of inaccessible bedrock.

<table>
<thead>
<tr>
<th>Pit No.</th>
<th>Pit Depth (cm)</th>
<th>Subsurface Oil Character</th>
<th>Oiled Interval (cm)</th>
<th>Below Oil/Film Color</th>
<th>Pit Zone</th>
<th>AANA</th>
<th>Subsurface Sediments</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Comments

This is a high wave-energy shoreline of spectacular granite cliffs and irregular coves. Calm seas, dry rocks, and a close inspection by boat makes me confident that no oil exists here.
No sketch provided.
### SHORELINE ECOLOGICAL SUMMARY

**Segment ST1 PY-7**  
**Subdivision C (of A-C)**  
**Date (mo/day/yr)** 4/1/90

- **Time (24 hr)** 1405
- **Biologist** M. Carr

#### (A) Substrate type and % of segments:

<table>
<thead>
<tr>
<th>Substrate</th>
<th>% of Segment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bedrock</td>
<td>(1)</td>
</tr>
<tr>
<td>Boulder</td>
<td>(2)</td>
</tr>
<tr>
<td>Cobble</td>
<td>(3)</td>
</tr>
<tr>
<td>Pebble</td>
<td>(4)</td>
</tr>
<tr>
<td>Sand</td>
<td>(5)</td>
</tr>
<tr>
<td>Silt</td>
<td>(6)</td>
</tr>
</tbody>
</table>

#### (B) Overall % cover of biota (% of segment):

- **Dense** 70
- **Moderate** 20
- **Low** 10

#### (C) Density, substrate preference (by number from A, above), & vertical zonation of major taxa:

**BARNACLES**

<table>
<thead>
<tr>
<th></th>
<th>Dense</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1U</td>
<td>1M</td>
<td>1L</td>
<td>1U</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

**MYTILUS**

<table>
<thead>
<tr>
<th></th>
<th>Dense</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1U</td>
<td>1M</td>
<td>1L</td>
<td>1U</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

**GASTROPODS**

<table>
<thead>
<tr>
<th></th>
<th>Dense</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1U</td>
<td>1M</td>
<td>1L</td>
<td>1U</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

**FUCUS**

<table>
<thead>
<tr>
<th></th>
<th>Dense</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1U</td>
<td>1M</td>
<td>1L</td>
<td>1U</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

**Wildlife Observations/General Comments:**

#### Ecological Considerations:

- **Sensitivity Code:** Same as PY-7-A
  - Eagle Nests (5T)
  - National Wildlife Refuge (412G)
FIELD SHORELINE COMMENT SHEET

SEGMENT ST1 PY-7  SUBDIVISION: C  DATE 4/1/90

USCG/NOAA NAME  JACQUI MICHEL  SIGNATURE  [Signature]

☐ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS

The light oil on this exposed rocky shore does not warrant further treatment.

ADEC

NAME  JOHN R. REED  SIGNATURE  [Signature]

☐ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS

Very light splashes on bedrock and large boulders. I have read and agree with all information on SSAT Form.

LAND MANAGER -USFWS

NAME  MARY PORTER  SIGNATURE  [Signature]

☐ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS

Due to the amount and location of the oil on this subdivision treatment would be difficult.

[Signature]
ADDENDUM: SUBDIVISION CONSTRAINTS
SEGMENT PY-07 SUBDIVISION B (2 of 3)

WORK WINDOW

Manual Pickup  OPEN

ARCHAEOLOGICAL STANDARD CONSTRAINT

If cultural resources are uncovered, PHONE 564-3274.

APPLICABLE ECOLOGICAL TIME CONSTRAINTS

5T  2 Eagle Nests
NO CONSTRAINT. Bald Eagle nests located in adjacent Subdivisions A & C are more than 400m from work area.

5R  Seabird Colony
NO CONSTRAINT. Seabird Colony is located in adjacent Subdivision C and is more than 800m from work area.

OTHER ECOLOGICAL CONSIDERATIONS

Avoid any unnecessary disturbance or damage to oiled biota and substrate.

TAG ADDENDUM DATE 5/21/90
ADEC  Art Wexler Art Wex
EXXON  Arvy Van Arsy
NOAA  Joseph Trask
USCG  Joseph Trask

FOSC  Wey  DATE 5/21/90

Prepared by: Andrew May  Date: 5/20/90
SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
Bald eagle nest (5T1) - 3/1 to 7/1; Seabird colony (5R1) - 5/1 to 9/1; National Wildlife Refuge (400).

SUBDIVISION ECOLOGICAL CONSTRAINTS: Restrict air traffic to essential minimum. Air approach from and to seaward only. Contact USFWS prior to treatment for confirmation of dates and avoidance minimums.

ARCHAEOLOGICAL CONSTRAINTS: If cultural resources are uncovered during shoreline treatment, stop work in the vicinity, mark the location of the find and contact a member of Exxon's Cultural Resource Program immediately (564-3657; 564-3658 or 564-3276).

SHPO SIGNATURE: ___________________________ DATE: 4/17/90

OILING CATEGORIZATION:
Wide 0 m; Medium 0 m; Narrow 63 m; V.Light 60 m; No Oil 0 m

Subsurface Oil Observed: Yes No X
Maximum Depth

RECOMMENDATIONS:
X Treatment Recommended
X Manual Pickup
X Bioremediation
X Tarmat: Breakup
X Removal

Snare/Absorbent Booms
Oil Snare (pom poms)
Absorbents (pads, rolls, etc)
Spot Washing: Wands
Beach Cleaner
Other (see comments)

COMMENTS: Manual removal of oiled trash and debris. Work done ASAP before 5/1 weather and safe access permitting.

TAG COMMENTS: ____________________________________________________

TAG APPROVAL DATE: 4/17/90
ADEC 
EXXON 
NOAA 
USCG

FOSC: ___________________________ DATE: 4/22/90
SHORELINE EVALUATION

SEGMENT ST/ PY-07 SUBDIVISION A (1 OF 3) DATE 4/5/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
Bald eagle nest (5T) - 3/1 to 7/1; Seabird colony (5R) - 5/1 to 9/1; National Wildlife Refuge (400).

SUBDIVISION ECOLOGICAL CONSTRAINTS: Restrict air traffic to essential minimum. Air approach from and to seaward only. Contact USFWS prior to treatment for confirmation of dates and avoidance minimums.

ARCHAEOLOGICAL CONSTRAINTS: If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO SIGNATURE: DATE: 4/17/90

OILING CATEGORIZATION:
Wide 0 m; Medium 0 m; Narrow 0 m; V.Light 82 m; No Oil 810 m
Subsurface Oil Observed: Yes No X Maximum Depth

RECOMMENDATIONS:
X No Treatment Recommended Snare/Absorbent Booms
____ Treatment Recommended Oil Snares (pom poms)
____ Manual Pickup Absorbents (pads, rolls, etc)
____ Bioremediation Spot Washing: Wands
____ Tarmat: Breakup Beach Cleaner
____ Removal Other (see comments)

COMMENTS:

TAG COMMENTS: MONITORS TO ASSIST SUITZ DURING TREATMENT OF ADJACENT SEGMENTS TO CONFIRM OBSERVATIONS.

EXXON: ANDY TAYLOR NOAA: KEVIN WELCH

USCG: KENNETH KANE

FOSC: DATE: 4/22/90.
PY-8

SENSITIVE SITES

PY-7

Bald Eagle Nest

end 3:45 PM 4/1/90

SEABIRD COLONY

start 205 PM 4/1/90

NVO = 16 VU 1.66 oil

XXX Wide

///// Medium

---- Narrow

TTTT Very Light

Map Key: KEN-102

Name: [Signature]

Date: 4/1/90

ADEC Segment Length: 5121m
SHORELINE EVALUATION

SEGMENT ST/ PY-07 SUBDIVISION B (2 OF 3) DATE 4/5/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
Bald eagle nest (5Tl - 3/1 to 7/1); Seabird colony (5Rl - 5/1 to 9/1); National Wildlife Refuge (400).

SUBDIVISION ECOLOGICAL CONSTRAINTS: Restrict air traffic to essential minimum. Air approach from and to seaward only. Contact USFWS prior to treatment for confirmation of dates and avoidance minimums.

ARCHAEOLOGICAL CONSTRAINTS: If cultural resources are uncovered during shoreline treatment, stop work in the vicinity, mark the location of the find and contact a member of Exxon's Cultural Resource Program immediately (564-3657; 564-3658 or 564-3276).

SHPO SIGNATURE: Charles E. Jones DATE: 4/17/90

OILING CATEGORIZATION:
Wide 0 m: Medium 0 m: Narrow 63 m: V.Light 60 m: No Oil 0 m
Subsurface Oil Observed: Yes No X Maximum Depth

RECOMMENDATIONS:
X Manual Pickup Snare/Absorbent Booms Oil Snares (pom poms)
X Treatment Recommended Absorbents (pads, rolls, etc) Spot Washing: Wands
Bioremediation Spot Washing: Wands Removal
Tarmat: Breakup Beach Cleaner Other (see comments)

COMMENTS: Manual removal of oiled trash and debris. Work done ASAP before 5/1 weather and safe access permitting.

TAG COMMENTS: 

TAG APPROVAL DATE: 4/17/90
ADEC: Andy White
EXXON: Andy Tal
NOAA: Bill Wescott
USCG: Kenneth Keane

FOSC: DATE: 4-22-90
SHORELINE EVALUATION

SEGMENT ST/ PY-07 SUBDIVISION C (3 OF 3) DATE 4/5/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
Bald eagle nest (5T) - 3/1 to 7/1; Seabird colony (5R) - 5/1 to 9/1; National Wildlife Refuge (400).

SUBDIVISION ECOLOGICAL CONSTRAINTS: Restrict air traffic to essential minimum. Air approach from and to seaward only. Contact USFWS prior to treatment for confirmation of dates and avoidance minimums.

ARCHAEOLOGICAL CONSTRAINTS: If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO SIGNATURE: DATE: 4/17/90

OILING CATEGORIZATION:
Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 126 m: No Oil 5071 m
Subsurface Oil Observed: Yes ____ No X Maximum Depth

RECOMMENDATIONS:
X No Treatment Recommended ___ Snare/Absorbent Booms
____ Treatment Recommended ___ Oil Snares (pom poms)
____ Manual Pickup ___ Absorbents (pads, rolls, etc)
____ Bioremediation ___ Spot Washing: ___ Wands
____ Tarmat: ___ Breakup ___ Beach Cleaner
____ Removal ___ Other (see comments)

COMMENTS:

TAG COMMENTS:

TAG APPROVAL DATE: 4/17/90
ADEC ADEEXXON USCG

DATE: 4-12-90
1991 MAYSAP EVALUATION

SEGMENT: FY 007   SUB: B   REGION: KEN   SURVEY DATE: 5/15/91

ENVIRONMENTAL SENSITIVITIES:
Work Window(s) OPEN

Ecological/Constraints (see page two for details) NONE

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO Signature: 
Date: 5/30/91

RECOMMENDATIONS:

TREATMENT REQUIRED (Y or N) N   N   N

Manual Pickup (Check as Req.)
Spot Washing
Bio-Customblend Only
Bio-Inipol/Customblend
Other
Other

COMMENTS:
INITIAL:

TAG:

FOSC:

TAG APPROVAL DATE: 5/29/91

FOSC APPROVAL DATE: 6/18/91

ADEC
EXXON
USCG
NOAA

E. E. PAGE, CDR, USCG
CHIEF OF STAFF, FOSC
MAYSAP FIELD SHORELINE COMMENT SHEET

TEAM NO. 4  SEGMENT PY 007  SUBDIVISION B  DATE 7/15/91

ADEC NAME Clarke S. Crosby  SIGNATURE Clarke S. Crosby

☑ NTR  High energy area. Past testing data indicated pooled oil present in this subdivision in a splash to patchy distribution. I would probably not recommend oiling cleanup in this subseg due to its limited access & safety hazard in any case.

EXXON NAME George P. 5/17/91  SIGNATURE George P. 5/17/91

☑ NTR  High energy beach. Do not recommend cleaning this segment due to the safety hazard of getting to and from. Not to be worked from here.

LANDMANAGER NAME John P. Hardister  OF USFWS  SIGNATURE John P. Hardister 7/16/91

☑ NTR  While landing was not attempted on this high energy small beach, the likelihood of being hit is extremely small.

USCG/NOAA NAME CW2 J. McNamara  SIGNATURE J. McNamara

☑ NTR  Limited access by foot/keel. Safety problems with high energy beach. No keel cleaning site (as seen off shore).
MAYSAP SHORELINE OILING SUMMARY

TEAM NO. 4
OG: [Name]
DEC: [Name]
SEGMENT: PY 297.9
SUBDIVISION: B
DATE: May 15, 1991

TIME: 12:00 to 12:10
TIDE LEVEL: 3.9 ft. to 4.1 ft.
ENERGY LEVEL: H M L
WEATHER: SUN CLOUDS FOG RAIN SNOW
WEATHER: SUN CLOUDS FOG RAIN SNOW
SURVEYED FROM: FOOT BOAT HELO
TOTAL LENGTH SHORELINE SURVEYED: 123 m
NEAR SHORE SHEEN: BR RB SL NO
EST. OIL CATEGORY LENGTH:

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>SURFACE OIL CHARACTER</th>
<th>SURFACE SEDIMENT TYPE</th>
<th>SHORE SLOPE</th>
<th>AREA WIDTH</th>
<th>AREA LENGTH</th>
<th>ZONE</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unstable for small seg.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Big patch of oil observed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

DISTRIBUTION: C = 91-100%; B = 51-60%; P = 11-50%; S = 1-10%; T = <1%
SLOPE: V = VERTICAL; H = HIGH ANGLE; M = MEDIUM ANGLE; L = LOW ANGLE

OG COMMENTS: Segment consists of small beaches with Juniper bushes. Area is too wide and too many
Kings Point homes to survey by foot. No sketch map provided.
MAYSAAP BIOLOGICAL SUMMARY FORM

TEAM # 4      DATE/TIME May 15, 1991 1105 - 1210
SEGMENT # PY007      TIDAL HEIGHT (Range) +0.5 => +3.7
SUBDIVISION B      BIOLOGIST JIM BARRY
SEA STATE 3 Ft swell      WIND SPEED/DIRECTION Variable 0-10 kt, rain

COMMENTS / OBSERVATIONS - OILED SUBDIVISIONS

General Features of PY007-B

This subdivision is a pocket beach along a high exposure coast. Logs prevented our landing at the shore. However, the beach is composed of large cobble and boulders rounded by wave scour. Log debris is abundant. Evidence of oiling was not visible from the skiff and, if present on the shore, the negative impacts to the biota were likely ameliorated by the strong reworking of the beach cobble by storms. Biota on the beach are likely limited to ephemeral species and those that can withstand the wave-induced disturbance. The shore appears to have black lichen and filamentous green algae above the cobble on the bedrock cliffs, with clean cobble below. It is likely that sparse small barnacles, moderate to dense abundances of limpets and littorine snails, and high densities of amphipods and isopods occur on this beach. The lowest zone have a moderate cover of filamentous algae and larger macroalgae are present on the headlands bordering the beach. This appears to be a healthy, high exposure beach.

A seabird colony is located in the adjacent segment (PY006), and many marine birds were observed along the segment, including marbled murrelets, red faced cormorants, pelagic cormorants, common murres, tufted puffins, horned puffins, red necked phalaropes, glaucous-winged gulls, black-legged kitiwakes, fork tailed petrels, harlequin ducks, common mergansers, rhinoceros auklets, pigeon guillemots, boneparte's gull, aleutian tern, arctic tern, and others? Two eagle nests were sighted at the locations marked on the ecology map near the northern and southern ends of the segment. We were unable to identify whether the nests were active, but did observe one adult eagle near each nest.

(continued)

WILDLIFE OBSERVATIONS - Completed on all subdivisions

<table>
<thead>
<tr>
<th>BIRDS</th>
<th># OF SPECIES</th>
<th>TOTAL BIRDS</th>
<th>FISH OBSERVED SPECIES PRESENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eagles</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seabirds</td>
<td>many</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waterfowl</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gulls/Kittiwakes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shorebirds</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Corvids</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Birds</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MARINE MAMMALS</th>
<th># OBSERVED</th>
<th>LAND MAMMALS SPECIES</th>
<th># OBSERVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sea Otters</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pinnipeds (specify)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whales (specify)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Shoreline subdivision map showing important biological features attached.
PY007-B Biology Report, continued

List of Species Expected along PY007-B

A. Marine Plants
1. Diatoms, Blue Greens
2. Green Algae - Chlorophyta
   Acrosiphonia sp., Cladophora sp., Enteromorpha sp., Prasiola meridionalis,
   Ulva sp., Urospora sp.
3. Brown Algae - Phaeophyta
   Alaria marginata, Ectocarpus spp., Fucus distichus, Hildenbrandia sp., Ralfsia
   sp.
4. Red Algae - Rhodophyta
   Endocladia muricata, Halosaccion glandiforme, Lithothamnion sp., Palmaria
   palmata, Petrocelis sp., Porphyra sp.

II. Marine Animals
2. Anemones - Anthopleura artemesia, E. prolifera, Epizoanthus scotinus
5. Flatworms - Platyhelminthes - Polyclads
8. Polychaete Worms
   Nereidae - Nereis spp.
   Spiorbidae - Spiorbis sp.
10. Crustaceans
    a. Amphipods - Orchestia sp., Traskorchestia traskiana
    b. Barnacles - Balanus glandula, Chthamalus dalli, Semibalanus cariosus
    c. Crabs - Paguridae (hermit crabs)
    d. Isopods - Cirdana harfordi, Idotea wosnesenskii, Gnorimorsphaeroma
       oregonensis
11. Molluscs
    b. Snails - Gastropods - Littorina sitkana, L. keenae, Nucella lamellosa,
       N. lima
    c. Limpets - Lottia digitalis, L. persona, Tectura fenestrata, T.
       persona, T. scutum
    e. Bivalves - Mytilus edulis
12. Echinoderms
    b. Sea stars - Pisaster ochraceus, Pycnopodia helianthoides
    c. Sea Cucumbers - Holothurians - Eupentacta sp.
15. Fishes - Stichaeidae - Xiphister atropurpureus, X. mucosus
1991 MAYSAP EVALUATION

SEGMENT: PY 007 SUB: A REGION: KEN SURVEY DATE: 5/15/91

ENVIRONMENTAL SENSITIVITIES:
Work Window(s) OPEN

Ecological/Constraints (see page two for details) NONE

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO Signature: Timothy Finch Date: 5/29/91

RECOMMENDATIONS:

TREATMENT REQUIRED (Y or N) N

Manual Pickup (Check as Req.)
Spot Washing
Bio-Customblen Only
Bio-Inipol/Customblen
Other
Other

COMMENTS:
INITIAL:

TAG:

FOSC:

TAG APPROVAL DATE: MAY 29 1994

ADEC
EXXON
USCG
NOAA

FOSC APPROVAL DATE: 6/19/91

E. E. PAGE, CDR, USCG
CHIEF OF STAFF, FOSC
High energy headland - cliffs - while the survey crew was not able to access shoreline, I would not recommend treatment due to the exposure of this segment & element of danger present to work crews.

High energy beach, I would not recommend clean up on this segment due to the safety hazard of getting to and from, Note it can not be worked from here.

High energy headland, No oil observed from best could not land. This high energy headland would not likely be aided.

Same as PY 007 A!
**MAYSAP SHORELINE OILING SUMMARY**

SEGMENT: PY-007-A

TEAM NO.: 4

**OG:** J. Semple

**BIO:** J. Barry

**BOXON:** C. Crosby

**LANDMANAGER:** Headster for USFWS

**USCG/NOAA:** S. Mahon/Smith

**DATE:** May 15, 1991

**TIME:** 11:51 to 12:40

**TIDE LEVEL:** 3.8 ft. to 3.9 ft.

**ENERGY LEVEL:** H M L

**SURVEYED FROM:** BOAT HELO

**WEATHER:** SUN CLOUDS FOG RAIN SNOW

**TOTAL LENGTH SHORELINE SURVEYED:** 892 m

**NEAR SHORE SHEEN:** BR OR SL NONE

**EXT. OIL CATEGORY LENGTH:** W m M m N m VL m NO m US m

---

<table>
<thead>
<tr>
<th>LO</th>
<th>SURFACE OIL CHARACTER</th>
<th>SURFACE SEDIMENT</th>
<th>SHORE SLOPE</th>
<th>AREA</th>
<th>ZONE</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

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

---

**OG COMMENTS:**

---

**PHOTO ROLL # MAYSAP-**

---

**FRAMES**

---

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

TEAM # 4
SEGMENT # PY007
SUBDIVISION A
SEA STATE 3 Ft swell

DATE/TIME May 15, 1991 1105 - 1210
TIDAL HEIGHT (Range) +0.5 => +3.7
BIOLOGIST JIM BARRY
WIND SPEED/DIRECTION Variable 0-10 kt, rain

COMMENTS / OBSERVATIONS - OILED SUBDIVISIONS

General Features of PY007-A

This segment was surveyed by skiff. The shores are mostly moderately to highly exposed sloping bedrock. Little oil was reported from the subdivision and no oil was observed. The biota on the shore appeared very healthy, with no evidence of oil, or oil-related impacts. Black lichen is visible in the supratidal zone, with green and red filamentous algae abundant in the upper to middle zone, moderate to dense cover of Fucus below, and patchy, but generally continuous cover of Mytilus along sections of the subdivision. Brown algae cover the lowest zones and subtidal. Cleanup will probably not be required, but would probably not impact the biota, unless hot water cleaning was performed.

A seabird colony is located in the adjacent segment (PY006), and many marine birds were observed along the segment, including marbled murrelets, red faced cormorants, pelagic cormorants, common murres, tufted puffins, horned puffins, red necked phalaropes, glaucous-winged gulls, black-legged kittiwakes, fork tailed petrels, harlequin ducks, common mergansers, rhinoceros auklets, pigeon guillemots, boneparte's gull, aleutian tern, arctic tern, and others? Two eagle nests were sighted at the locations marked on the ecology map near the northern and southern ends of the segment. We were unable to identify whether the nests were active, but did observe one adult eagle near each nest.

(continued)

WILDLIFE OBSERVATIONS - Completed on all subdivisions

<table>
<thead>
<tr>
<th>BIRDS</th>
<th># OF SPECIES</th>
<th>TOTAL BIRDS</th>
<th>FISH OBSERVED SPECIES PRESENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eagles</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Seabirds</td>
<td>many</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>Waterfowl</td>
<td>2</td>
<td>300 +</td>
<td></td>
</tr>
<tr>
<td>Gulls/Kittiwakes/Terns</td>
<td>5</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Shorebirds</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corvids</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Birds</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MARINE MAMMALS</th>
<th># OBSERVED</th>
<th>LAND MAMMALS SPECIES</th>
<th># OBSERVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sea Otters</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pinnipeds (specify)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whales (specify)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Shoreline subdivision map showing important biological features attached.
List of Species Expected along PY007-A

A. Marine Plants

1. Diatoms, Blue Greens
   - Acrosiphonia sp., Cladophora sp., Enteromorpha sp., Prasiola meridionalis,
   - Ulva sp., Urospora sp.

2. Green Algae - Chlorophyta
   - Acrosiphonia sp., Cladophora sp., Enteromorpha sp., Prasiola meridionalis,
   - Ulva sp., Urospora sp.

3. Brown Algae - Phaeophyta
   - Alaria marginata, Ectocarpus spp., Fucus distichus, Hedophyllum sessile,
   - Hildenbrandia sp., Laminaria groenlandica, Nereocystis leutkeana, Ralfsia sp.,
   - Systosiphon Iomentaria

4. Red Algae - Rhodophyta
   - Anfeltia plicata, Bossiella sp., Calliarthron sp., Corallina sp.,
   - Cryptosiphonia woodii, Cumagloia andersonii, Endocladium muricata, Halosaccion
   - glandiforme, Iridaea sp., Lithothamnion sp., Memranoptera dimorpha, floccosa,
   - Palmaria palmata, Petrocelis sp., Porphyra sp., Ptilota filicina, Rhodomela
   - larix

5. Higher Plants - Leymus mollis (beach rye grass)

II. Marine Animals

1. Sponges - Porifera
   - Halichondria sp., Halichondria panicea, Ophlitaspongia pennata, Tethys sp.

2. Anemones - Anthopleura artemesia, A. elegantissama, A. xanthogrammica,
   - Epiactis ritteri, E. proliferata, Metridium senile, Urticina
   - crassicornis, Epizoanthus scotinus

3. Hydroids - Sertulariidae - Sertularella?, Abietinaria sp.

5. Flatworms - Platyhelminthes - Polyclads

6. Nemertean Worms - Ribbon Worms
   - Emplectonema gracile, Tubulanus polymorphus

8. Polychaete Worms
   - Glyceridae
   - Nepthyidae
   - Nereidae - Nereis spp.
   - Serpulidae - Serpula sp., Cruciger sp., Eudistylia polymorpha
   - Spiorbidae - Spiorbis sp.

9. Peanut worms - Sipunculids - Phascolosoma agassizii

10. Crustaceans
    a. Amphipods - Orchestia sp.?, Traskorchestia traskiana
    b. Barnacles - Balanus glandula, Chthamalus dalli, Semibalanus cariosus
    c. Crabs
    - Acantholithodes hispidula, Haplogaster sp., Paguridae (hermit crabs),
    - Oregonia gracilis, Pugettia sp.,
    d. Isopods - Cirdana harfordi, Idotea wosnesenskii, Gnorimorsphaeroma
    - oregonensis
PY007A Biology Summary, continued

11. Mollusca
   a. Chitons - Cryptochiton stelleri, Mopalia sp., M. mucosa, Katharina tunicata, Tonicella lineata,
   b. Snails - Gastropods
      Amphissa columbiana, Fusitriton oregonensis, Littorina scutulata, L. sitkana, L. keenae, Nucella lamellosa, N. lima, Tachyrhynchus sp.
   c. Limpets - Acmaea mitra, Diadora aspera, Lottia digitalis, L. persona, Tectura fenestrata, T. persona, T. scutum, Siphonaria thersites
   d. Nudibranches - Lamellididris fusca, Onchidela sp.
   e. Bivalves - Mytilus edulis, Pododesmus cepio
   f. Cephalopods - Octopus dofleini

12. Echinoderms
   a. Brittle Stars - Ophiolus sp., ?
   b. Sea stars
      Dermasterias imbricata, Evasterias truscheli, Henricia leviuscula, H. sanguinolenta, Leptasterias hexactis, Orthasterias keohleri, Pisaster ochraceus, Pycnopodia helianthoides, Solaster sp.
   c. Sea Cucumbers - Holothurians
      Cucumaria miniata, C. vegae, Eupentacta sp., Leptosynapta sp.
   d. Urchins - Strongylocentrotus droebachiensis

13. Bryozoans - Carbasea carbasea, Eucratea loricata, Membranipora sp.,

14. Fishes
   a. Cottidae - Artedius harringtoni, Oligocottus sp. (bright green),
      Rhanphocottus richardsonii
   b. Liparidae - Liparis callyodon
   c. Stichaeidae - Xiphister atropurpureus, X. mucosus
1991 MAYSAP EVALUATION

SEGMENT: PY 007  SUB: A  REGION: KEN  SURVEY DATE: 5/15/91

ENVIRONMENTAL SENSITIVITIES:
Work Window(s) OPEN

Ecological/Constraints (see page two for details) NONE

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO Signature: ___________________________ Date: __________

RECOMMENDATIONS:
<table>
<thead>
<tr>
<th>TREATMENT REQUIRED (Y or N)</th>
<th>INITIAL</th>
<th>TAG</th>
<th>FOSC</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>______</td>
<td>___</td>
<td>___</td>
</tr>
</tbody>
</table>

Manual Pickup (Check as Req.) ______
Spot Washing ______
Bio-Customblen Only ______
Bio-Inipol/Customblen ______
Other _______________________
Other _______________________

COMMENTS:
INITIAL: ____________________________

TAG: __________________________________

FOSC: __________________________________

TAG APPROVAL DATE: __________
FOSC APPROVAL DATE: _______________
ADEC _____________________________
EXXON ____________________________
USCG _____________________________
NOAA _____________________________
ADEC
NAME: Clara S. Crosby
SIGNATURE: Clara S. Crosby

High energy headland - cliffs - while the survey crew was not able to access shoreline, I would not recommend treatment due to the exposure of this segment & element of danger present & work crew.

EXXON
NAME: George S. Stiles
SIGNATURE: George S. Stiles 5/7/91

[ ] NTR
High energy beach, I would not recommend cleanup on this segment due to the safety hazard of getting to and from. Note it can not be worked from here.

LANDMANAGER
NAME: [Redacted]
SIGNATURE: June P. Hardister 5/4/91

[ ] NTR
High energy headland. The oil observed from boat. Could not land. This high energy headland would not likely be cited.

USCG/NOAA
NAME: [Redacted]
SIGNATURE: [Redacted]

[ ] NTR
Same as PY 007 A!
MAYSAP SHORELINE OILING SUMMARY

TEAM NO. 4

BIO: J. Barry
LANDMANAGER: Ted Koster for USFWS
USCG/NOAA: Joe Mahoney/McDonald

DATE: 1/15/91
SEGMENT: P.Y. 90 A
SUBDIVISION: A

TIME: 11:51 to 12:05
TIDE LEVEL: 3.8 ft. to 3.9 ft.
ENERGY LEVEL: M
SURVEYED FROM: FOOT X BOAT X HELO
WEATHER: ☐ SUN ☐ CLOUDS ☐ FOG ☐ RAIN ☐ SNOW
TOTAL LENGTH SHORELINE SURVEYED: 2.95 m
NEAR SHORE SHEEN: ☐ BR ☐ RB ☐ SL ☐ NONE
EST. OIL CATEGORY LENGTH: W - m M - m N - m VI - m NO - .5 m US - m

<table>
<thead>
<tr>
<th>L O</th>
<th>SURFACE OIL CHARACTER</th>
<th>SURFACE SEDIMENT</th>
<th>SHORE SLOPE</th>
<th>WIDTH</th>
<th>LENGTH</th>
<th>ZONE</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>C AP MS TB SOF CV CT ST FL DB NO</td>
<td>TYPE V H M L m m</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SHORELINE SHOWS THE SHEEN... PANELED TO LEGS...

OG COMMENTS:

Reviewed S.20, 6/20/91 F.R.
General Features of PY007-A

This segment was surveyed by skiff. The shores are mostly moderately to highly exposed sloping bedrock. Little oil was reported from the subdivision and no oil was observed. The biota on the shore appeared very healthy, with no evidence of oil, or oil-related impacts. Black lichen is visible in the supratidal zone, with green and red filamentous algae abundant in the upper to middle zone, moderate to dense cover of Fucus below, and patchy, but generally continuous cover of Mytilus along sections of the subdivision. Brown algae cover the lowest zones and subtidal. Cleanup will probably not be required, but would probably not impact the biota, unless hot water cleaning was performed.

A seabird colony is located in the adjacent segment (PY006), and many marine birds were observed along the segment, including marbled murrelets, red faced cormorants, pelagic cormorants, common murres, tufted puffins, horned puffins, red necked phalaropes, glaucous-winged gulls, black-legged kittiwakes, fork tailed petrels, harlequin ducks, common mergansers, rhinoceros auklets, pigeon guillemots, boneparte’s gull, Aleutian tern, arctic tern, and others? Two eagle nests were sighted at the locations marked on the ecology map near the northern and southern ends of the segment. We were unable to identify whether the nests were active, but did observe one adult eagle near each nest.

WILDLIFE OBSERVATIONS – Completed on all subdivisions

<table>
<thead>
<tr>
<th>BIRDS</th>
<th># OF SPECIES</th>
<th>TOTAL BIRDS</th>
<th>FISH OBSERVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eagles</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Seabirds</td>
<td>many</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>Waterfowl</td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Gulls/Kittiwakes/Teasants</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shorebirds</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corvids</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Other Birds</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MARINE MAMMALS</th>
<th># OBSERVED</th>
<th>SPECIES</th>
<th># OBSERVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sea Otters</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pinnipeds (specify)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whales (specify)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Shoreline subdivision map showing important biological features attached.
PY007-4 Biology Report, continued

List of Species Expected along PY007-A

A. Marine Plants
   1. Diatoms, Blue Greens
   2. Green Algae - Chlorophyta
      Acrosiphonia sp., Cladophora sp., Enteromorpha sp., Prasiola meridionalis,
      Ulva sp., Urospora sp.
   3. Brown Algae - Phaeophyta
      Alaria marginata, Ectocarpus spp., Fucus distichus, Hedophyllum sessile,
      Hildenbrandia sp., Laminaria groenlandica, Nereocystis leutkeana, Ralfsia sp.,
      Sycosiphon lomentaria
   4. Red Algae - Rhodophyta
      Anfeltia plicata, Bossiella sp., Calliarthron sp., Corallina sp.,
      Cryptosiphonia woodii, Cumagloia andersonii, Endocladia muricata, Halosaccion
      glandiforme, Iridaea sp., Lithothamnion sp., Membranopteris dimorpha, floccosa.
      Palmaria palmata, Petrocelis sp., Porphyra sp., Ptilota filicina, Rhodomela
      larix
   5. Higher Plants - Leymus mollis (beach rye grass)

II. Marine Animals
   1. Sponges - Porifera
      Halichondria sp., Halichondria panicea, Ophlitaspongia pennata, Tethys sp.
   2. Anemones - Anthopleura artemesia, A. elegantissama, A. xanthogrammica,
      Epiactis ritteri, E. proliferata?, Metridium senile, Urticina
      crassicornis, Epizoanthus scotinus
   3. Hydroids - Sertulariidae - Sertularella?, Abietinaria sp.
   5. Flatworms - Platyhelminthes - Polyclads
   6. Nemertean Worms - Ribbon Worms
      Emplectonema gracile, Tubulanus polymorphus
   8. Polychaete Worms
      Glyceridae
      Nephthidae
      Nereidae - Nereis spp.
      Serpulidae - Serpula sp., Crucigera sp., Eudistylia polymorpha
      Spirorbidae - Spirorbis sp.
   9. Peanut worms - Sipunculids - Phascolosoma agassizii
   10. Crustaceans
       a. Amphipods - Orchestia sp.?, Traskorchestia traskiana
       b. Barnacles - Balanus glandula, Chthamalus dalli, Semibalanus cariosus
       c. Crabs
          Acantholithodes hispidus, Hoploaster sp., Paguridae (hermit crabs),
          Oregonia gracilis, Pugettia sp.
       d. Isopods - Cirdana harfordi, Idotea wosnesenskii, Gnorumorsphaeroma
          oregonensis
11. Mollusca
   a. Chitons - Cryptochiton stelleri, Mopalia sp., M. mucosa, Katharina tunicata, Tonicella lineata,
   b. Snails - Gastropods
      Amphissa columbiana, Fusitriton oregonensis, Littorina scutulata, L. sitkana, L. keenae, Nucella lamellosa, N. lima, Tachyrhynchus sp.
   c. Limpets - Acmaea mitra, Diadora aspera, Lottia digitalis, L. persona, Tectura fenestrata, T. persona, T. scutum, Siphonaria thersites
   d. Nudibranches - Lamellidoris fusca, Onchidela sp.
   e. Bivalves - Mytilus edulis, Pododesmus cepio
   f. Cephalopods - Octopus dofleini

12. Echinoderms
   a. Brittle Stars - Ophiolus sp.
   b. Sea stars
      Dermasterias imbricata, Evasterias truscheli, Henricia leviuscula, H. sanguinolenta, Leptasterias hexactis, Orthasterias keohleri, Pisaster ochraceus, Pycnopodia helianthoides, Solaster sp.
   c. Sea Cucumbers - Holothurians
      Cucumaria miniata, C. vegae, Eupentacta sp., Leptosynapta sp.
   d. Urchins - Strongylocentrotus droebachiensis


15. Fishes
   Cottidae - Artedius harringtoni, Oligocottus sp. (bright green), Rhanphocottus richardsonii
   Liparidae - Liparis callydon
   Stichaeidae - Xiphister atropurpureus, X. mucosus
1991 MAYSAP EVALUATION

SEGMENT: FY 007 SUB: B REGION: KEN SURVEY DATE: 5/15/91

ENVIRONMENTAL SENSITIVITIES:
Work Window(s) OPEN

Ecological/Constraints (see page two for details) NONE

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO Signature: __________________________ Date: __________________________

RECOMMENDATIONS:

TREATMENT REQUIRED (Y or N) N

Manual Pickup (Check as Req.) ____________ ____________ ____________
Spot Washing ____________ ____________ ____________
Bio-Custombien Only ____________ ____________ ____________
Bio-Inipol/Custombien ____________ ____________ ____________
Other __________________________ ____________ ____________
Other __________________________ ____________ ____________

COMMENTS:
INITIAL: __________________________

TAG: ____________ ____________ ____________
FOSC: __________________________

TAG APPROVAL DATE: ____________ FOSC APPROVAL DATE: ____________

ADEC __________________________ FOSC __________________________
EXXON __________________________
USCG __________________________
NOAA __________________________
ADEC
NAME Clara S. Crosby
SIGNATURE Clara S. Crosby.

EXXON
NAME George P. Stiles
SIGNATURE George P. Stiles 5/17/71

MANAGER
NAME John P. Hardistie of USFWS
SIGNATURE John P. Hardistie 5/6/71

USCG/NOAA
NAME Capt. J. McLean
SIGNATURE J. McLean

---

High energy area. Past sampling data indicated good oil present in this Subdivision in a splash to patchy distribution. I would probably not recommend oiling cleanup in this Sub-seg due to its limited access & safety hazard in any case.

High energy beach. Do not recommend cleaning this segment due to the safety hazard of getting to and from. Not safe and cannot be worked from helo.

While landing was not attempted on this high energy, small beach, the likelihood of being hit is extremely small.

Limited access by boat/ helo. Safety problems with high energy beach. No helo landing site (as seen off shore).
**MAYSAP SHORELINE OILING SUMMARY**

**TEAM NO.** 4  
**OG**  
**ADEC**  
**USCG/NOAA**

**BIO**  
**LANDMANAGER**  
**HEADSTAFF**

**SUBDIVISION**  1  
**DATE**  May 15, 1991

**TIME** 12:00 to 12:30

**TIDE LEVEL**  3.9 ft. to 4.1 ft.

**ENERGY LEVEL**  □ H  □ M  □ L

**SURVEYED FROM**:  
- □ FOOT  
- □ BOAT  
- □ HELO

**WEATHER**:  
- □ SUN  
- □ CLOUDS  
- □ FOG  
- □ RAIN  
- □ SNOW

**TOTAL LENGTH SHORELINE SURVEYED**:  133 m

**NEAR SHORE SHEEN**:  
- □ BR  
- □ RB  
- □ SL  
- □ NONE

**EST. OIL CATEGORY LENGTH**:  
- W __ m  
- M __ m  
- N __ m  
- VL __ m  
- NO/2 __ m  
- US __ m

### SURFACE OIL CHARACTER

<table>
<thead>
<tr>
<th>L</th>
<th>O</th>
<th>C</th>
<th>AP</th>
<th>MS</th>
<th>TB</th>
<th>SOR</th>
<th>CV</th>
<th>CT</th>
<th>ST</th>
<th>FL</th>
<th>DB</th>
<th>NO</th>
<th>SURFACE</th>
<th>SEDIMENT</th>
<th>SHORE</th>
<th>AREA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NOTES**:  
- Unable to count because of rough.  Segment surveyed.
- Big pateg. No oil observed.

### DISTRIBUTION:

- C = 01-100%;  
- 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**:  
- MAYSAP 4, 3, 23

**FRAMES**:  

### PIT NO. DEPTH

<table>
<thead>
<tr>
<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED ZONE</th>
<th>CLEAN BELOW</th>
<th>H2O</th>
<th>SHEEN COLOR</th>
<th>PIT ZONE</th>
<th>SURFACE-SUBSURFACE OIL</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>OP</td>
<td>H</td>
<td>MOR</td>
<td>LOR</td>
<td>CF</td>
<td>TR</td>
<td>NO</td>
<td>cm-cm</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>cm-cm</td>
</tr>
</tbody>
</table>

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

**OG COMMENTS**:  
- Segment consists of steep bedrock with steep cliffs.  
- Cannot be counted for any area.
- Some oil on surface, but no oil on shore.

**REVISED**:  5/20/91
MAYSSP BIOLOGICAL SUMMARY FORM

TEAM # 4 DATE/TIME May 15, 1991 1105 - 1210
SEGMENT # PY007 TIDAL HEIGHT (Range) +0.5 => +3.7
SUBDIVISION B BIOLOGIST JIM BARRY
SEA STATE 3 ft swell WIND SPEED/DIRECTION Variable 0-10 kt, rain

COMMENTS / OBSERVATIONS - OILED SUBDIVISIONS

General Features of PY007-B

This subdivision is a pocket beach along a high exposure coast. Logs prevented our landing at the shore. However, the beach is composed of large cobble and boulders rounded by wave scour. Log debris is abundant. Evidence of oiling was not visible from the skiff and, if present on the shore, the negative impacts to the biota were likely ameliorated by the strong reworking of the beach cobble by storms. Biota on the beach are likely limited to ephemeral species and those that can withstand the wave-induced disturbance. The shore appears to have black lichen and filamentous green algae above the cobble on the bedrock cliffs, with clean cobble below. It is likely that sparse small barnacles, moderate to dense abundances of limpets and littorine snails, and high densities of amphipods and isopods occur on this beach. The lowest zone have a moderate cover of filamentous algae and larger macroalgae are present on the headlands bordering the beach. This appears to be a healthy, high exposure beach.

A seabird colony is located in the adjacent segment (PY006), and many marine birds were observed along the segment, including marbled murrelets, red faced cormorants, pelagic cormorants, common murres, tufted puffins, horned puffins, red necked phalaropes, glaucous-winged gulls, black-legged kittiwakes, fork tailed petrels, harlequin ducks, common mergansers, rhinoceros auklets, pigeon guillemots, boneparte's gull, aleutian tern, arctic tern, and others? Two eagle nests were sighted at the locations marked on the ecology map near the northern and southern ends of the segment. We were unable to identify whether the nests were active, but did observe one adult eagle near each nest.

WILDLIFE OBSERVATIONS - Completed on all subdivisions

<table>
<thead>
<tr>
<th>BIRDS</th>
<th># OF SPECIES</th>
<th>TOTAL BIRDS</th>
<th>FISH OBSERVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eagles</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Seabirds</td>
<td>many</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gulls/Kittiwakes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shorebirds</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Corvids</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MARINE MAMMALS</th>
<th># OBSERVED</th>
<th>LAND MAMMALS SPECIES</th>
<th># OBSERVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sea Otters</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pinnipeds (specify)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whales (specify)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Shoreline subdivision map showing important biological features attached.
List of Species Expected along PY007-B

A. Marine Plants
1. Diatoms, Blue Greens
2. Green Algae - Chlorophyta
   Acrosiphonia sp., Cladophora sp., Enteromorpha sp., Prasiola meridionalis,
   Ulva sp., Urospora sp.
3. Brown Algae - Phaeophyta
   Alaria marginata, Ectocarpus spp., Fucus distichus, Hildenbrandia sp., Ralfsia
   sp.
4. Red Algae - Rhodophyta
   Endocladia muricata, Halosaccion glandiforme, Lithothamnion sp., Palmaria
   palmata, Petrocelis sp., Porphyra sp.

II. Marine Animals
2. Anemones - Anthopleura artemesia, E. prolifera, Epizoanthus scotinus
5. Flatworms - Platyhelminthes - Polyclads
8. Polychaete Worms
   Nereidae - Nereis spp.
   Spiorbidae - Spirorbis sp.
10. Crustaceans
   a. Amphipods - Orchestia sp., Traskorchestia traskiana
   b. Barnacles - Balanus glandula, Chthamalus dalli, Semibalanus cariosus
   c. Crabs - Paguridae (hermit crabs)
   d. Isopods - Cirdana harfordi, Idotea wosnesenskii, Gnorimorsphaeroma
      oregonensis
11. Molluscs
   b. Snails - Gastropods - Littorina sitkana, L. keenae, Nucella lamellosa,
      N. lima
   c. Limpets - Lottia digitalis, L. persona, Tectura fenestrata, T.
      persona, T. scutum
   e. Bivalves - Mytilus edulis
12. Echinoderms
   b. Sea stars - Pisaster ochraceus, Pycnopodia helianthoides
   c. Sea Cucumbers - Holothurians - Eupentacta sp.
15. Fishes - Stichaeidae - Xiphister atropurpureus, X. mucosus
1991 MAYSAP EVALUATION

SEGMENT: PY 007  SUB: C  REGION: KEN  SURVEY DATE: 5/15/91

ENVIRONMENTAL SENSITIVITIES:
Work Window(s)  OPEN

Ecological/Constraints (see page two for details)  NONE

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO Signature:__________________________ Date:__________________________

RECOMMENDATIONS:

<table>
<thead>
<tr>
<th>TREATMENT REQUIRED (Y or N)</th>
<th>INITIAL</th>
<th>TAG</th>
<th>FOSC</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Manual Pickup (Check as Req.)
Spot Washing
Bio-Customblen Only
Bio-Inipol/Customblen
Other

OTHER

COMMENTS:
INITIAL: Subdivision surveyed by skiff. No oil observed.

TAG:_____________________________________

FOSC:_____________________________________

TAG APPROVAL DATE:______________________ FOSC APPROVAL DATE:______________________

ADEC_________________________________

EXXON_______________________________

USCG_________________________________

NOAA_________________________________
This is a high energy segment. Access is limited and was impossible on the day of survey. Due to this, I would not recommend treatment.

Very high energy beach. No treatment would be worth the safety risk.

No treatment recommended for this high safety risk, high energy beach.

Safely hazardous due to inaccessibility to beach.
MAYSAP SHORELINE OILING SUMMARY

TEAM NO. 4
OG: J. Simpkin
ADEC: C. Bean
EXXON: P. Strike

BIO: J. Barry
LANDMANAGER: N. Hardister for USFWS
USCG/NOAA: M. Mathea, M. Donald

DATE: MAY 15, 91
SEGMENT: D4.007 C
SUBDIVISION: C

TIME: 12:05 to 12:10
TIDE LEVEL: +3.7 ft. to +3.7 ft.
ENERGY LEVEL: [ ] H [ ] M [ ] L

SURVEYED FROM: [ ] FOOT [ ] BOAT [ ] HELO
WEATHER: [ ] SUN [ ] CLOUDS [ ] FOG [ ] RAIN [ ] SNOW

TOTAL LENGTH SHORELINE SURVEYED: 4,638 m
NEAR SHORE SHEEN: [ ] BR [ ] RB [ ] SL [ ] NONE

EST. OIL CATEGORY LENGTH: 4 m M 4 m N 4 m VI 4 m NO 4 m US 4 m

---

**SURFACE OIL CHARACTER**

<table>
<thead>
<tr>
<th>LOC</th>
<th>AP</th>
<th>IM</th>
<th>TB</th>
<th>SOR</th>
<th>CV</th>
<th>CT</th>
<th>ST</th>
<th>FL</th>
<th>DB</th>
<th>NO</th>
</tr>
</thead>
</table>

**SURFACE SEDIMENT TYPE**

<table>
<thead>
<tr>
<th>LOC</th>
<th>VH</th>
<th>ML</th>
</tr>
</thead>
</table>

**SHORE SLOPE**

<table>
<thead>
<tr>
<th>LOC</th>
<th>WIDTH</th>
<th>LENGTH</th>
</tr>
</thead>
</table>

**AREA ZONE**

<table>
<thead>
<tr>
<th>LOC</th>
<th>S</th>
<th>UI</th>
<th>MI</th>
<th>LI</th>
</tr>
</thead>
</table>

**NOTES**

---

**DISTRIBUTION:**

- C = 91-100%
- B = 81-90%
- A = 71-80%
- P = 61-70%
- S = 1-10%
- T = <1%

**SLOPE:**

- V = VERTICAL
- H = HIGH ANGLE
- M = MEDIUM ANGLE
- L = LOW ANGLE

**PHOTO ROLL:** MAYSAP-

---

**PIT NO.**

<table>
<thead>
<tr>
<th>LOC</th>
<th>PIT</th>
<th>DEPTH (cm)</th>
</tr>
</thead>
</table>

**OIL CHARACTER**

<table>
<thead>
<tr>
<th>LOC</th>
<th>OP</th>
<th>H</th>
<th>MOR</th>
<th>LOR</th>
<th>OF</th>
<th>TR</th>
<th>NO</th>
<th>OILED ZONE</th>
<th>CLEAN H2O LEVEL</th>
<th>SHEEN COLOR</th>
<th>ZONE</th>
<th>PIT SUBSURFACE SEDIMENTS</th>
</tr>
</thead>
</table>

**NOTES**

---

**OG COMMENTS:**

Unable to read segment because of high swell waves. No maps available.

---

**REVISED:** F.W. 5/26/91
**REVISED:** M.C. 5/30/91 P.E. C.D.
General Features of PY007-C

This segment was surveyed by skiff from 100 or more meters distance. The shores are mostly moderately to highly exposed sloping bedrock. Little oil was reported from the subdivision. Observable areas on the subdivision appear to have floral and faunal assemblages typical of exposed coasts. Black lichen is visible in the supratidal zone, with green and red filamentous algae abundant in the upper to middle zone, moderate to dense cover of Fucus below, and patchy, but generally continuous cover of Mytilus along sections of the subdivision. Brown algae cover the lowest zones and subtidal. Cleanup will probably not be required, but would probably not impact the biota, unless hot water cleaning was performed.

A seabird colony is located in the adjacent segment (PY006), and many marine birds were observed along the segment, including marbled murrelets, red faced cormorants, pelagic cormorants, common murres, tufted puffins, horned puffins, red necked phalaropes, glaucous-winged gulls, black-legged kittiwakes, fork tailed petrels, harlequin ducks, common mergansers, rhinoceros auklets, pigeon guillemots, boneparte's gull, aleutian tern arctic tern, and others? Two eagle nests were sighted at the locations marked on the ecology map near the northern and southern ends of the segment. We were unable to identify whether the nests were active, but did observe one adult eagle near each nest.

(continued)

WILDLIFE OBSERVATIONS - Completed on all subdivisions

<table>
<thead>
<tr>
<th>BIRDS</th>
<th># OF SPECIES</th>
<th>TOTAL BIRDS</th>
<th>FISH OBSERVED SPECIES PRESENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eagles</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Seabirds</td>
<td>many</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waterfowl</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gulls/Kittiwakes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shorebirds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corvids</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Other Birds</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

MARINE MAMMALS | # OBSERVED | SPECIES | # OBSERVED |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sea Otters</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pinnipeds (specify)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whales (specify)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Shoreline subdivision map showing important biological features attached.
List of Species Expected along PY007-C

A. Marine Plants
1. Diatoms, Blue Greens
   Acrosiphonia sp., Cladophora sp., Enteromorpha sp., Prasiola meridionalis, Ulva sp., Urospora sp.
2. Green Algae - Chlorophyta
   Alaria marginata, Ectocarpus spp., Fucus distichus, Hedophyllum sessile, Hildenbrandia sp., Laminaria groenlandica, Nereocystis leutkeana, Ralfsia sp., Syctosiphon lomentaria
3. Brown Algae - Phaeophyta
4. Red Algae - Rhodophyta
   Anfelia plicata, Bossiella sp., Calliarthron sp., Corallina sp., Cryptosiphonia woodii, Cumagloia andersonii, Endocladia muricata, Halosacciglantiforme, Iridaea sp., Lithothamnion sp., Membranoptera dimorpha, floccosyron; Palmaria palmata, Petrocelis sp., Porphyra sp., Ptilota filicina, Rhodomela larix
5. Higher Plants - Leymus mollis (beach rye grass)

II. Marine Animals
1. Sponges - Porifera
   Halichondria panicea, Ophlitaspongia pennata, Tethys sp.
3. Hydroids - Sertularidæ - Sertularella?, Abietinaria sp.
4. Flatworms - Platyhelminthes - Polyclads
5. Nemertean Worms - Ribbon Worms
   Emplectonema gracile, Tubulanus polymorphus
6. Polychaete Worms
   Glyceridae
   Nephthidae
   Nereidae - Nereis spp.
   Serpulidae - Serpula sp., Crucigera sp., Eudistylia polymorpha
   Spiorbidae - Spirorbis sp.
7. Peanut worms - Sipunculids - Phascolosoma agassizii
8. Barnacles - Balanus glandula, Chthamalus dalli, Semibalanus cariosus
10. Isopods
    a. Amphipods - Orchestia sp.?, Traskorchestia traskiana
    b. Barnacles - Balanus glandula, Chthamalus dalli, Semibalanus cariosus
    c. Crabs
    d. Isopods - Cirdana harfordi, Idotea wosnesenski, Gnorimorsphaeroma oregonensis
11. Mollusca
   a. Chitons - Cryptochiton stelleri, Mopalia sp., M. mucosa, Katharina tunicata, Tonicella lineata.
   b. Snails - Gastropods
      Amphissa columbiana, Fusitriton oregonensis, Littorina scutulata, L. sitkana, L. keenae, Nucella lamellosa, N. lima, Tachyrhynchus sp.
   c. Limpets - Acmaea mitra, Diadora aspera, Lottia digitalis, L. persona, Tectura fenestrata, T. persona, T. scutum, Siphonaria thersites
   d. Nudibranches - Lamellidoris fusca, Onchidela sp.
   e. Bivalves - Mytilus edulis, Pododesmus cepio
   f. Cephalopods - Octopus dofleini

12. Echinoderms
   a. Brittle Stars - Ophiolus sp., ?
   b. Sea stars
      Dermasterias imbricata, Eusterias truscheli, Henricia leviuscula, H. sanguinolenta, Leptasterias hexactis, Orthasterias keohleri, Pisaster ochraceus, Pycnopodia helianthoides, Solaster sp.
   c. Sea Cucumbers - Holothurians
      Cucumaria miniata, C. vegae, Eupentacta sp., Leptosynapta sp.
   d. Urchins - Strongylocentrotus droebachiensis


15. Fishes
   Cottidae - Artedius harringtoni, Oligocottus sp. (bright green), Rhaphocottus richardsonii
   Liparidae - Liparis callyodon
   Stichaeidae - Xiphister atropurpureus, X. mucosus
1991 MAYSAP EVALUATION

SEGMENT: PY 007    SUB: C    REGION: KEN    SURVEY DATE: 5/15/91

ENVIRONMENTAL SENSITIVITIES:
Work Window(s) OPEN

Ecological/Constraints (see page two for details) NONE

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO Signature: [Signature] Date: 6/04/91

RECOMMENDATIONS:

TREATMENT REQUIRED (Y or N) N

Manual Pickup (Check as Req.)
Spot Washing
Bio-Custombлен Only
Bio-Inipol/Custumblen
Other

COMMENTS:
INITIAL: Subdivision surveyed by skiff. No oil observed.

TAG:

FOSC:

TAG APPROVAL DATE: June 4, 1991
ADEC
EXXON
NOAA

FOSC APPROVAL DATE: 6/6/91
E. E. PAGE, CDR, USCG
CHIEF OF STAFF, FOSC
This is a high energy segment. Access is limited and was impossible on the day of survey. Due to this, I would not recommend treatment.

EXXON
NAME: Cave C. Strite
SIGNATURE: Cave C. Strite, 5/15/81

NTR
Very high energy beach. No treatment would be worth the safety risk.

ANDMANAGER
NAME: John C. Weidner, OF USFWS
SIGNATURE: John C. Weidner

NTR
No treatment recommended for this high safety risk high energy beach.

USCG/NOAA
NAME: John McNab, US Coast Guard
SIGNATURE: John McNab

NTR
Safely hazard due to inaccessibility to beach.

Donald A. Macdonald
Unable to land due to small and logs in the water. Segment surveyed from the boat. No advice a reason segment is high energy.
MAYSAP SHORELINE OILING SUMMARY

TEAM NO. 4
OG J. M. Semple
ADEC Crosby

BIO J. Berry
LANDMANAGER  H. Redifter for USFWS
USCG/NOAA McNaught/ Mc Donald

TIME 12:05 to 12:10

TIDE LEVEL +3.7 ft. to +3.7 ft. ENERGY LEVEL: X H M L

SURVEYED FROM: □ FOOT ☑ BOAT □ HELO
WEATHER: ☑ SUN ☑ CLOUDS ☑ FOG ☑ RAIN ☑ SNOW

TOTAL LENGTH SHORELINE SURVEYED: 4,638 m
NEAR SHORE SHEEN: □ BR □ RB □ SL □ NONE

EST. OIL CATEGORY LENGTH: W _ m M _ m N _ m VL _ m NO _ m US _ 4,638 m

---

<table>
<thead>
<tr>
<th>LO</th>
<th>SURFACE OIL CHARACTER</th>
<th>SURFACE SEDIMENT</th>
<th>SHORE SLOPE</th>
<th>AREA</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>AP MS TB SOR CV CT ST FL DB NO</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

DISTRIBUTION: C = 91-100%; B = 61-90%; P = 11-50%; S = 1-10%; T = 0%
SLOPE: V = VERTICAL; H = HIGH ANGLE; M = MEDIUM ANGLE; L = LOW ANGLE

---

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

---

OG COMMENTS:

Unable to read segment because of high small waves. No maps available for subdivision at time of survey.
List of Species Expected along PY007-C

A. Marine Plants
1. Diatoms, Blue Greens
   - Acrosiphonia sp., Cladophora sp., Enteromorpha sp., Prasiola meridionalis, Ulva sp., Urospora sp.
2. Green Algae - Chlorophyta
   - Acrosiphonia sp., Cladophora sp., Enteromorpha sp., Prasiola meridionalis, Ulva sp., Urospora sp.
3. Brown Algae - Phaeophyta
   - Alaria marginata, Ectocarpus spp., Fucus distichus, Hedophyllum sessile, Hildenbrandia sp., Laminaria groenlandica, Nereocystis leutkeana, Ralfsia sp., Systosiphon lomentaria
4. Red Algae - Rhodophyta
   - Anfeltia plicata, Bossiella sp., Calliarthron sp., Corallina sp., Cryptosiphonia woodii, Cymagloia andersonii, Endocladia muricata, Halosaccion glandiforme, Iridaea sp., Lithothamnion sp., Membranoptera dimorpha, floccosa, Palmaria palmata, Petrocelis sp., Porphyra sp., Ptilota filicina, Rhodomela larix
5. Higher Plants - Leymus mollis (beach rye grass),

II. Marine Animals
1. Sponges - Porifera
   - Halichondria sp., Halichondria panicea, Ophlitaspongia pennata, Tethys sp.
3. Hydroids - Sertularidæ - Sertularella?, Abietinaria sp.
4. Flatworms - Platyhelminthes - Polyclads
5. Nemertean Worms - Ribbon Worms
   - Emplectonema gracile, Tubulanus polymorphus
6. Polychaete Worms
   - Glyceridae
     - Nepthyidae
     - Nereidae - Nereis spp.
     - Serpulidae - Serpula sp., Crucigera sp., Eudistylia polymorpha
     - Spioirbidae - Spirorbis sp.
7. Peanut worms - Sipunculids - Phascolosoma agassizii
8. Crustaceans
   a. Amphipods - Orchestia sp.?, Traskorchestia traskiana
   b. Barnacles - Balanus glandula, Chthamalus dalli, Semibalanus cariosus
   c. Crabs
      - Acantholithodes hispidus, Haplogaster sp., Paguridae (hermit crabs), Oregonia gracilis, Pugettia sp.
   d. Isopods - Cirdana harfordi, Idotea wosnesenskii, Gnorimorsphaeroma oregonensis
11. Mollusca
   a. Chitons - Cryptochiton stelleri, Mopalia sp., M. mucosa, Katharina tunicata, Tonicella lineata,
   b. Snails - Gastropods
      Amphissa columbiana, Fusitriton oregonensis, Littorina scutulata, L. sitkana, L. keenae, Nucella lamellosa, N. lima, Tachyrhynchus sp.
   c. Limpets - Acmaea mitra, Diadora aspera, Lottia digitalis, L. persona, Tectura fenestrata, T. persona, T. scutum, Siphonaria thersites
   d. Nudibranches - Lamellidoris fusca, Onchidela sp.
   e. Bivalves - Mytilus edulis, Pododesmus cepio
   f. Cephalopods - Octopus dofleini
12. Echinoderms
   a. Brittle Stars - Ophiolus sp., ?
   b. Sea stars
      Dermasterias imbricata, Evasterias truscheli, Henricia leviuscula, H. sanguinolenta, Leptasterias hexactis, Orthasterias keohleri, Pisaster ochraceus, Pycnopodia helianthoides, Solaster sp.
   c. Sea Cucumbers - Holothurians
      Cucumaria miniata, C. vegae, Eupentacta sp., Leptosynapta sp.
   d. Urchins - Strongylocentrotus droebachiensis
15. Fishes
   Cottidae - Artedius harringtoni, Oligocottus sp. (bright green), Rhanphocottus richardsonii
   Liparidae - Liparis callyodon
   Stichaeidae - Xiphister atropurpureus, X. mucosus
REGION: KENAI

SEGMENT: ST/PY-008

SUBDIVISIONS: A (1 OF 6)
SEGMENT ST/ PY-008 SUBDIVISION A (1 OF 6) DATE 3/30/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
5T Bald eagle nest (3/1 to 9/1)
4QQ National Wildlife Refuge.
See attached Ecological Constraint Sheet for specific constraints and contacts.

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid disturbance/damage to unoiled biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO SIGNATURE: ___________________ DATE: ___________________

OILING CATEGORIZATION:
Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 0 m: No Oil 735 m
Subsurface Oil Observed: Yes ____ No X ____ Maximum Depth ______

RECOMMENDATIONS:
X ____ No Treatment Recommended ______ Snare/Absorbent Booms
____ Treatment Recommended ______ Oil Snares (pom poms)
____ Manual Pickup ______ Absorbents (pads, rolls, etc)
____ Bioremediation ______ Spot Washing: ______ Wands
____ Tarmat: ______ Breakup ______ Beach Cleaner
____ Removal ______ Other (see comments)

COMMENTS:

TAG COMMENTS:

TAG APPROVAL DATE: _____________
ADEC ___________________________
EXXON __________________________ FOSC: _____________ DATE: _______
NOAA ___________________________
USCG ___________________________
KODIAK ECOLOGICAL CONSTRAINTS

1A Salmon stream mouth - fry outmigration (4/15 to 7/31)
1B Salmon stream mouth - spawning (7/15 to 9/10; PEAK 8/15)
No disturbance of stream bed or banks unless authorized by ADF&G. No beach flushing into stream drainage.
No bioremediation or other chemical application within 100m of stream. Contact ADF&G Habitat Division prior to treatment for permits.

1C Salmon fry nursery area (4/31 to 7/31)

1D Kukui Bay Hatchery release
Pink salmon - late June; Chum salmon - June; Sockeye salmon - early July.

1E Remote release site

1F Gill net area

1G Purse seine area
Mainland, West side Kodiak, Shuyak & Olga Bay - 6/9 to 10/1. East side Kodiak, East side Afognak - 7/4 to 10/1.

1H Purse seine hook-off

1I Set net sites
USFWS setnet uplands permit 5/15 to 9/15.

For Codes 1C through 1L contact ADF&G for specific dates, locations and constraints.

2M Herring spawning (4/15 to 6/30)
Restrict boat traffic to essential minimum. Avoid damage to uncoiled intertidal and subtidal algae and seagrass.
Contact ADF&G for specific dates and locations.

3N, 3P Harbor seal and sea lion pupping (5/10 to 6/30)
Restrict boat and air traffic to essential minimum. No personnel within 400m. Aircraft to maintain 800m horizontal and 300m vertical distance from haulouts.

3O, 3Q Harbor seal and sea lion molting (8/15 to 9/15)
Restrict boat and air traffic to essential minimum. No personnel within 400m. Aircraft to maintain 800m horizontal and 300m vertical distance from haulouts.

3R Seabird colony (5/1 to 8/31)
Restrict air traffic to essential minimum. No personnel within 800m. Aircraft to maintain 800m horizontal, 300m vertical distance. Contact ADF&G and USFWS prior to treatment.

3S Shorebird/waterfowl concentration (4/1 to 5/15)
Restrict all activity to essential minimum, especially air traffic.

3T All Bald Eagle nests (3/1 to 6/1)
Active Bald Eagle nests (3/1 to 9/1)
Restrict air traffic to essential minimum. No personnel within 400m 3/1 to 6/1. Air approach and takeoff from and to seaward only; maintain 800m horizontal, 300m vertical distance from nests. Contact USFWS prior to treatment for confirmation of dates.

6U Recreation:
Tent sites (6/1 to 9/15)
Anchorage (6/1 to 9/15)
Forest Service cabins (6/1 to 9/15)
Lodge (6/1 to 9/15)
Special use destination

7Z Subsistence area: Salmon harvesting (6/1 to 9/30)

7HH Finfish harvesting

7II Deer harvesting (8/1 to 1/7)

7JJ Invertebrate harvesting

7KK Bear harvesting (4/1 to 5/15 and 10/25 to 11/30)
For Codes 7Z through 7JJ contact ADF&G and Chenega Corporation for specific dates, locations, and constraints.
FIELD SHORELINE COMMENT SHEET

DOCUMENT ST/ PY-8  SUBDIVISION: A  DATE 3/30/90

USCG/NOAA
NAME  JACQUI MIGUEL  SIGNATURE

☑ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS

No oil found.

ADEC
NAME  JOHN R. REED  SIGNATURE

☐ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS

No oil spotted. I have read and agree with all information on SSAT form.

LAND MANAGER - USFWS
NAME  MARA PORTER  SIGNATURE

☑ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS

No oil observed.
FIELD SHORELINE COMMENT SHEET

SEGMENT ST1  PY 08  SUBDIVISION:  A Through F  DATE 30 MAR 90

NOAA
NAME  JACQUI MICHEL  SIGNATURE  

☐ NO TREATMENT RECOMMENDED  ☑ TREATMENT SUGGESTED

COMMENTS

The mousse patches can be readily removed manually. Some are quite thick (>10 cm), especially under large boulders/cobbles. Bioremediation should be considered for the subdivisions C and E, pocket beaches which have the heaviest oiling. However, manual removal will have to be conducted in the print that bioremediation would work, i.e., removal of mousse to a coat (cover).

ADEC
NAME  JOHN R. REED  SIGNATURE  

☐ NO TREATMENT RECOMMENDED  ☑ TREATMENT SUGGESTED

COMMENTS

I am recommending some type of manual removal for subdivisions A-F, such as shot-had shovel. Boulders and cobbles should be turned over and the thick mousse scraped off. I tested this treatment in the field and feel that it is a viable form of removing the thick mousse patches found on subdivisions C and E. Subdivisions C and E could also be candidates for bioremediation if the thick mousse is removed to a coat or cover. I would like to add that I concur with all the information on the SSAT Forms. A GOOD SURVEY!

LAND MANAGER - USFWS
NAME  Mary Porter  SIGNATURE  

☐ NO TREATMENT RECOMMENDED  ☑ TREATMENT SUGGESTED

COMMENTS

Extensive patches of mousse remain in subdivisions C and E. It appears to be recoverable using hand trowels, pumps etc. Under the cobbles and boulders the mousse is thick, sometimes penetrating to 10 cm. It may be beneficial to turn many of the cobbles and small boulders and remove the mousse. The remaining subdivisions with oil could also benefit from small scale manual removal.
**SHORELINE OILING SUMMARY**

**SEGMENT** PY-8  
**AREA** A 10-46  
**TEAM NO.** 18  
**TIME** 6:45 to 7:00

**EXXON** Boyer  
**ADEC** Reed  
**LAND REP** Partner  
**DATE** 3/30/90

**TIDE LEVEL:** Sun  
**DATE:** 3/30/90  
**EST. SUBDIVISION LENGTH:** 250 m

**UPLANDS DESCRIPTION:** Grass  
**WORKING DIRECTION:** E to W

**SURFACE SEDIMENTS:** R 70% B 30% %C 0% %P 0% %G 0% %O 0% %M 0% %V 0% %

**SLOPE:** Long 30% Hang 30% Vert 40%

**WAVE EXPOSURE:** Low  
**OIL CATEGORY LENGTH:** W 7m M 0m N 0m V 0m NO 750 m

---

**SURFACE OIL**

<table>
<thead>
<tr>
<th>CHARACTER</th>
<th>DISTRIBUTION</th>
<th>OIL / FILM COLOR</th>
<th>IMPACTED ZONES</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASPHALT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PAVEMENT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>POOLED</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COVER</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COAT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STAIN</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MOUSSE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ATTIES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TARBALLS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FILM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NO OIL</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**PAVEMENT:** H F S **sq. m by** 0 cm  
**PATTIES / TARBALLS:** No BAGS

**NEAR SHORE SHEEN?** No

**OILED DEBRIS:** No

**AMOUNT:**

- Logs
- Vegetation
- Trash
- Debris

**DEBRIS COLLECTED:**

- Type: O
- #BAGS: 0

**Photographs:**

- Roll No.: 18-1
- Frames: 1-2

---

**SUBSURFACE OIL**

<table>
<thead>
<tr>
<th>PIT NO.</th>
<th>PIT DEPTH (cm)</th>
<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED INTERVAL (CM-CM)</th>
<th>OIL / FILM COLOR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**COMMENTS:** No pits dug.

We suspected this shoreline by small boat. I have no reason to suspect the presence of subsurface oil.

**JW 4/3/90**
SEGMENT ST/ PVEE

SUBDIVISION A

DATE 30/1/90

CHECKLIST

- N Arrow
- Approx. Scale
- Seg/Sub Brdry
- Oil Dist.
- Width
- Length
- % Cover
- Substrate Character
- Est. HWL/WL
- SSL
- Profile Location(s)
- Profile(s)
- Pit Location(s)
- Photo Location(s)

LEGEND

1 △

Pit - No Subsurface Oil

2 △

Pit - Subsurface Oil

CT/C

Continuous Distribution

CT/B

Broken Distribution

CT/P

Patchy Distribution

CT/S

Splashed Distribution

Oiled Vegetation

1 ↔

Photo location, direction, and number

Oil Character Length (m): AP 0 PO 1 CV 0 CT 0 ST 0 MS 0 PT 0 TB 0 FL 0 NO 750
**SHORELINE ECOLOGICAL SUMMARY**

Segment ST1 PY08 Subdivision A (of A-F) Date (mo/day/yr) 3/30/90

Time (24 hr) 06:45 Biologist M. CARR

### Subdivision

(A) Substrate type and % of segments:

1) Bedrock 30%
2) Boulder 20%
3) Cobble 20%
4) Pebble 5%
5) Sand 10%
6) Silt 5%

(B) Overall % coverage of biota (% of segment):

- Dense 30%
- Moderate 60%
- Low 10%

(C) Density, substrate preference (by number from A, above), & vertical zonation of major taxa:

- Upper-U: mid-M: low tidal-L: juveniles/adults (X), new settlement (3)

#### Photographs:

- Roll No. 1
- Frames 52

### BARNACLES

<table>
<thead>
<tr>
<th>Density</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>1U</td>
<td>2</td>
<td>1L</td>
<td>1L</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

#### NOT PRESENT

### MYTILUS

<table>
<thead>
<tr>
<th>Density</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>1U</td>
<td>1M</td>
<td>1L</td>
<td>1L</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

#### NOT PRESENT

### GASTROPODS

<table>
<thead>
<tr>
<th>Density</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>1U</td>
<td>1M</td>
<td>1L</td>
<td>1L</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

#### NOT PRESENT

### FUCUS

<table>
<thead>
<tr>
<th>Density</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>1U</td>
<td>1M</td>
<td>1L</td>
<td>1L</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

#### NOT PRESENT

### Wildlife Observations/General Comments:

- White-winged Scoter (2)
- Cloudburst, winged gull (0)
- Black eel (2 adults + 2 mm)
- Harlequin duck (1)
- For entire PY08 segment
- Red-footed boomerang (1)

### Ecological Considerations:

- (3) Dense cover of other algae in low intertidal includes: Akraea, crustose coralline, Rhodophyceae, Ulva, Valonia
- Sensitivity codes: ST (EAGLE NEST)
REGION: KENAI

SEGMENT: ST/PY-008

SUBDIVISIONS: B (2 OF 6)
SHORELINE EVALUATION

SEGMENT ST/ PY-008 SUBDIVISION B (2 OF 6) DATE 3/30/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
5T Bald eagle nest (3/1 to 9/1)
4QQ National Wildlife Refuge.
See attached Ecological Constraint Sheet for specific constraints and contacts.

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid disturbance/damage to uncoiled biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS:
If cultural resources are uncovered during shoreline treatment, stop work in the vicinity, mark the location of the find and contact a member of Exxon's Cultural Resource Program immediately (564-3657; 564-3658 or 564-3276).

SHPO SIGNATURE: _____________________ DATE: _____________________

OILING CATEGORIZATION:
Wide 0 m: Medium 97 m: Narrow 479 m: V.Light 391 m: No Oil 0 m
Subsurface Oil Observed: Yes X No ___ Maximum Depth 15 cm

RECOMMENDATIONS:
____ No Treatment Recommended _____ Snare/Absorbent Booms
____ Treatment Recommended ______ Oil Snares (pom poms)
____ Manual Pickup ______ Absorbents (pads, rolls, etc)
____ Bioremediation _____ Spot Washing: _____ Wands
____ Tarmat: _____ Breakup _______ Beach Cleaner
____ Removal _______ Other (see comments)

COMMENTS: Recommend manual pick up of mousse and removal of tarmat in area shown on attached sketch map. Conduct treatment activities after 6/1 per above eagle constraints and obtain approval from ADF&G and USFWS.

TAG COMMENTS:

TAG APPROVAL DATE: ____________

ADEC ___________________________ FOSC: ____________ DATE: ____________
EXXON __________________________
NOAA __________________________
USCG __________________________
PWS ECOLOGICAL CONSTRAINTS

1A Salmon stream mouth - fry outmigration (3/1 to 5/15)
1B Salmon stream mouth - spawning (7/10 to 8/31)

No disturbance of stream bed or banks unless authorized by ADF&G. No beach flushing into stream drainage.
No bio remediation or other chemical application within 100m of stream. Contact ADF&G Habitat Division prior to treatment for permits.

1C Salmon fry nursery area (4/31 to 7/31)
1D Esther Hatchery release (4/15 to 6/1)
1E Main Bay Hatchery release (4/20 to 5/10)
1F Sawmill Bay Hatchery release (4/20 to 5/10)
1G Cannery Creek Hatchery release (4/21 to 6/1)
1H Remote release sites
1I Gill net area (6/7 to 8/31)
1J Purse seine area (7/21 to 9/30)
1K Purse seine hook-off (7/20 to 9/30)
1L Set net sites (6/11 to 7/25)

For Codes 1C through 1L contact ADF&G for specific dates, locations and constraints.

2M Herring spawning (4/1 to 5/15)

Restrict boat traffic to essential minimum. Avoid damage to unoiled intertidal and subtidal algae and seagrass.
Contact ADF&G for specific dates and locations.

3N, 3P Harbor seal and sea lion pupping (5/15 to 7/1)
3Q Harbor seal and sea lion molting (8/15 to 9/15)

Restrict boat and air traffic to essential minimum. No personnel within 400m. Aircraft to maintain 800m horizontal and 300m vertical distance from haulouts.

5R Seabird colony (5/1 to 9/1)

Restrict air traffic to essential minimum. No personnel within 800m. Aircraft to maintain 800m horizontal, 300m vertical distance. Contact ADF&G and USFWS prior to treatment.

5S Shorebird/waterfowl concentration (4/1 to 5/15)

Restrict all activity to essential minimum, especially air traffic.

5T All Bald Eagle nests (3/1 to 6/1)
Active Bald Eagle nests (3/1 to 9/1)

Restrict air traffic to essential minimum. No personnel within 400m 3/1 to 6/1. Air approach and takeoff from and to seaward only; maintain 800m horizontal, 300m vertical distance from nests. Contact USFWS prior to treatment for confirmation of dates.

6U Recreation:
   Tent sites (6/1 to 9/15)
   Anchorages (6/1 to 9/15)
   Forest Service cabins (6/1 to 9/15)
   Lodge (6/1 to 9/15)
   Special use destination

6Z Subsistence area:
   Salmon harvesting (5/1 to 9/30)
   Finfish harvesting
   Deer harvesting (8/15 to 2/28)

7JJ Invertebrate harvesting

For Codes 7Z through 7JJ contact ADF&G and Chenega Corporation for specific dates, locations, and constraints.
FIELD SHORELINE COMMENT SHEET

DOCUMENT ST / PY-8 SUBDIVISION: B DATE 3/30/90

USCG / NOAA NAME JACQUES MICHEL SIGNATURE J. Michel

☐ NO TREATMENT RECOMMENDED ☑ TREATMENT SUGGESTED

COMMENTS

Removal of pavement and mousse patches in areas
marked medium and narrow.

ADEC NAME John R. Reed SIGNATURE John R. Reed

☐ NO TREATMENT RECOMMENDED ☑ TREATMENT SUGGESTED

COMMENTS

Manual removal of asphalt and mousse patches will be
possible with a shovel or hand trowel. Pom Poms could
also be helpful on mousse between boulders. I have
read and agree with all information on SSATI Form.

LAND MANAGER - USFWS

NAME Mary Parker SIGNATURE Mary Parker

☐ NO TREATMENT RECOMMENDED ☑ TREATMENT SUGGESTED

COMMENTS

Asphalt pavement (see map) should be removed. Mousse / pudding
should be removed using hand trowels, shovels, pom poms.

☐
FIELD SHORELINE COMMENT SHEET

SEGMENT ST1
PY 08
SUBDIVISION: A Through F
DATE 30 MAR 90

NO TREATMENT RECOMMENDED
TREATMENT SUGGESTED

COMMENTS

The mousse patches can be readily removed manually. Some are quite thick (>10 cm), especially under large boulders/cobbles. Bioremediation should be considered for the subdivisions C and E, pocket beaches which have the heaviest oiling. However, manual removal will have to be conducted in the print that bioremediation would work, i.e., removal of mousse to a coat/cover.

ADEC
NAME: JOHN R. REED
SIGNATURE: John R. Reed

NO TREATMENT RECOMMENDED
TREATMENT SUGGESTED

COMMENTS

I am recommending some type of manual removal for subdivisions A-F, such as shore had travel. Boulders and cobbles should be turned over and the thick mousse stripped off. I tested this treatment in the field and feel that it is a viable form of removing the thick mousse patches found on subdivisions C and E. Subdivisions C and E could also be candidates for bioremediation if the thick mousse is removed to a coat or cover. I would like to add that I concur with all the information on the SSAT forms. A GOOD SURVEY!

LAND MANAGER
NAME: Mary Partner
SIGNATURE: Mary Partner

NO TREATMENT RECOMMENDED
TREATMENT SUGGESTED

COMMENTS

Extensive patches of mousse remain in subdivisions C and E. It appears to be recoverable using hand tools, pumps, etc. Under the cobbles and boulders the mousse is thick, sometimes penetrating to 10 cm. It may be beneficial to turn many of the cobbles and small boulders and remove the mousse. The remaining subdivisions with oil would also benefit from small scale manual removal.
**SHORELINE OILING SUMMARY**

**OG:** Mann  **USCG:** Michel  **SEGMENT ST:** PY-8
**NO:** Carr  **LAND REP:** Partner - FWS  **TIME:** 7:00 to 7:30
**OKON Boyer**  **ADEC:** Reed  **DATE:** 5/29/90
**TEAM NO.: 18**  **TIDE LEVEL:** R to S

**EST. SUBDIVISION LENGTH:** 990 m

**DESCRIPTION:**
- **UPLANDS:** Grass, Forest, Rock
- **SURVEYED FROM:** Foot, Boat, Helo
- **WORKING DIRECTION:** E to W

**SURFACE SEDIMENTS:**
- **R:** 70%, **B:** 30%, **C:** 0%
- **P:** 0%, **O:** 0%, **S:** 0%, **G:** 0%, **M:** 0%, **V:** 0%, **W:** 0%

**SLOPE:**
- **Lang:** 30%, **Hang:** 50%, **V:** 20%

**WAVE EXPOSURE:**
- **Low:** □, **Med:** □, **High:** □

**OIL CATEGORY LENGTH:**
- **W:** 0 m, **M:** 90 m, **N:** 186 m, **V:** 414 m, **NO:** 0 m

---

**SURFACE OIL**

<table>
<thead>
<tr>
<th>CHARACTER</th>
<th>DISTRIBUTION</th>
<th>OIL / FILM COLOR</th>
<th>IMPACTED ZONES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt</td>
<td>v</td>
<td>S.</td>
<td>v</td>
</tr>
<tr>
<td>Pooled</td>
<td>u</td>
<td>P.</td>
<td>v</td>
</tr>
<tr>
<td>Cover</td>
<td>v</td>
<td>U.</td>
<td>v</td>
</tr>
<tr>
<td>Coat</td>
<td>v</td>
<td>v</td>
<td>v</td>
</tr>
<tr>
<td>Stain</td>
<td>v</td>
<td>v</td>
<td>v</td>
</tr>
<tr>
<td>Mousse</td>
<td>v</td>
<td>v</td>
<td>v</td>
</tr>
<tr>
<td>Patties</td>
<td>v</td>
<td>v</td>
<td>v</td>
</tr>
<tr>
<td>Tarballs</td>
<td>v</td>
<td>v</td>
<td>v</td>
</tr>
<tr>
<td>Film</td>
<td>v</td>
<td>v</td>
<td>v</td>
</tr>
<tr>
<td>No Oil</td>
<td>v</td>
<td>v</td>
<td>v</td>
</tr>
</tbody>
</table>

**PAVEMENT:**
- H (F S) 5 sq.m by 8 cm

**PATTIES / TARBALLS:** 30 - 50 - BAGS

**NEAR SHORE SHEEN?**
- **Y** BR, RW, SL, TL

**OILED DEBRIS NO:**
- Logs
- Vegetation
- Trash
- Debris
- *NO* COYLE

**DEBRIS COLLECTED:**
- **Yes** □, **No** □

**TYPE:**
- **BAGS:**

**PHOTOGRAPHS:**
- Roll No.: 18-1
- Frames: 3-6

---

**SUBSURFACE OIL**

<table>
<thead>
<tr>
<th>PIT NO.</th>
<th>PIT DEPTH (cm)</th>
<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED INTERVAL</th>
<th>OILED DEBRIS</th>
<th>OIL / FILM COLOR</th>
<th>PIT ZONE</th>
<th>ANA</th>
<th>SUBSURFACE SEDIMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>20</td>
<td>v</td>
<td>0.10</td>
<td>v</td>
<td>v</td>
<td>v</td>
<td>v</td>
<td>BC</td>
</tr>
<tr>
<td>2</td>
<td>15</td>
<td>v</td>
<td>0.15</td>
<td>v</td>
<td>v</td>
<td>v</td>
<td>v</td>
<td>BC</td>
</tr>
</tbody>
</table>

**COMMENTS:**

This is a steep, rocky coast with 2 areas of 1m wide x 10m long CT to CV by dark brown mat. Set within an otherwise narrow to very light stretch of oil, character. The NE part of the shoreline has no visible oil. There is a virtual absence of debris (oiled or clean). Pit locations shown on segment map at 1 and 2.

**REVIEWS:**
- Date: 15 Aug.
NO- OIL.

No sketch map.

See attached oil
categorization map for

oil distribution.

revise by

Dan Mann

4/10/90

Oil Character Length (m): AP 5 PO 0 CV 110 CT 350 ST 350 MS 100 PT 0 TB 0 FL 0 NO 350
**SHORELINE ECOLOGICAL SUMMARY**

Segment ST / PY08 Subdivision B Date (mo/day/yr) 3/30/90

**Time (24 hr) 0700**  **Biolist (M. CMR)**

(A) Substrate type and % of segments:
1. Bedrock (F)
2. Boulder (S)
3. Cobble (C)
4. Pebble (P)
5. Sand (S)
6. Silt (I)

(B) Overall % cover of biota (% of segment): Dense 30 Moderate 60 Low 10

(C) Density, substrate preference (by number from A, above), & vertical zonation of major taxa: (upper-U; mid-M; low tidal-L);
juveniles / adults (X), new settlement (G)

### BARNACLES

<table>
<thead>
<tr>
<th>Density</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>U</td>
<td>1M 1L</td>
<td>1U 1M</td>
<td>1U</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

### MYTILUS

<table>
<thead>
<tr>
<th>Density</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>U</td>
<td>1M 1L</td>
<td>1U 1M</td>
<td>1U</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

### GASTROPODS

<table>
<thead>
<tr>
<th>Density</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>U</td>
<td>1M 1L</td>
<td>1U 1M</td>
<td>1U</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

### FUCUS

<table>
<thead>
<tr>
<th>Density</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>U</td>
<td>1M 1L</td>
<td>1U 1M</td>
<td>1U</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

Wildlife Observations/ General Comments:

- Included in subdivision A sheet.

Ecological Considerations:

- Some as subdivision A sheet
- Sensitivity codes: 5T
Subd. A

PY-8

TARMAT REMOVAL & MANUAL PICKUP OF MOUSE

Sm² of asphalt in debris

Subdiv. B

Subdiv. C
(wide oiling)

Subdiv. D

Subdiv. E
(medium oiling)

Subdiv. F

25m long cobble beach, no visible oil, no visible oil in 2 pits dug to 20cm.

Map Key: KEN-96

Name: Mann

ADEC Segment Length: 5970m
REGION: KENAI

SEGMENT: ST/ PY-008

SUBDIVISIONS: C (3 OF 6)
SHORELINE EVALUATION

SEGMENT ST/ PY-008  SUBDIVISION C (3 OF 6)  DATE  3/30/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
5T Bald eagle nest (3/1 to 9/1)
4QQ National Wildlife Refuge.
See attached Ecological Constraint Sheet for specific constraints and contacts.

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid disturbance/damage to uncoiled biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS:
If cultural resources are uncovered during shoreline treatment, stop work in the vicinity, mark the location of the find and contact a member of Exxon's Cultural Resource Program immediately (564-3657; 564-3658 or 564-3276).

SHPO SIGNATURE:____________________ DATE:____________________

OILING CATEGORIZATION:
Wide 110m: Medium 0 m: Narrow 0 m: V.Light 0 m: No Oil 0 m
Subsurface Oil Observed: Yes X No ___ Maximum Depth 20+ cm

RECOMMENDATIONS:
____ No Treatment Recommended
X Treatment Recommended
____ Manual Pickup
X Bioremediation
____ Tarmat: Breakup
____ Removal
____ Other (see comments)

COMMENTS: Recommend manual pick up of mousse and bioremediation of broken cover. Conduct treatment activities after 6/1 per above eagle constraints and obtain approval from ADF&G and USFWS.

TAG COMMENTS:

TAG APPROVAL DATE:_____________
ADEC ____________________________ FOSC:____________ DATE:_________
EXXON ____________________________
NOAA ____________________________
USCG ____________________________
1A Salmon stream mouth - fry outmigration (3/1 to 5/15)
1B Salmon stream mouth - spawning (7/10 to 8/31)
No disturbance of stream bed or banks unless authorized by ADF&G. No beach flushing into stream drainage. No bioremediation or other chemical application within 100m of stream. Contact ADF&G Habitat Division prior to treatment for permits.
1C Salmon fry nursery area (4/31 to 7/31)
1D Esther Hatchery release (4/15 to 6/1)
1E Main Bay Hatchery release (4/20 to 5/10)
1F Sawmill Bay Hatchery release (4/20 to 5/10)
1G Cannery Creek Hatchery release (4/21 to 6/1)
1H Remote release site
1I Gill net area (6/7 to 8/31)
1J Purse seine area (7/21 to 9/30)
1K Purse seine hook-off (7/20 to 9/30)
1L Set net sites (6/11 to 7/25)
For Codes 1C through 1L contact ADF&G for specific dates, locations and constraints.
2M Herring spawning (4/1 to 6/15)
Restrict boat traffic to essential minimum. Avoid damage to uncoiled intertidal and subtidal algae and seagrass. Contact ADF&G for specific dates and locations.
3N, 3P Harbor seal and sea lion pupping (5/15 to 7/1)
3Q, 3R Harbor seal and sea lion molting (5/15 to 9/15)
Restrict boat and air traffic to essential minimum. No personnel within 400m. Aircraft to maintain 800m horizontal and 300m vertical distance from haulouts.
5R Seabird colony (5/1 to 9/1)
Restrict air traffic to essential minimum. No personnel within 800m. Aircraft to maintain 800m horizontal, 300m vertical distance. Contact ADF&G and USFWS prior to treatment.
5S Shorebird/waterfowl concentration (4/1 to 5/15)
Restrict all activity to essential minimum, especially air traffic.
5T All Bald Eagle nests (3/1 to 6/1)
Active Bald Eagle nests (3/1 to 9/1)
Restrict air traffic to essential minimum. No personnel within 400m 3/1 to 6/1. Air approach and takeoff from and to seaward only; maintain 800m horizontal, 300m vertical distance from nests. Contact USFWS prior to treatment for confirmation of dates.
6U Recreation: Tent sites (6/1 to 9/15)
6V Anchorages (6/1 to 9/15)
6W Forest Service cabins (6/1 to 9/15)
6X Lodge (6/1 to 9/15)
6Y Special use destination
7Z Subsistence area: Salmon harvesting (6/1 to 9/30)
7HH Finfish harvesting
7II Deer harvesting (8/15 to 2/28)
7JJ Invertebrate harvesting
For Codes 7Z through 7JJ contact ADF&G and Chenega Corporation for specific dates, locations, and constraints.
FIELD SHORELINE COMMENT SHEET

SEGMENT ST: PY-8  SUBDIVISION: C  DATE 3/30/90

USCG/NOTA
NAME: JACQU MIEGEL  SIGNATURE

□ NO TREATMENT RECOMMENDED  ■ TREATMENT SUGGESTED

COMMENTS

Manual removal of mouse/patties on this pocket beach is highly recommended. Bioremediation should be considered, but only after manual removal of the thick oil deposits. But, manual removal will have to be conducted to the point where bioremediation will be effective, i.e., removal of the mouse to a coat/cover.

ADEC
NAME: JOHN R. REED  SIGNATURE: John R. Reed

□ NO TREATMENT RECOMMENDED  ■ TREATMENT SUGGESTED

COMMENTS

Manual removal of mouse with shovel or hand trowel. Cobble and boulders could be turned over and scraped without causing any erosion. I tested this method in the field and feel that it is a viable form of cleanup. This site could also be considered for bio remediation after manual cleanup.

LAND MANAGER: vsrws
NAME: Mary Feltner  SIGNATURE: Mary Feltner

□ NO TREATMENT RECOMMENDED  ■ TREATMENT SUGGESTED

COMMENTS

I recommend manual removal of the mouse/patties using trowels, pumpos etc. Under the cobble and boulders the mouse is thick, sometimes penetrating to > 15 cm. It would be beneficial to turn many of the cobble and small boulders and remove the mouse on the underside of the rocks and down to clean substrate. I feel this was a good survey and concern with the information on the
FIELD SHORELINE COMMENT SHEET

SEGMENT ST1   FY 08   SUBDIVISION: A Through F    DATE 30 MAR 90

NOAA

FIELD NAME: JACQUIN MOCHIKI   SIGNATURE: [Signature]

☐ NO TREATMENT RECOMMENDED   ☑ TREATMENT SUGGESTED

COMMENTS

The mousse patches can be readily removed manually. Some are quite
thick (>10 cm), especially under large boulders/cobbles. Bioremediation
should be considered for the subdivisions C and E, pocket beaches
which have the heaviest oiling. However, manual removal will have to be
conducted to the point that bioremediation would work, i.e.,
removal of mousse to a coat (cover).

☐ NO TREATMENT RECOMMENDED   ☑ TREATMENT SUGGESTED

COMMENTS

I am recommending some type of manual removal for subdivisions A-F such as short
and rowel. Boulders and cobbles should be turned over and the thick mousse scraped
off. I tested this treatment in the field and feel that it is a viable
form of removing the thick mousse patches found on subdivisions C and E.
Subdivisions C and E could also be candidates for bioremediation if the
thick mousse is removed to a coat or cover. I would like to add that
I concur with all the information on the SSAT forms. A good survey.

☐ NO TREATMENT RECOMMENDED   ☐ TREATMENT SUGGESTED

COMMENTS

Extensive patches of mousse remain in subdivisions C and E.
It appears to be recoverable using hand tools, pumps,
etc. Under the cobbles and boulders the mousse is
thick, sometimes penetrating to 10 cm. It may be beneficial
to turn many of the cobbles and small boulders and
remove the mousse. The remaining subdivisions with oil
could also benefit from small scale manual removal.

☐ NO TREATMENT RECOMMENDED   ☐ TREATMENT SUGGESTED

COMMENTS

I concur with the information on the SSAT forms.
**SHORELINE OILING SUMMARY**

**SURFACE OIL**

<table>
<thead>
<tr>
<th>CHARACTER</th>
<th>DISTRIBUTION</th>
<th>OIL / FILM COLOR</th>
<th>IMPACTED ZONES</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASPHALT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PAVEMENT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>POOLED</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COVER</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>COAT</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>STAIN</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>MOUSSE</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>PATTIES</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>TARBALLS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FILM</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>NO OIL</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SUBSURFACE OIL**

<table>
<thead>
<tr>
<th>PIT NO.</th>
<th>PIT DEPTH (cm)</th>
<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED INTERVAL</th>
<th>OIL / FILM COLOR</th>
<th>PIT ZONE</th>
<th>ANA</th>
<th>SUBSURFACE SEDIMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>15</td>
<td>✓</td>
<td>0-10</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>NO (CPG) throughout</td>
</tr>
<tr>
<td>2</td>
<td>10</td>
<td>✓</td>
<td>0-5</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>40</td>
<td>✓</td>
<td>0-0</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>30</td>
<td>✓</td>
<td>0-3</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>15</td>
<td>✓</td>
<td>0-6</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>20</td>
<td>✓</td>
<td>0-5</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

**COMMENTS**

The winter storm berm is surprisingly clean. Abrasion by moving cobbles is cleaned most of the stones in this low berm. Seaward corner of last year's oiled surface has transferred material into this berm. Bedrock and sediments are granitic so oil shows up well.
### Subsurface Oil (continued)

<table>
<thead>
<tr>
<th>Pit No.</th>
<th>Pit Depth (cm)</th>
<th>Subsurface Oil Character</th>
<th>Oiled Interval (cm)</th>
<th>Color Zone</th>
<th>Oil / Film Color</th>
<th>Pit Zone</th>
<th>Ana</th>
<th>Subsurface Sediments</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>20</td>
<td>✓</td>
<td>- - -</td>
<td>-</td>
<td>✓</td>
<td>✓</td>
<td>NO (BC) Throughout</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>10</td>
<td>✓</td>
<td>0 - 3</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>NO</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>35</td>
<td>✓</td>
<td>- - -</td>
<td>-</td>
<td>✓</td>
<td>✓</td>
<td>NO</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>20</td>
<td>✓</td>
<td>0 - 5</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>NO (CPG) Throughout</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>15</td>
<td>✓</td>
<td>- - -</td>
<td>-</td>
<td>✓</td>
<td>✓</td>
<td>NO (CB) Throughout</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>20</td>
<td>✓</td>
<td>0 - 20</td>
<td>51</td>
<td>✓</td>
<td>✓</td>
<td>NO (CG) Throughout</td>
<td></td>
</tr>
</tbody>
</table>

### Comments

Regarding pits:

- #1 Boulder armor, pit at up slope edge of surface oiling
- #4 A single patty, 10 cm², underlies surface boulders here
- #9 Dug in 1989/90 winter storm term
- #10 Ends on top of boulder or bedrock
- #11 Dug in 1989/90 winter storm term
- #12 Silver sheen in water, dug in 1989/90 winter storm term

REVIEWED: ZW  DATE: 4/9/96
**SKETCH MAP**

**inner Morning Cove**

**KEY**
- "Mouse/P (25% coverage) (cover on stone, mouse is between)
- "Mouse/B (55% coverage; note that boulders: tops are clean spoil but between them 80% oil cover; cover on stone, mouse is below)

**CHECKLIST**
- N Arrow
- Approx. Scale
- Seg/Sub Div Info
- Oil Dist.
- Width
- Length
- J5 Cover
- Substrate Character
- Est. HWL/WL
- CSS
- Profile Location(s)
- Pit Location(s)
- Photo Location(s)
- SFE Notes

**LEGEND**
1. Pit - No Subsurface Oil
2. ▲ Pit - Subsurface Oil

- Continuous Distribution (CT/C)
- Broken Distribution (CT/B)
- Patchy Distribution (CT/P)
- Splashed Distribution (CT/S)

**MAP NOTES**
- HWL at edge of snow, SSL under snow
- LWL at upper edge of "cover/B" zone

**Oil Character Length (m):**
- AP
- FO
- CV
- CT
- ST
- MS
- PT
- TB
- OFI
- NO

**SEGMENT ST/ PY-8**
**SUBDIVISION C**
**DATE 3/30/90**
**SHORELINE ECOLOGICAL SUMMARY**

Segment ST  B108  Subdivision  C  Date (mo/day/yr) 3/30/80

Time (24 hr)  0800  Biologist  W. Carr

(A) Substrate type and % of segments:
- (1) Bedrock
- (2) Boulder
- (3) Cobble
- (4) Pebble
- (5) Sand
- (6) Silt

(B) Overall % cover of biota (% of segment):
- Dense
- Moderate
- Low

(C) Density, substrate preference (by number from A, above), & vertical zonation of major taxa: (upper-U; mid-M; low tidal-L);
- juveniles / adults (X), new settlement (3)

<table>
<thead>
<tr>
<th>BARNACLES</th>
<th>Dense</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>1U</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>1M</td>
<td>6</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>1L</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MYTILUS</th>
<th>Dense</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>1U</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>1M</td>
<td>6</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>1L</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GASTROPODS</th>
<th>Dense</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>1U</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>1M</td>
<td>6</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>1L</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FUCUS</th>
<th>Dense</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>1U</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>1M</td>
<td>6</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>1L</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Wildlife Observations/General Comments:
Summary on subdivision A sheet.

Ecological Considerations:
- Same as subdivision A data sheet.
- Sensitivity codes: 5T
PY-8

Subdiv. A

Subdiv. B

Subdiv. C
(wide oiling)

Subdiv. D

Subdiv. E
(medium oiling)

Subdiv. F

25m long cobble beach, no visible oil, no visible oil in 2 pits dug to 20cm.

Map Key: KEH-96
Name: Mann 2/11/18
REGION: KENAI
SEGMENT: ST/PY-008
SUBDIVISIONS: D (4 OF 6)
SEGMENT ST/ PY-008 SUBDIVISION D (4 OF 6) DATE 3/30/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
5T Bald eagle nest (3/1 to 9/1)
4QQ National Wildlife Refuge.
See attached Ecological Constraint Sheet for specific constraints and contacts.

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid disturbance/damage to unoiled biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO SIGNATURE: ______________________ DATE: ______________________

OILING CATEGORIZATION:
Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 234 m: No Oil 0 m
Subsurface Oil Observed: Yes ___ No X ___ Maximum Depth ___

RECOMMENDATIONS:
_X__ No Treatment Recommended
____ Treatment Recommended
____ Manual Pickup
____ Bioremediation
____ Tarmat: ______ Breakup
____ Removal

COMMENTS:

TAG COMMENTS:

TAG APPROVAL DATE: __________
ADEC ________________ EXXON ________________ NOAA ________________ USCG ________________

FOSC: ________________ DATE: ________________
FIELD SHORELINE COMMENT SHEET

SEGMENT ST/ PY 8 SUBDIVISION: D DATE 3/30/90

USCG/NOAA
NAME JAQUI MICHEL SIGNATURE Michele

☑ NO TREATMENT RECOMMENDED ☑ TREATMENT SUGGESTED

COMMENTS

MOSTLY ROCKY HEADLAND - NO TREATMENT WARRANTED ON ROCK FACE OILING

ADEC
NAME JOHN R. REED SIGNATURE John R. Reed

☑ NO TREATMENT RECOMMENDED ☑ TREATMENT SUGGESTED

COMMENTS

VERY LIGHT OILING ON BEDROCK OUTCROP. NO TREATMENT REQUIRED. I HAVE READ AND AGREE WITH ALL INFORMATION ON S.S.A.T. FORM.

LAND MANAGER
NAME Mary Parker SIGNATURE Mary Parker

☑ NO TREATMENT RECOMMENDED ☑ TREATMENT SUGGESTED

COMMENTS

VERY LIGHT OILING WAS NOTED ON THIS BEDROCK PROTRUSION. DUE TO THE CHARACTER AND AMOUNT OF OIL, AVAILABLE TREATMENT METHODS WOULD BE INEFFECTIVE AND MAY NOT BE WARRANTED.
FIELD SHORELINE COMMENT SHEET

SEGMENT STI PY 08 SUBDIVISION: A Through F DATE 30 MAR 90

□ NO TREATMENT RECOMMENDED ☑ TREATMENT SUGGESTED

COMMENTS
The mousse patches can be readily removed manually. Some are quite thick (>10 cm), especially under large boulders/cobbles. Bioremediation should be considered for the subdivisions C and E, pocket beaches which have the heaviest oiling. However, manual removal will have to be conducted in the print that bioremediation would work, i.e., removal of mousse to a coat (cover).

□ NO TREATMENT RECOMMENDED ☑ TREATMENT SUGGESTED

COMMENTS
I am recommending some type of manual removal for subdivisions. A-F such as shovel had removal. Boulders and cobbles should be turned over and the thick mousse scraped off. I tested this treatment in the field and feel that it is a viable form of removing the thick mousse patches found on subdivisions C and E. Subdivisions C and E could also be candidates for bioremediation if the thick mousse is removed to a coat or cover. I would like to add that I concur with all the information on the SSAT forms. A good survey!

□ NO TREATMENT RECOMMENDED ☑ TREATMENT SUGGESTED

COMMENTS
Extensive patches of mousse remain in subdivisions C and E. Extensive patches of mousse remain in subdivisions C and E. It appears to be recoverable using hand tools, pumps, etc. Under the cobbles and boulders the mousse is thick, sometimes penetrating to 10 cm. It may be beneficial to turn many of the cobbles and small boulders and to remove the mousse. The remaining subdivisions with oil could also benefit from this was a good survey and of mousse patches. I feel with the information on the SSAT forms...
SHORELINE OILING SUMMARY

REVIEWED

TEAM NO.: 18  TIDE LEVEL: -2 to -2  DATE 3/30/90

SURVEYED FROM:  Foot  Boat  Helo  WORKING DIRECTION: W to E

SURFACE SEDIMENTS: R 20 % B 20 % C 0 % P 0 % G 0 % S 0 % M 0 % V 0 %

SLOPE:  Lang 0 %  Hang 60 %  Vert 40 %  WAVE EXPOSURE:  Low  Med  High

OIL CATEGOR LENGTH: W 0 m M 0 m N 0 m V 120 m NO 0 m

P AVEMENT: H F S 20 sq. m by 10 cm

PATTIES/TARBALLS 0 BAGS

NEAR SHORE SHEEN?  NO  BR RW SL TL

OILED DEBRIS  NO  AMOUNT

Logs  Vegetation  Trash  Debris

Photographs:

Roll No.  none

Frames  none

SUBSURFACE OIL  None

COMMENTS:

No pits dug because bedrock at surface. Oiling is in the form of
patches, 1-2m wide, coat to cover with conifer needles,
mostly on lee faces of rock. These patches have oil cover
of about 60%. Oil cover of entire subdivision is ~ 10%.
SEGMENT ST/ PF 8
SUBDIVISION D
DATE 3/30/90

CHECKLIST
- N Avenue
- Approx. Scale
- Slope/Suit Bestly
- Oil Dist.
- Width
- Length
- H. Cover
- Substrate Character
- EST. HWY/LW
- SSL
- Profile Location(s)
- Pit Location(s)
- Photo Location(s)

LEGEND
1 A:
Pl. - No Subsurface Oil

2 A:
Pl. - Subsurface Oil

CT/C
Continuous Distribution

CT/B
Broken Distribution

CT/P
Patchy Distribution

CT/S
Splashed Distribution

OilVegetation

Photo location, direction, and number

no map drawn
SHORELINE ECOLOGICAL SUMMARY

Segment ST PY08 Subdivision D ___________ Date (mo / day / yr) 3/30/90

Time (24 hr) 0930. Biologist: M. CARR

(A) Substrate type and % of Subdivision:
   (1) Bedrock (2) Boulder (3) Cobble (4) Pebble (5) Sand (6) Silt

(B) Overall % cover of biota (% of segment): Dense 60 Moderate 20 Low 20

(C) Density, substrate preference (by number from A. above), & vertical zonation of major taxa: ( upper-U: mid-M; low tidal-L ); juveniles / adults (X), new settlement (O)

<table>
<thead>
<tr>
<th></th>
<th>Dense</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
<th>NOT PRESENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>BARNACLES</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1U</td>
<td>1M</td>
<td>1L</td>
<td>1U</td>
<td>1M</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

| MYTILUS |
|---------|-------|----------|--------|------|-------------|
|         | 1U    | 1M | 1L | 1U | 1M | 1L | 1U | 1M | 1L | 1U | 1M | 1L |
| 2       | 2     | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  |
| 3       | 3     | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  |
| 4       | 4     | 4  | 4  | 4  | 4  | 4  | 4  | 4  | 4  | 4  | 4  | 4  |
| 5       | 5     | 5  | 5  | 5  | 5  | 5  | 5  | 5  | 5  | 5  | 5  | 5  |
| 6       | 6     | 6  | 6  | 6  | 6  | 6  | 6  | 6  | 6  | 6  | 6  | 6  |

| GASTROPODS |
|------------|-------|----------|--------|------|-------------|
|           | 1U    | 1M | 1L | 1U | 1M | 1L | 1U | 1M | 1L | 1U | 1M | 1L |
| 2         | 2     | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  |
| 3         | 3     | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  |
| 4         | 4     | 4  | 4  | 4  | 4  | 4  | 4  | 4  | 4  | 4  | 4  | 4  |
| 5         | 5     | 5  | 5  | 5  | 5  | 5  | 5  | 5  | 5  | 5  | 5  | 5  |
| 6         | 6     | 6  | 6  | 6  | 6  | 6  | 6  | 6  | 6  | 6  | 6  | 6  |

| FUCUS    |
|---------|-------|----------|--------|------|-------------|
|         | 1U    | 1M | 1L | 1U | 1M | 1L | 1U | 1M | 1L | 1U | 1M | 1L |
| 2         | 2     | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  | 2  |
| 3         | 3     | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  |
| 4         | 4     | 4  | 4  | 4  | 4  | 4  | 4  | 4  | 4  | 4  | 4  | 4  |
| 5         | 5     | 5  | 5  | 5  | 5  | 5  | 5  | 5  | 5  | 5  | 5  | 5  |
| 6         | 6     | 6  | 6  | 6  | 6  | 6  | 6  | 6  | 6  | 6  | 6  | 6  |

Wildlife Observations/General Comments:

Summaryed on subdivision A sheet.

Ecological Considerations:

1. Same as subdivision A sheet.

Sensitivity codes: ST
PWS ECOLOGICAL CONSTRAINTS

1A Salmon stream mouth - fry outmigration (3/1 to 5/15)
1B Salmon stream mouth - spawning (7/10 to 8/31)
No disturbance of stream bed or banks unless authorized by ADF&G. No beach flushing into stream drainage. No bioremediation or other chemical application within 100m of stream. Contact ADF&G Habitat Division prior to treatment for permits.

1C Salmon fry nursery area (4/31 to 7/31)

1D Esther Hatchery release (4/15 to 6/1)

1E Main Bay Hatchery release (4/20 to 5/10)

1F Sawmill Bay Hatchery release (4/20 to 5/10)

1G Cannery Creek Hatchery release (4/21 to 6/1)

1H Remote release site

1I Gill net area (6/7 to 8/31)

1J Purse seine area (7/21 to 9/30)

1K Purse seine hook-off (7/20 to 9/30)

1L Set net sites (6/11 to 7/25)
For Codes 1C through 1L contact ADF&G for specific dates, locations and constraints.

2M Herring spawning (4/1 to 6/15)
Restrict boat traffic to essential minimum. Avoid damage to un-oiled intertidal and subtidal algae and seagrasses. Contact ADF&G for specific dates and locations.

3N, 3P Harbor seal and sea lion pupping (5/15 to 7/1)
3O, 3Q Harbor seal and sea lion molting (8/15 to 9/15)
Restrict boat and air traffic to essential minimum. No personnel within 400m. Aircraft to maintain 800m horizontal and 300m vertical distance from haulouts.

5R Seabird colony (5/1 to 9/1)
Restrict air traffic to essential minimum. No personnel within 800m. Aircraft to maintain 800m horizontal, 300m vertical distance. Contact ADF&G and USFWS prior to treatment.

5S Shorebird/waterfowl concentration (4/1 to 5/15)
Restrict all activity to essential minimum, especially air traffic.

5TAll Bald Eagle nests (3/1 to 6/1)
Active Bald Eagle nests (3/1 to 9/1)
Restrict air traffic to essential minimum. No personnel within 400m 3/1 to 6/1. Air approach and takeoff from and to seaward only; maintain 800m horizontal, 300m vertical distance from nests. Contact USFWS prior to treatment for confirmation of dates.

6U Recreation:
Tent sites (6/1 to 9/15)
Anchorage (6/1 to 9/15)
Forest Service cabins (6/1 to 9/15)
Lodge (6/1 to 9/15)
Special use destination

6V

6W

6X

6Y

7Z Subsistence area:
Salmon harvesting (5/1 to 9/30)

7HH Finfish harvesting

7II Deer harvesting (8/15 to 2/28)

7JJ Invertebrate harvesting
For Codes 7Z through 7JJ contact ADF&G and Chenega Corporation for specific dates, locations, and constraints.
REGION: KENAI

SEGMENT: ST/PY-08

SUBDIVISIONS: E (5 OF 6)
SHORELINE EVALUATION

SEGMENT ST/ PY-08 SUBDIVISION E (5 OF 6) DATE 3/30/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
5T Active eagle nest (3/1 to 6/1)
4QQ National Wildlife Refuge
Takeoff from and to seaward only. Contact USFWS prior to cleanup.

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid disturbance/damage to unoiled biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS:
If cultural resources are uncovered during shoreline treatment, stop work in the vicinity, mark the location of the find and contact a member of Exxon's Cultural Resource Program immediately (564-3657; 564-3658 or 564-3276).

SHPO SIGNATURE: ______________________ DATE: ______________________

OILING CATEGORIZATION:
Wide 0 m: Medium 99 m: Narrow 0 m: V.Light 0 m: No Oil 0 m
Subsurface Oil Observed: Yes X No Maximum Depth 25 cm

RECOMMENDATIONS:
____ No Treatment Recommended ____ Snare/Absorbent Booms
X Treatment Recommended ____ Oil Snares (pom poms)
X Manual Pickup ____ Absorbents (pads, rolls, etc)
X Bioremediation ____ Spot Washing: Wands
____ Tarmat: ____ Breakup ____ Beach Cleaner
____ Removal ____ Other (see comments)

COMMENTS: Recommend manual pick up of mousse and bioremediate coat areas as shown on attached sketch map. Work should be conducted after 6/1 with approval from ADF&G and USFWS based on above eagle constraints.

TAG COMMENTS:

TAG APPROVAL DATE: __________
ADEC ________________ FOSC: __________ DATE: __________
EXXON ________________
NOAA ________________
USCG ________________
FIELD SHORELINE COMMENT SHEET

SEGMENT ST1  PY 8  SUBDIVISION: E  DATE 3/30/90

USCG/NOAA  NAME: JACQUI MICHIEL  SIGNATURE: [Signature]

☐ NO TREATMENT RECOMMENDED  ☑ TREATMENT SUGGESTED

COMMENTS
Manual removal of mousse/patties is highly recommended on this pocket beach. Bioremediation should also be considered, but only after manual removal of the mousse to a coat/layer thickness so that bioremediation is most likely to be effective.

☐ NO TREATMENT RECOMMENDED  ☑ TREATMENT SUGGESTED

COMMENTS
Manual removal of mousse from substrate with shovel or hand trowel. This site could also be considered for bio remediation after manual cleanup. I have read and agree with all information on SSAT Forms.

LAND MANAGER - USFWS
NAME: Mary Parmer  SIGNATURE: [Signature]

☐ NO TREATMENT RECOMMENDED  ☑ TREATMENT SUGGESTED

COMMENTS
I recommend manual removal of the mousse/patties using trowel, pond poke etc. Under the cobble and boulders the mousse is thick, sometimes penetrating to >10 cm. Cobble and small boulders should be turned and the mousse on the boulders should be removed. Remaining mousse should be undercut and scraped off. Remaining mousse should be removed to clean substrate. I feel this was a good survey and concern with the SSAT forms.
SEGMENT ST
PY 08
SUBDIVISION: A Through F
DATE 30 MAR 90

NOAA
NAME: JACQUI MICHEL
SIGNATURE: 

☐ NO TREATMENT RECOMMENDED    ☒ TREATMENT SUGGESTED

COMMENTS
The mousse patches can be readily removed manually. Some are quite thick (>10 cm), especially under large boulders (cobbles). Bioremediation should be considered for the subdivisions C and E, pocket beaches which have the heaviest oiling. However, manual removal will have to be conducted in the print that bioremediation would work, i.e., removal of mousse to a coat (cover).

ADEC
NAME: JOHN R. REED
SIGNATURE: 

☐ NO TREATMENT RECOMMENDED    ☒ TREATMENT SUGGESTED

COMMENTS
I am recommending some type of manual removal for subdivisions A-E, such as shore and removal of the cobbles and cobbles should be turned over and the thick mousse soaked off. I am testing this treatment in the field and feel that it is a viable form of removing the thick mousse patches found on subdivisions C and E. Subdivisions C and E could also be candidates for bioremediation if the thick mousse is removed to a coat or cover. I would like to add that I concur with all the information on the SSAT forms. A GOOD SURVEY!

LAND MANAGER - USEUS
NAME: Mary Potter
SIGNATURE: Mary Potter

☐ NO TREATMENT RECOMMENDED    ☐ TREATMENT SUGGESTED

COMMENTS
Extensive patches of mousse remain in subdivisions C and E. Extensive patches of mousse remain in subdivisions C and E. It appears to be recoverable using hand tools, pumps, etc. Under the cobbles and boulders the mousse is thick sometimes penetrating to 20 cm. It may be beneficial to turn many of the cobbles and small boulders and could also benefit from small-scale manual removal. The remaining subdivisions with oil remove the mousse. I feel this was a good survey and with the information on the SSAT forms.
**SHORELINE OILING SUMMARY**

- **Surveyor:** Enco Atlas
- **Land Rep.:** ADEC
- **Subdivision:** E
- **Team No.:** 18
- **Time:** 9:50 to 11:15
- **Date:** 3-1-80

**Surface Oil**

<table>
<thead>
<tr>
<th>Character</th>
<th>Distribution</th>
<th>Oil/Film Color</th>
<th>Impacted Zones</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt Pavement</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Pooled</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Cover</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Coat</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Stain</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Mousse</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Patties</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Tarballs</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Film</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>No Oil</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

**Subsurface Oil**

<table>
<thead>
<tr>
<th>Pit No.</th>
<th>Pit Depth (cm)</th>
<th>Subsurface Oil Character</th>
<th>Oiled Interval</th>
<th>Below</th>
<th>Oil/Film Color</th>
<th>Pit Zone</th>
<th>Ana</th>
<th>Subsurface Sediments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>25</td>
<td>X</td>
<td>0 - 25</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td>No BCPG throughout</td>
</tr>
<tr>
<td>2</td>
<td>20</td>
<td>X</td>
<td>0 - 5</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td>No CPC</td>
</tr>
<tr>
<td>3</td>
<td>30</td>
<td>X</td>
<td>0 - 10</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td>No CPC</td>
</tr>
<tr>
<td>4</td>
<td>20</td>
<td>X</td>
<td>0 - 20</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td>No BCPG</td>
</tr>
<tr>
<td>5</td>
<td>10</td>
<td>X</td>
<td>0 - 5</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td>No CPCG</td>
</tr>
<tr>
<td>6</td>
<td>10</td>
<td>X</td>
<td>0 - 5</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td>CPC</td>
</tr>
</tbody>
</table>

**Comments:**
- Two bands of oil - one in M38 and lower U12, the other in U12.
- Pit #3: well developed cable armor
- Pit #4: couldn't dig further. Oil is in form of balls of oiled granules
- Pit #5: 1/2 pit clear, 1/2 through mousse patch

This is a narrow 60-beach between two bedrock points.

Reviewed by: [Signature]  Date: 4/9/80
### Subsurface Oil (Continued)

<table>
<thead>
<tr>
<th>PIT NO.</th>
<th>PIT DEPTH (cm)</th>
<th>Subsurface Oil Character</th>
<th>Oiled Interval (cm/cm)</th>
<th>Below Oil/Film Color</th>
<th>Pit Zone</th>
<th>Ana</th>
<th>Subsurface Sediments</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>5</td>
<td>✓</td>
<td>0 - 2</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>NC</td>
</tr>
<tr>
<td>7</td>
<td>10</td>
<td>✓</td>
<td>0 - 10</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>No BG</td>
</tr>
<tr>
<td>8</td>
<td>15</td>
<td>✓</td>
<td>0 - 15</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>No BG</td>
</tr>
</tbody>
</table>

**Comments**

REVIEWED BY: [Signature] 4/9/90
## SHORELINE ECOLOGICAL SUMMARY

### Segment ST

**Subdivision:** E  
**Date (mo / da / yr):** 3/30/20

**Time (24 hr):** 14:08  
**Biologist:** M. CAR

### (A) Substrate type and % of segments:

<table>
<thead>
<tr>
<th></th>
<th>Dense</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bedrock</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Boulder</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Cobble</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Pebble</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Sand</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Silt</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

### (B) Overall % cover of biota (% of segment):

- Dense: 30
- Moderate: 30
- Low: 40

### (C) Density, substrate preference (by number from A, above), & vertical zonation of major taxa (upper-U: mid-M; low tidal-L; juveniles/adults (J), new settlement (N))

#### Barnacles

<table>
<thead>
<tr>
<th></th>
<th>Dense</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>1U</td>
<td>6</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>1M</td>
<td>6</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>1L</td>
<td>6</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
</tbody>
</table>

#### Mytilus

<table>
<thead>
<tr>
<th></th>
<th>Dense</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>1U</td>
<td>6</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>1M</td>
<td>6</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>1L</td>
<td>6</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
</tbody>
</table>

#### GastroPods

<table>
<thead>
<tr>
<th></th>
<th>Dense</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>1U</td>
<td>6</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>1M</td>
<td>6</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>1L</td>
<td>6</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
</tbody>
</table>

#### Fucus

<table>
<thead>
<tr>
<th></th>
<th>Dense</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>1U</td>
<td>6</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>1M</td>
<td>6</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>1L</td>
<td>6</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
</tbody>
</table>

### Wildlife Observations/ General Comments:

Summary on sub div sheet A.

### Ecological Considerations:

1. Same as Subdivision A sheet.

**Sensitivity codes:** 5T
REGION: KENAI

SEGMENT: ST/PY-08

SUBDIVISIONS: F (6 OF 6)
SEGMENT ST/ PY-08     SUBDIVISION F (6 OF 6) DATE  3/30/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
5T  Active eagle nest (3/1 to 9/1)
4QQ National Wildlife Refuge
Takeoff from and to seaward only. Contact USFWS prior to cleanup.
See attached Ecological Constraints Sheet for specific constraints and contacts.

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid disturbance/damage to uncoiled biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO SIGNATURE: ______________________ DATE: ______________________

OILING CATEGORIZATION:
Wide 0 m: Medium 0 m: Narrow 255 m: V.Light 1067 m: No Oil 0 m
Subsurface Oil Observed: Yes  No X  Maximum Depth ______

RECOMMENDATIONS:
X No Treatment Recommended    Snare/Absorbent Booms
    Treatment Recommended    Oil Snares (pom poms)
    Manual Pickup    Absorbents (pads, rolls, etc)
    Bioremediation    Spot Washing: Wands
    Tarmat: Breakup    Beach Cleaner
    Removal    Other (see comments)

COMMENTS:

TAG COMMENTS:

TAG APPROVAL DATE: __________
ADEC
EXXON
NOAA
USCG
FOSC: __________ DATE: ________
FIELD SHORELINE COMMENT SHEET

SEGMENT: PY - E  SUBDIVISION: E  DATE 3/30/90

USCG / NOAA
NAME: JACQUI MURPHY  SIGNATURE: [Signature]

☐ NO TREATMENT RECOMMENDED  ☒ TREATMENT SUGGESTED

COMMENTS

Manual removal of mousse accumulations in areas marked as narrow on map.

ADEC
NAME: JOHN R. REED  SIGNATURE: [Signature]

☐ NO TREATMENT RECOMMENDED  ☒ TREATMENT SUGGESTED

COMMENTS

Manual removal of mousse between boulders with shovel, hard trowel, or pumpons. I have read and agree with all information on SSAT Forms.

LAND MANAGER - U.S.F.W.S
NAME: Mary Porter  SIGNATURE: [Signature]

☐ NO TREATMENT RECOMMENDED  ☒ TREATMENT SUGGESTED

COMMENTS

Manual removal of mousse between boulders using trowels, shovels, pumpons especially in areas marked narrow on PY-8 map.
FIELD SHORELINE COMMENT SHEET

SEGMENT ST. PY 08 SUBDIVISION: A Through F DATE 30 MAR 90

NOAA NAME Jacqui MicheL SIGNATURE

☐ NO TREATMENT RECOMMENDED ☒ TREATMENT SUGGESTED

COMMENTS
The mousse patches can be readily removed manually. Some are quite thick (>10 cm), especially under large boulders/cobbles. Bioremediation should be considered for the subdivisions C and E, pocket beaches which have the heaviest oiling. However, manual removal will have to be conducted in the print that bioremediation would work, i.e., removal of mousse to a coat/cover.

ADEC NAME John R Reed SIGNATURE

☐ NO TREATMENT RECOMMENDED ☒ TREATMENT SUGGESTED

COMMENTS
I am recommending some type of manual removal for subdivisions A-F, such as shovel and trowel. Boulders and cobbles should be turned over and the thick mousse scraped off. I tested this treatment in the field and feel that it is a viable form of removing the thick mousse patches found on subdivisions C and E. Subdivisions C and E could also be candidates for bioremediation if the thick mousse is removed to a coat of cover. I would like to add that I concur with all the information on the SSAT forms. A GOOD SURVEY!

LAND MANAGER CFWS NAME Mary Potter SIGNATURE

☐ NO TREATMENT RECOMMENDED ☐ TREATMENT SUGGESTED

COMMENTS
Extensive patches of mousse remain in subdivisions C and E. It appears to be recoverable using hand trowels, pompons etc. Under the cobbles and boulders the mousse is thick, sometimes penetrating to 10 cm. It may be beneficial to turn many of the cobbles and small boulders and remove the mousse. The remaining subdivisions could also benefit from small scale manual removal.
### SHORELINE OILING SUMMARY

**SEGMENT ST/ PY-8**

**NO:** Mann  
**USCG:** Michel  
**BIO:** Carr  
**LAND REP:** Porter - FUS

**EXXON:** Boyer  
**ADEC:** Reed  
**TO:** SSAT

**DATE:** 3/30/90  
**TIME:** 11:30 to 12:15

**TEAM NO.:** 18

**TIDE LEVEL:** 4 ft. to 6 ft.

**EST. SUBDIVISION LENGTH:** 1200 m

**UPLANDS DESCRIPTION:**  
- Grass  
- Forest  
- Rock

**SURVEYED FROM:**  
- Foot  
- Boat  
- Helo

**WORKING DIRECTION:** W to E

**SURFACE SEDIMENTS:**  
- R (%)  
- B (%)  
- S (%)  
- O (%)  
- G (%)  
- P (%)  
- M (%)  
- V (%)

**SLOPE:**  
- Lang: 60%  
- Hang: 30%  
- Vert: 10%

**WAVE EXPOSURE:**  
- Low  
- Med  
- High

**OIL CATEGORY LENGTH:**  
- W 0 m  
- M 0 m  
- N 270 m  
- V 990 m  
- L 0 m

### SURFACE OIL

<table>
<thead>
<tr>
<th>CHARACTER</th>
<th>DISTRIBUTION</th>
<th>OIL / FILM COLOR</th>
<th>IMPACTED ZONES</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASPHALT PAVEMENT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>POOLED</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COVER</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COAT</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>STAIN</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>MOUSSE</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>PATTIES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TARBALLS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FILM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NO OIL</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>

**PAVEMENT:**  
- H  
- F  
- S  
- 0 sq. m by 0 sq. m

**PATTIES / TARBALLS:** 0 
**BAGS:**

**NEAR SHORE SHEEN?**  
- No  
- BR  
- RW  
- SL  
- TL

**OILED DEBRIS AMOUNT**  
- SM  
- MD  
- LG

**DEBRIS COLLECTED**  
- Yes  
- No

**TYPE**  
- TR

**Photographs:**  
- Roll No.: 18-1
- Frames: 22-26

### SUBSURFACE OIL

<table>
<thead>
<tr>
<th>PIT NO.</th>
<th>PIT DEPTH (cm)</th>
<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED INTERVAL (cm-0cm)</th>
<th>BELOW OIL / FILM COLOR</th>
<th>OIL / FILM COLOR</th>
<th>PIT ZONE</th>
<th>SEDIMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### COMMENTS

- 5 hardhats and face shields + 2 canopies + oiled bags. No ports due to lack of places to di.

- The 2 areas of narrow oiling shown on map, cover and mousse exist 1.5 to 2m wide.

- Band in U/ITZ these are well hidden under/behind large boulders. Splashes of ST and CT are scattered along the shoreline in the U/ITZ. No sketch map is provided because this additional detail would provide no further useful information.

**Reviewer:**  
**Date:** 4/9/90

---

Page 1 of 1
No sketch map provided per oiling. Comments on shoreline summary.
SHORELINE ECOLOGICAL SUMMARY

Segment ST1/TY08 Subdivision E Date (mo/day/yr) 3/30/90

Time (24 hr) 11:45 Biologist M. CARR

(A) Substrate type and % of segment:
(1) Bedrock (2) Boulder (3) Cobble (4) Pebble (5) Sand (6) Silty

(B) Overall % cover of biota (% of segment): Dense 50 Moderate 50 Low

(C) Density, substrate preference (by number from A, above), & vertical zonation of major taxa: (upper-U; mid-M; low tidal-L); juveniles/adults (X), new settlement (3)

BARNACLES

<table>
<thead>
<tr>
<th></th>
<th>Dense</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>1U</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>1M</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>1L</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>6</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

MYTILUS

<table>
<thead>
<tr>
<th></th>
<th>Dense</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>1U</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>1M</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>1L</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>6</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

GASTROPODS

<table>
<thead>
<tr>
<th></th>
<th>Dense</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>1U</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>1M</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>1L</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>6</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

FUCUS

<table>
<thead>
<tr>
<th></th>
<th>Dense</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>1U</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>1M</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>1L</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>6</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

Wildlife Observations/General Comments:

Summarized on subdivision A sheet

Ecological Considerations:

0 Some at subdivision A sheet plus "Rhodymenia"/Fucus in mid-tide

Sensitivity codes: ST

Gastropods include: LIMPET & KATHARINA Tunicata
PWS ECOLOGICAL CONSTRAINTS

1A Salmon stream mouth - fry outmig (3/1 to 5/15)
1B Salmon stream mouth - spawning (7/10 to 8/31)
1C Salmon fry nursery area (4/31 to 7/31)
1D Esther Hatchery release (4/15 to 6/1)
1E Main Bay Hatchery release (4/20 to 5/10)
1F Sawmill Bay Hatchery release (4/20 to 5/10)
1G Cannery Creek Hatchery release (4/21 to 6/1)
1H Remote release site
1I Gill net area (6/7 to 8/31)
1J Purse seine area (7/21 to 9/30)
1K Purse seine hook-off (7/20 to 9/30)
1L Setnet sites (6/11 to 7/25)

For Codes 1C through 1L contact ADF&G for specific dates, locations and constraints.

2M Herring spawning (4/1 to 6/15)

Restrict boat traffic to essential minimum. Avoid damage to unoiled intertidal and subtidal algae and seagrass. Contact ADF&G for specific dates and locations.

3N, 3P Harbor seal and sea lion pupping (5/1 to 7/1)
3O, 3Q Harbor seal and sea lion molting (8/15 to 9/15)

Restrict boat and air traffic to essential minimum. No personnel within 400m. Aircraft to maintain 600m horizontal and 300m vertical distance from haulouts.

5R Seabird colony (5/1 to 9/1)

Restrict air traffic to essential minimum. No personnel within 800m. Aircraft to maintain 800m horizontal, 300m vertical distance. Contact ADF&G and USFWS prior to treatment.

5S Shorebird/waterfowl concentration (4/1 to 5/15)

Restrict all activity to essential minimum, especially air traffic.

5T All Bald Eagle nests (3/1 to 6/1)
Active Bald Eagle nests (3/1 to 9/1)

Restrict air traffic to essential minimum. No personnel within 400m 3/1 to 6/1. Air approach and takeoff from and to seaward only; maintain 800m horizontal, 300m vertical distance from nests. Contact USFWS prior to treatment for confirmation of dates.

6U Recreation:

Tent sites (6/1 to 9/15)
Anchorage (6/1 to 9/15)
Forest Service cabins (6/1 to 9/15)
Lodge (6/1 to 9/15)
Special use destination

6Z Subsistence area:

Salmon harvesting (5/1 to 9/30)
Finfish harvesting
Deer harvesting (8/15 to 2/28)
Invertebrates harvesting

For Codes 7Z through 7JJ contact ADF&G and Chenega Corporation for specific dates, locations, and constraints.
PY-8

Subdiv. A

Subdiv. B

Subdiv. C (wide oiling)

Subdiv. D (medium oiling)

Subdiv. E (medium oiling)

Not surveyed

ADEC Segment Length: 5970m

Map Key: KEN-96

Date: 3/30/90
ADDENDUM: SUBDIVISION CONSTRAINTS

SEGMENT PY-8 SUBDIVISION C (3 of 6)

WORK WINDOW

<table>
<thead>
<tr>
<th>Manual Pickup</th>
<th>OPEN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bioremediation</td>
<td></td>
</tr>
<tr>
<td>Hand Tools &amp; Mechanical Equipment</td>
<td>OPEN</td>
</tr>
</tbody>
</table>

ARCHAEOLOGICAL STANDARD CONSTRAINT

If cultural resources are uncovered, PHONE 564-3274.

APPLICABLE ECOLOGICAL TIME CONSTRAINTS

5T Bald Eagle Nest NO CONSTRAINT. Bald eagle nest is outside Subdivision C of Segment PY-8 and more than 400m from work site.

OTHER ECOLOGICAL CONSIDERATIONS

Avoid any unnecessary disturbance or damage to unaltered biota and substrate.

FOSC ___________________________ Date 6-10-90

Prepared by ___________________________ Date 6/10/90
SHORELINE EVALUATION

SEGMENT ST/ PY-008 SUBDIVISION C (3 OF 6) DATE 3/30/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
5T Bald eagle nest (3/1 to 9/1)
4Q National Wildlife Refuge.
See attached Ecological Constraint Sheet for specific constraints and contacts.

SUBDIVISION ECOCLOGICAL CONSTRAINTS:
Avoid disturbance/damage to uncoiled biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS:
If cultural resources are uncovered during shoreline treatment, stop work in the vicinity, mark the location of the find and contact a member of Exxon's Cultural Resource Program immediately (564-3657; 564-3658 or 564-3276).

SHPO SIGNATURE: Charles T. Hage DATE: 4/17/90

OILING CATEGORIZATION:
Wide 110 m: Medium 0 m: Narrow 0 m: V.Light 0 m: No Oil 0 m
Subsurface Oil Observed: Yes X No____ Maximum Depth 20+ cm

RECOMMENDATIONS:

_____No Treatment Recommended  _____Snare/Absorbent Booms
_____Treatment Recommended  _____Oil Snares (pom poms)
_____Manual Pickup  _____Absorbsents (pads, rolls, etc)
_____Bioremediation  _____Spot Washing:_____Wands
_____Tarmat: _____Breakup  _____Beach Cleaner
_____Removal  _____Other (see comments)

COMMENTS: Recommend manual pick up of mousse and bioremediation of broken cover. Conduct treatment activities after 6/1 per above eagle constraints and obtain approval from ADF&G and USFSW.

USE HAND TOOLS TO REMOVE MOUSSE AMONGST BOULDERS. MECHANICAL EQUIPMENT MAY BE APPROPRIATE TO ACCESS MOUSSE. FEASIBILITY OF BUCKET USE

TAG COMMENTS: Must be determined by operations + monitors prior to mobilization.

TAG APPROVAL DATE: 4/17/90
DEE: ANNY TEG XFOC: DATE: 5-3-90
NOAA Zelkowicz H. Stein
USCG
ARCHAEOLOGICAL STANDARD CONSTRAINT

If cultural resources are uncovered, PHONE 564-3274.

APPLICABLE ECOLOGICAL TIME CONSTRAINTS

5T Bald Eagle Nest NO CONSTRAINT. Bald eagle nest is outside Subdivision E of Segment PY-8 and more than 400m from work site.

OTHER ECOLOGICAL CONSIDERATIONS

Avoid any unnecessary disturbance or damage to unloiled biota and substrate.

FOSC Date 6-10-90
Prepared by Date 6/10/90
SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
5T  Active eagle nest (3/1 to 6/1)
4QQ National Wildlife Refuge
Takeoff from and to seaward only. Contact USFWS prior to cleanup.

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid disturbance/damage to unoiled biota and substrate.

ARCHEOLOGICAL CONSTRAINTS:
If cultural resources are uncovered during shoreline treatment, stop work in the vicinity, mark the location of the find and contact a member of Exxon's Cultural Resource Program immediately (564-3657; 564-3658 or 564-3276).

SHPO SIGNATURE:  DATE: 4/17/90

OILING CATEGORIZATION:
Wide 0 m: Medium 99 m: Narrow 0 m: V.Light 0 m: No Oil 0 m: 
Subsurface Oil Observed: Yes X No Maximum Depth 25 cm

RECOMMENDATIONS:
____ No Treatment Recommended  ____ Snare/Absorbent Booms
X ___ Treatment Recommended  ____ Oil Snares (pom poms)
X ___ Manual Pickup  ____ Absorbents (pads, rolls, etc)
X ___ Bioremediation  ____ Spot Washing: __ Wands
___ Tarmat: ___ Breakup  ____ Beach Cleaner
____ Removal  ____ Other (see comments)

COMMENTS: Recommend manual pick up of mousse and bioremediate coat areas as shown on attached sketch map. Work should be conducted after 6/1 with approval from ADF&G and USFWS based on above eagle constraints.

TAG COMMENTS:

TAG APPROVAL DATE: 4/17/90
ADEC  FOSC:  DATE: 5-3-90
EXXON
NOAA
USCG
SHORELINE EVALUATION

SEGMENT ST/ PX-008 SUBDIVISION D (4 OF 6) DATE 3/30/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
5T Bald eagle nest (3/1 to 9/1)
4QQ National Wildlife Refuge.
See attached Ecological Constraint Sheet for specific constraints and contacts.

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid disturbance/damage to uncoiled biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO SIGNATURE: DATE: 4/17/90

OILING CATEGORIZATION:
Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 234 m: No Oil 0 m
Subsurface Oil Observed: Yes No X Maximum Depth

RECOMMENDATIONS:
X No Treatment Recommended Snare/Absorbent Booms
_____ Treatment Recommended Oil Snares (pom poms)
_____ Manual Pickup Absorbents (pads, rolls, etc)
_____ Bioremediation Spot Washing: Wands
_____ Tarmat: Breakup Beach Cleaner
_____ Removal Other (see comments)

COMMENTS:

TAG COMMENTS:

TAG APPROVAL DATE: 4/17/90
ADEC \\
EXXON
NOAA
USCG

DATE: 4-22-90
SHORELINE EVALUATION

SEGMENT ST/ PY-008 SUBDIVISION A (1 OF 6) DATE 3/30/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
5T Bald eagle nest (3/1 to 9/1)
4QQ National Wildlife Refuge.
See attached Ecological Constraint Sheet for specific constraints and contacts.

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid disturbance/damage to unoiled biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO SIGNATURE: [signature] DATE: 4/17/90

OILING CATEGORIZATION:

Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 0 m: No Oil 735 m
Subsurface Oil Observed: Yes No X Maximum Depth

RECOMMENDATIONS:

X No Treatment Recommended
_____Treatment Recommended
_____Manual Pickup
_____Bioremediation
_____Tarmat: ____Breakup
_____Removal

COMMENTS:

TAG COMMENTS:

TAG APPROVAL DATE: 4/17/90
ADEC [signature] DATE: 4/17/90
EXXON [signature] DATE: 4/17/90
NOAA [signature] DATE: 4/17/90
USCG [signature] DATE: 4/17/90
WORK PLAN ADDENDUM

Segment PY-008  Subdivision C  Dated 5/16/90

MODIFICATION

1. REASON FOR MODIFICATION
   - Admiral's requirement.
   - Landowner recommendation.

2. ADJUSTMENT TO WORK PLAN
   - Note eagle nest restrictions; 2 nests in cove will be assessed around 6/1 for activity. Contact USFWS before proceeding.
   - A USFWS representative must be onsite for treatment.
   - Customblend may be used in the ITZ only, after manual removal of mousse, patties, etc.

SHPO APPROVAL NEEDED YES X

SHPO SIGNATURE ____________________________

TAG APPROVAL DATE 5/18/90
ADEC Art Weiner Art Weiner
EXXON Andy Enge
NOAA Copy jets, faxed
USCG Copy jets, faxed

FOSC ____________________________ DATE 5/16/90
WORK PLAN ADDENDUM

Segment PY-008  Subdivision E  Dated 5/16/90

MODIFICATION

1. REASON FOR MODIFICATION
   • FOSC requirement.
   • Landowner recommendation.

2. ADJUSTMENT TO WORK PLAN
   • Note eagle nest restrictions; 2 nests in cove will be assessed around 6/1 for activity. Contact USFWS before proceeding.
   • A USFWS representative must be onsite for treatment.
   • Customblen may be used in the ITZ only, after manual removal of mousse, patties, etc.

SHPO APPROVAL NEEDED YES NO X

SHPO SIGNATURE __________________________

TAG APPROVAL DATE 5/18/90
ADEC  Art Weimer  Art Weimer
EXXON  Andy Tom  __________
NOAA  Gary Peterson  Gary Peterson
USCG  ____________  ____________

FOSC  ____________  DATE 5/18/90
WORK PLAN ADDENDUM

Segment PY-008

Subdivision B

Dated 5/16/90

MODIFICATION

1. REASON FOR MODIFICATION

• FOSC requirement.
• Landowner recommendation.

2. ADJUSTMENT TO WORK PLAN

• Note eagle nest restrictions: nest in cove will be assessed around 6/1 for activity. Contact USFWS before proceeding.
• Custombien may be used in the ITZ area only, near Pits 1 and 2 after manual removal of mousse.
• A USFWS representative must be onsite for treatment.

SHPO APPROVAL NEEDED YES ___ NO ___

SHPO SIGNATURE ______________________

TAG APPROVAL DATE 5/17/90
ADEC Art Weiser Art Weiser
EXXON Avery Small Manolo
NOAA Gary Alarco Gary Alarco
SCG C.S. Hiet Hiet
SHORELINE EVALUATION

SEGMENT ST/ PY-008  SUBDIVISION B (2 OF 6) DATE  3/30/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
5T  Bald eagle nest (3/1 to 9/1)
4QQ  National Wildlife Refuge.
See attached Ecological Constraint Sheet for specific constraints and contacts.

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid disturbance/damage to un原油 biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS:
If cultural resources are uncovered during shoreline treatment, stop work in the vicinity, mark the location of the find and contact a member of Exxon's Cultural Resource Program immediately (564-3657; 564-3658 or 564-3276).

SHPO SIGNATURE:  [Signature] DATE: 4/2/90

OILING CATEGORIZATION:
Wide 0 m: Medium 97 m: Narrow 479 m: V.Light 391 m: No Oil 0 m
Subsurface Oil Observed: Yes X No Maximum Depth 15 cm

RECOMMENDATIONS:
___No Treatment Recommended ___ Snare/Absorbent Booms
X Treatment Recommended  ___ Oil Snares (pom poms)
X Manual Pickup  ___ Absorbents (pads, rolls, etc)
X Bioremediation  ___ Spot Washing: ___ Wands
X Tarmat: ____ Breakup  ___ Beach Cleaner
___ Removal  ___ Other (see comments)

COMMENTS:  Recommend manual pick up of mousse and removal of tarmat in area shown on attached sketch map. Conduct treatment activities after 6/1 per above eagle constraints and obtain approval from ADF&G and USFWS.

TAG COMMENTS:

TAG APPROVAL DATE:  4/17/90
ADEC  [Signature]  DATE:  5-3-90
EXXON  [Signature]
NOAA  [Signature]
USCG  [Signature]
5m$^2$ of asphalt in Unit 2

Subdiv. B

Subdiv. C (wide oiling)

Subdiv. E (medium oiling)

25 m long cobbled beach, no visible oil, no visible oil in 2 pits dug to 20 cm.

PY-8

Map Key: KEH-96
Name: Mann
Date: 3/30/9
SHORELINE EVALUATION

SEGMENT ST PY-008 SUBDIVISION C (3 OF 6) DATE 3/30/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
5T Bald eagle nest (3/1 to 9/1)
4QQ National Wildlife Refuge.
See attached Ecological Constraint Sheet for specific constraints and contacts.

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid disturbance/damage to unoiled biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS:
If cultural resources are uncovered during shoreline treatment, stop work in the vicinity, mark the location of the find and contact a member of Exxon's Cultural Resource Program immediately (564-3657; 564-3658 or 564-3276).

SHPO SIGNATURE: [Signature] DATE: 4/17/90

OILING CATEGORIZATION:
Wide 110m: Medium 0 m: Narrow 0 m: V.Light 0 m: No Oil 0 m
Subsurface Oil Observed: Yes X No____ Maximum Depth 20+ cm

RECOMMENDATIONS:
____ No Treatment Recommended  ____ Snare/Absorbent Booms
X Treatment Recommended  ____ Oil Snares (pom poms)
X Manual Pickup  ____ Absorbents (pads, rolls, etc)
X Bioremediation  ____ Spot Washing: ______ Wands
_____ Tarmat: ______ Breakup  _____ Beach Cleaner
_____ Removal  _____ Other (see comments)

COMMENTS: Recommend manual pick up of mousse and bioremediation of broken cover. Conduct treatment activities after 6/1 per above eagle constraints and obtain approval from ADF&G and USFWS.

TAG COMMENTS: Must be determined by operations & monitors prior to mobilization.

TAG APPROVAL DATE: 4/17/90
ADEC [Signature] DATE: 5-3-90
EXXON [Signature]
NOAA [Signature]
USCG [Signature]
SKETCH MAP

iinner Morning Cove

KEY
- Mouse/P (25% coverage) (cover on stones, mouse is between)

- Mouse/B (55% coverage; note that boulder tops are clean of oil but between them 80% oil cover; cover on stones, mouse is below)

HWL at edge of snow, SSL under snow, last at upper edge of cover/B zone.

LEGEND

1 △
- Pit - No Subsurface Oil

2 △
- Pit - Subsurface Oil

CT/C
- Continuous Distribution

CT/B
- Broken Distribution

CT/P
- Patchy Distribution

CT/S
- Splashed Distribution

Oil Vegetation

Photo location, direction, and number

Oil Character Length (m): AP 0 10 100 20 100 100 100 0
Field Sketch

Subdiv. A

Subdiv. B

Subdiv. C
(wide oiling)

Subdiv. D

Subdiv. E
(medium oiling)

Subdiv. F

25m long cobble
beach, no visible
oil, no visible oil
in 2 pits dug to
20cm.

XXX Wide

/// Medium

--- Narrow

PY-8

ADEC Segment Length: 5970m

Map Key: KEH-96

Name: Mann

7/27/91
SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
5T  Active eagle nest (3/1 to 6/1)
4QQ  National Wildlife Refuge
Takeoff from and to seaward only. Contact USFWS prior to cleanup.

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid disturbance/damage to unoiled biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS:
If cultural resources are uncovered during shoreline treatment, stop work in the vicinity, mark the location of the find and contact a member of Exxon's Cultural Resource Program immediately (564-3657; 564-3658 or 564-3276).

OILING CATEGORIZATION:
Wide 0 m: Medium 99 m: Narrow 0 m: V.Light 0 m: No Oil 0 m
Subsurface Oil Observed: Yes X No Maximum Depth 25 cm

RECOMMENDATIONS:
X Treatment Recommended Snare/Absorbent Booms
X Manual Pickup Oil Snare (pom poms)
X Bioremediation Absorbents (pads, rolls, etc)
Tarmac Breakup Spot Washing Wands
Removal Beach Cleaner

COMMENTS: Recommend manual pick up of mousse and bioremediate coat areas as shown on attached sketch map. Work should be conducted after 6/1 with approval from ADF&G and USFWS based on above eagle constraints.

TAG COMMENTS:

TAG APPROVAL DATE: 4/17/90
ADEC  EXXON  NOAA  USCG

FOSC:  DATE: 5-3-90
Subdiv. A
Subdiv. B
Subdiv. C (wide oiling)
Subdiv. D
Subdiv. E (medium)
Subdiv. F

25m long cobble beach, no visible oil, no visible oil in 2 pits dug to 20cm.

Map Key: KEK-96
Name: Mann
Date: 3/30/90

XXX Wide
/// Medium
---- Narrow
TTTT Very Light

ADEC Segment Length: 5970m
SHORELINE EVALUATION

SEGMENT ST/ PY-08 SUBDIVISION F (6 OF 6) DATE 3/30/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
5T Active eagle nest (3/1 to 9/1)
40Q National Wildlife Refuge
Takeoff from and to seaward only. Contact USFWS prior to cleanup.
See attached Ecological Constraints Sheet for specific constraints and contacts.

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid disturbance/damage to unoiled biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS: If cultural resources are uncovered during shoreline treatment, stop work in the vicinity, mark the location of the find and contact a member of Exxon's Cultural Resource Program immediately (564-3657; 564-3658 or 564-3276).

SHPO SIGNATURE: [Signature] DATE: 3/30/90

OILING CATEGORIZATION:
Wide 0 m; Medium 0 m; Narrow 255 m; V.Light 1067m: No Oil 0 m
Subsurface Oil Observed: Yes__ No X__ Maximum Depth_____

RECOMMENDATIONS:
X No Treatment Recommended ___ Snare/Absorbent Booms
X Treatment Recommended ___ Oil Snares (pom poms)
X Manual Pickup ___ Absorbents (pads, rolls, etc)
_____ Bioremediation ___ Spot Washing: Wands
_____ Tarmat: Breakup ___ Beach Cleaner
_____ Removal ___ Other (see comments)

COMMENTS:
MANUAL PICKUP OF MUSSE AS INDICATED ON MAP.

TAG COMMENTS:

TAG APPROVAL DATE: 4/17/90
ADEC ART HENREITER DATE: 5/12/90
EXXON ANNY TEM SWALLEN
NOAA Paul Wiersel DATE: 5/12/90
USCG KENNETH HERRE DATE: 5/12/90

USFWS MAP to be on scene.
1991 MAYSAP EVALUATION

SEGMENT:  _PY 008_  SUB:  _C_  REGION:  _KEN_  SURVEY DATE:  5/16/91

ENVIRONMENTAL SENSITIVITIES:
Work Window(s)  OPEN

Ecological/Constraints (see page two for details)  NONE

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO Signature:  ________________________  Date:  __________________

RECOMMENDATIONS:

TREATMENT REQUIRED (Y or N)  N

Manual Pickup (Check as Req.)  ______
Spot Washing  ______
Bio-Customblen Only  ______
Bio-Inipol/Customblen  ______
Other  ________________________
Other  ________________________

COMMENTS:

INITIAL:  ___________________________________________________________

TAG:  ____________________________________________________________

FOSC:  _____________________________________________________________

TAG APPROVAL DATE:  ___________  FOSC APPROVAL DATE:  ___________

ADEC:  ________________________  FOSC:  ________________________

EXXON:  ________________________

USCG:  ________________________

NOAA:  ________________________
MAVSA FIELD SHORELINE COMMENT SHEET

AM NO. 4 SEGMENT PY 008 SUBDIVISION C DATE MAY 16 1991

ADEC
NAME: Clara J. Crosby
SIGNATURE: Clara J. Crosby

☐ TREATMENT RECOMMENDED - John Hardister informed me of the condition of this beach in 1989. 4 weeks of watching occurred here on Subsy 02 E. For contrast, the current condition of the beach looks good. However, in areas 42 & 43, manual removal can be conducted to finish up accessible surface debris. Area 42 was not fully addressed due to the point of inaccessibility. Area 42 cleanup was more sporadic. The 25% cleanup in 42 included a concentrated area of MG & HSO up to 40 m in size between boulders. This subdivision should be worked in conjunction with Subsy. 02 E. less than one day est. V1 434.2 ft. 47 C.E.

EXXON
NAME: George P. Styles
SIGNATURE:

☐ TREATMENT RECOMMENDED - The MS remaining is very patchy scattered around the edge of the large boulder. Very little oil would be recovered if worked.

LANDMANAGER
NAME: J. P. Hardister
OF USFWS
SIGNATURE: J. P. Hardister

☐ TREATMENT RECOMMENDED - I was on this beach segment during the mechanical and working operations that occurred in July 1989. Cleanup has been effective. Some patches of resistant remain between the allure and boulder, some of which was removed during the survey. For further cleanup recommendation this was a tough call to make. On balance, a relatively little amount remains that could be mechanically removed because of the nature of the terrain. Thus, I believe the scale could be targeted toward NTR. I have seen this beach when it was coated with oil. It was dirty.

USCG/NOAA
NAME: W. Mohr/MA Davidson
SIGNATURE:

☐ TREATMENT RECOMMENDED - Approaching oiling did exist. Top noun between large boulder however, recovery of any product between beach & such rock is that mechanically feasible and practicable. No contribution to or effect to public health or environment.

[Signature]
**MAYSAP SHORELINE OILING SUMMARY**

| SEGMENT | PY. 306 |
| SUBDIVISION | C |
| DATE | MAY 11, 1991 |

**Team No. 1**
- **OG:** John Sample
- **BG:** Jim Barry
- **ADEC:** Crosby
- **BIO:** Dasilva
- **LANDMANAGER:** Herbst
- **USCG/NOAA:** McManus/McDonald

**Surveyed From:**
- Foot
- Boat
- Helo

**Surveyed From:**
- **TIDE LEVEL:** -1.0 ft to -3.0 ft
- **ENERGY LEVEL:**
  - H
  - M
  - L

**Surveyed From:**
- **WEATHER:**
  - Sun
  - Clouds
  - Fog
  - Rain
  - Snow

**Total Length Shoreline Surveyed:** 110 m

**Near Shore Sheen:**
- **BR:** 0
- **RB:** 0
- **SL:** X
- **NONE:** 0

**Est. Oil Category Length:**
- **W:** -- m
- **M:** -- m
- **N:** -- m
- **VL:** 42 m
- **US:** -- m

**Surface Oil Character**

<table>
<thead>
<tr>
<th>LOC</th>
<th>SURFACE OIL CHARACTER</th>
<th>SURFACE SEDIMENT</th>
<th>SHORE SLOPE</th>
<th>AREA</th>
<th>ZONE</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>P&lt;sub&gt;i&lt;/sub&gt;, &lt;sub&gt;p&lt;/sub&gt;, &lt;sub&gt;c&lt;/sub&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A2</td>
<td>S</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A3</td>
<td>S</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Distribution:**
- **C:** 91-100%
- **B:** 81-90%
- **P:** 61-80%
- **S:** 1-10%
- **T:** <1%

**Slope:**
- **V:** Vertical
- **H:** High Angle
- **M:** Medium Angle
- **L:** Low Angle

**Photo Roll:**
- MAYSAP-
- Frames

**Pit NO.**
- **PIT DEPTH (cm):**
  - 1: 30
  - 2: 20
  - 3: 15
  - 4: 20
  - 5: 20

**Subsurface Oil Character**

<table>
<thead>
<tr>
<th>PIT NO.</th>
<th>OILED ZONE</th>
<th>CLEAN BELOW LEVEL</th>
<th>SHEEN COLOR</th>
<th>PIT ZONE</th>
<th>SURFACE-SUBSURFACE SEDIMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>X</td>
<td>-</td>
<td>-</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>X</td>
<td>-</td>
<td>-</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>X</td>
<td>-</td>
<td>-</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>X</td>
<td>-</td>
<td>-</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>X</td>
<td>-</td>
<td>-</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

**Sheen Color:**
- **B:** Brown
- **R:** Rainbow
- **S:** Silver
- **N:** None

**OG Comments:**

Shal be come 2 eb/bo on bold/ch and bedrock
areas. Oilline an indicator on map. A1 was
not taped but A3. A3 were worked on but not com-
pleted up to become of nite & troubleshooting. Pack of
\(\text{\textcopyright No. 97/98} \)
RAYSAP BIOLOGICAL SUMMARY  FORM

TEAM # 4
SEGMENT # PYO08
SUBDIVISION C
SEA STATE Calm

DATE/TIME May 16, 1991 0821-0921
TIDAL HEIGHT (Range) -1.0 -> -3.0
BIOLOGIST JIM BARRY
WIND SPEED/DIRECTION Calm, cloudy

COMMENTS / OBSERVATIONS - OILED SUBDIVISIONS

A1 Oil (AP,MS) is in the high intertidal zone. Littorine snails are moderately abundant as adults, juveniles, and eggs, even directly on the remaining oil. Amphipods are sparse in this area. Green filamentous algae is present, but not densely abundant as it is on the SW corner of the beach. This cobble beach has only sparse cover of invertebrates and algae, except in the low zone or on the bedrock outcrops, which have moderately dense patches of mussels and barnacles.

Manual cleanup was performed at this site. Additional cleanup will not adversely affect the beach biota, so long as the bedrock mussel beds are protected from disturbance.

A2, A3 Oil (MS, HSR) is present in an area of the cobble beach in the high to medium intertidal zone. Green filamentous algae is sparse on the cobble in this area. Fucus is present on some of the cobble, as are barnacles, littorine snails, and limpets. Amphipods are abundant under some cobble. Below this area, the intertidal flora is much richer, with dense coverage of red and brown algae. Invertebrates, such as urchins, bryozoans, various worms, and snails are abundant under the beach cobble of the low zone.

Manual pickup was performed at this site during the survey. Additional manual pickup will not harm the biota at the site.

(continued)

WILDLIFE OBSERVATIONS - Completed on all subdivisions

<table>
<thead>
<tr>
<th>BIRDS</th>
<th># OF SPECIES</th>
<th>TOTAL BIRDS</th>
<th>FISH OBSERVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eagles</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Seabirds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waterfowl</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gulls/Kittiwakes</td>
<td>2</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Shorebirds</td>
<td>1</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Corvids</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Other Birds</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MARINE MAMMALS</th>
<th># OBSERVED</th>
<th>SPECIES</th>
<th># OBSERVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sea Otters</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pinnipeds (specify)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whales (specify)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Shoreline subdivision map showing important biological features attached.

Reviewed: 5/91

(Handwritten notes)
PY008-C Biology Summary, continued

4. Red Algae - Rhodophyta
   Bangia fuscopurpurea, Endocladiamuricata, Halosaccion glandiforme,
   Lithothamnion sp., Membranoptera dimorpha, Odonthalia floccosa, Palmaria
   palmata, Petrocelis sp., Porphyra sp., Rhodomela larix

5. Higher Plants - Leymus mollis (beach rye grass)

II. Marine Animals

1. Sponges - Porifera - Halichondria bowerbanki?
2. Anemones - Anthopleura artemesia, Epiactis prolifera?, Metridium senile,
   Urticina crassicornis,
6. Nemerteans - Ribbon Worms - Emplectonema gracile

8. Polychaetes
   Glyceridae
   Nepthidae
   Nereidae - Nereis spp.
   Serpulidae - Serpula sp., Crucigera sp., Eudistylia polymorpha
   Spiorbidae - Spirobranchus sp.
9. Peanut worms - Sipunculids - Phascolosoma agassizii
10. Crustaceans
    a. Amphipods - Orchestia sp.?, Traskorchestia traskiana
    b. Barnacles - Balanus glandula, Semibalanus cariosus
    c. Crabs - Haplogaster sp., Paguridae (hermit crabs)
    d. Isopods - Cirdana harfordi, Idotea wosnesenskii, Gnornimorsphaeroma
       oregonensis

11. Mollusca
    a. Chitons - Cryptochiton stelleri, Mopalia sp., M. mucosa, Katharina
       tunicata, Tonicella lineata,
    b. Snails - Gastropods
       Littorina sitkana, L. keenae, Nucella lamellosa, N. lima,
       Searlesia dira
    c. Limpets - Lottia digitalis, L. persona, Tectura fenestrata, T.
       persona, T. scutum, Siphonaria thersites
    d. Bivalves - Chlamys hastata, Mytilus edulis, Pododesmus cepio

12. Echinoderms
    a. Brittle Stars - Ophiolius aculeatus?, Ophiobatis spiculata?,
       Amphipholis?
    b. Sea stars - Crossaster papposus, Derasterias imbricata, Henricia
       leviuscula, Leptasterias hexactis, Orthasterias keohleri,
       Pisaster ochraceus, Pycnopodia helianthoides, Solaster
dawsoni,
    c. Sea Cucumbers - Holothurians - Eupentacta sp.
    d. Urchins - Strongylocentrotus droebachiensis


15. Fishes
    Cottidae -
    Stichaeidae - Xiphister atropurpureus, X. mucosus

IV. Birds - Bald Eagle (1), Glaucous-winged Gull (5), Black-legged Kittiwake (3)
        Western Sandpiper (3) Fox Sparrow (1), Crow (1)
General Features of PY008-C

This is a cobble beach at the inner portion of a small cove. The beach was heavily oiled and has experienced extensive cleanup efforts. The moderately rounded cobble suggest that medium sized waves occasionally or frequently scour the shore. The high to middle zone cobble have only sparse to moderate coverage or density of biota. The low zone has thick red and brown algal cover.

Littorine snail densities are patchy and often dense in the cobble beach. Recruitment of littorines, amphipods, mussels, barnacles, and several species of algae is evident.

Miscellaneous Observations

An adult bald eagle picked a dead kittiwake from the water and ate it in a nearby tree. Two other dead gulls were seen on the water.

General Zonation Pattern along PY008-C

<table>
<thead>
<tr>
<th>Biota:</th>
<th>Tide Level</th>
<th>Supratidal</th>
<th>Upper</th>
<th>Middle</th>
<th>Low</th>
<th>Subtidal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil Spatters</td>
<td>- - - +++ -+++ - - - -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black Lichen</td>
<td>-+++*-----</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barnacles (Balanus)</td>
<td>- - - - - ++ - - + + - - + -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Limpets/Littorines</td>
<td>- - - - - + + - + + - - - -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crustose Red Algae (Hildenbrandia)</td>
<td>-+++---+++---+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rockweed (Fucus)</td>
<td>- - -+++ - ++ - - - -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Red Algae (Endocladia/other)</td>
<td>- + + - + -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mussels (Mytilus)</td>
<td>- - ++ <em>-</em> - -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Green Algae (Ulva/other)</td>
<td>- -++++ - -++++ - - - +++</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Palmaria and other red algae</td>
<td>- -++++ - -++++ - - - +++</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Red Algae</td>
<td>- -++++ - -++++ - - - +++</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upright Brown Algae (not Fucus)</td>
<td>- -++++ - -++++ - - - +++</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Encrusting bryozoans</td>
<td>- -++++ - -++++ - - - +++</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Legend: (−) Sparse to rare, (+) Moderate, (*) Abundant

List of Species from PY008-C

A. Marine Plants
1. Diatoms, Blue Greens
2. Green Algae - Chlorophyta
   - Cladophora sp., Enteromorpha sp., Prasiola meridionalis, Ulva sp., Urospora sp.
3. Brown Algae - Phaeophyta
   - Alaria marginata, Ectocarpus sp., Fucus distichus, Hildenbrandia sp., Laminaria groenlandica, Ralfsia sp., Syctosiphon lomentaria
SKECH MAP
14008-C
16 MAY 1991
8:21 - 9:21 AM
JP Barney

A3/A2
SPARSE BARE 
GREEN FILAMENTOUS ALGAE 
SPARSE 
GREEN 
FILAMENTOUS ALGAE
SOME 
BROWN ALGAE, AMPHIPODS

MODERATE AMPHIPODS
MODERATE USTERINES W/EGLS ON OIL
SPARSE BARNACLES, GREEN FILAMENTOUS 
ALGAE, PATCHY MUSSELS BELOW OR
BEHIND, LOW INTENTION ZONE
WITH RICH RED & BROWN ALGAE
COMMUNITY

20

Meters

Dense Red & Brown Algae

Dense Green Algae

Cystose Red Spots

Drift loss
On Boulder

A1

A2

Red & Brown Algae

Mussels Patchy

Barnacles

System

Silt area
1991 MAYSAP EVALUATION

SEGMENT: PY 008  SUB: C  REGION: KEN  SURVEY DATE: 5/16/91

ENVIRONMENTAL SENSITIVITIES:
Work Window(s) OPEN

Ecological/Constraints (see page two for details)  NONE

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO Signature:  Date: 5/30/91

RECOMMENDATIONS:

<table>
<thead>
<tr>
<th>TREATMENT REQUIRED (Y or N)</th>
<th>INITIAL</th>
<th>TAG</th>
<th>FOSC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manual Pickup (Check as Req.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spot Washing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bio-Customblen Only</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bio-Inipol/Customblen</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

COMMENTS:

INITIAL:________________________________________________________

TAG: __________________________________________________________

FOSC: __________________________________________________________

TAG APPROVAL DATE: May 29 1991  FOSC APPROVAL DATE: 6/15/91

ADEC  EXXON  USCG  NOAA

E E Page  CDR  USCG  Chief of Staff  FOSC

The site is not ready for further treatment.
**MAYSAP FIELD SHORELINE COMMENT SHEET**

**TEAM NO.** 4  **SEGMENT** PV 008  **SUBDIVISION** C  **DATE** May 16, 1991

**NAME** Clara S. Crosby  **SIGNATURE** Clara S. Crosby

**EXXON** George P. Stiles  **SIGNATURE**

**LANDMANAGER** John P. Hardister  **SIGNATURE** John P. Hardister

**USCG/NOAA** M. Michael McDavid  **SIGNATURE**

**NTR**

- Treatment recommended – John Hardister informed me of the condition of this beach in 89-4 weeks of washing occurred here on Subdiv B & C. In contrast, the current condition of the beach looks good. However, in areas 12 & 13, manual removal can be conducted to finish up accessible surface algae. Area 12 was not fully addressed to the point of inaccessibility. Area 12 coverage was more sporadic. The 15% coverage in area 12 included concentrated areas of M. E. Hps and 1 m. in dia. between boulders. Thin subdivision should be worked in conjunction with Subdiv B & C less than one day ext. by a crew of 6.

**NTR**

- The MS remains is very patchily scattered around the edge of the large boulders. Very little oil would be recovered if worked.

**NTR**

- I was on the beach segment during the mechanical and washing operations that occurred in July 89. Cleaning has been effective. Some patches of seaweed remain between the rocks and boulders; some of which was removed during the survey. For further cleaning recommendations, this was a tough call to make. On balance, a relatively little amount remains that could be mechanically removed because of the nature of the terrain; thus, I believe the scale could be tagged toward NTR. I have seen this beach when it was coated with oil. It was dirty!
# Maysap Shoreline Oiling Summary

**Team No.:** 11  
**Og:** J. C. Gunter  
**Bio:** J. Barry  
**Adec:** R. Crosby  
**Landmanager:** Headstew  
**USCG/NOAA:** Mc Mahon/Mc Donald

**Segment:** PY. 008  
**Subdivision:** C  
**Date:** May 16, 1991  
**Time:** 08:30 to 09:00  
**Tide Level:** 1.0 ft. to 3.0 ft.  
**Energy Level:**  

## Surveyed From:
- **Foot:**  
- **Boat:**  
- **Helo:**  

## Weather:
- **Sun:**  
- **Clouds:**  
- **Fog:**  
- **Rain:**  
- **Snow:**

## Total Length Shoreline Surveyed: 110 m  
**Near Shore Sheen:**  
- **BR:**  
- **RB:**  
- **SL:**  
- **None:**

## Estimated Oil Category Length:
- **W:** _m  
- **M:** _m  
- **N:** _m  
- **VL:** 42 m  
- **NO:** 68 m  
- **US:** _m

## Surface Oil Character

<table>
<thead>
<tr>
<th>LOC</th>
<th>Oiled</th>
<th>Sediment</th>
<th>Slope</th>
<th>Width</th>
<th>Length</th>
<th>Zone</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td></td>
<td></td>
<td></td>
<td>10</td>
<td>20</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>A2</td>
<td>S</td>
<td></td>
<td></td>
<td>10</td>
<td>20</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>A3</td>
<td>S</td>
<td></td>
<td></td>
<td>20</td>
<td>12</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

**Surface Subsurface Oil Character**

<table>
<thead>
<tr>
<th>Pit</th>
<th>Depth</th>
<th>Oiled Zone</th>
<th>Clean Below</th>
<th>H2O Level</th>
<th>Sheen Color</th>
<th>Pit Zone</th>
<th>Surf/Subsurface Sediments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Sheen Color:**  
- **B:** Brown  
- **R:** Rainbow  
- **S:** Silver  
- **N:** None

**OG Comments:**  
Shore come of 16/30 on bed ofch and Bedrock or water as indicated on map. A1 was picked up but A2 and A3 were not picked up because of high tides and lack of time.
Sketch Map

Py. 008. C
DM Semple
May 13/91
08:20 - 09:00.

A

MS/HSOR
2x10. 25%

A1

MS, 10x3.0
around line
of 80%, <5%

A2

3x2 AP/HS
20%

Pl1

Worked

Bd/C0

ι

Sleep Bedrock

Reviewed 5.21.91
Reviewed: F.W. Shuttle
MAYSAP BIOLOGICAL SUMMARY FORM

TEAM # 4
SEGMENT #: PY008
SUBDIVISION C
SEA STATE Calm

DATE/TIME May 16, 1991 0821 - 0921
TIDAL HEIGHT (Range) -1.0 => -3.0
BIOLIST JIM BARRY
WIND SPEED/DIRECTION Calm, cloudy

COMMENTS / OBSERVATIONS - OILED SUBDIVISIONS

A1 Oil (AP, MS) is in the high intertidal zone. Littorine snails are moderately abundant as adults, juveniles, and eggs, even directly on the remaining oil. Amphipods are sparse in this area. Green filamentous algae is present, but not densely abundant as it is on the SW corner of the beach. This cobble beach has only sparse cover of invertebrates and algae, except in the low zone or on the bedrock outcrops, which have moderately dense patches of mussels and barnacles.

Manual cleanup was performed at this site. Additional cleanup will not adversely affect the beach biota, so long as the bedrock mussel beds are protected from disturbance.

A2, A3 Oil (MS, HSR) is present in an area of the cobble beach in the high to medium intertidal zone. Fucus is present on some of the cobble, as are barnacles, littorine snails, and limpets. Amphipods are abundant under some cobble. Below this area, the intertidal flora is much richer, with dense coverage of red and brown algae. Invertebrates, such as urchins, bryozoans, various worms, and snails are abundant under the beach cobble of the low zone.

Manual pickup was performed at this site during the survey. Additional manual pickup will not harm the biota at the site.

WILDLIFE OBSERVATIONS - Completed on all subdivisions

<table>
<thead>
<tr>
<th>BIRDS</th>
<th># OF SPECIES</th>
<th>TOTAL BIRDS</th>
<th>FISH OBSERVED SPECIES PRESENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eagles</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Seabirds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waterfowl</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gulls/Kittiwakes</td>
<td>2</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Shorebirds</td>
<td>1</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Corvids</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Other Birds</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

MARINE MAMMALS

<table>
<thead>
<tr>
<th>SPECIES</th>
<th># OBSERVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sea Otters</td>
<td></td>
</tr>
<tr>
<td>Pinnipeds (specify)</td>
<td></td>
</tr>
<tr>
<td>Whales (specify)</td>
<td></td>
</tr>
</tbody>
</table>

LAND MAMMALS

<table>
<thead>
<tr>
<th>SPECIES</th>
<th># OBSERVED</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Shoreline subdivision map showing important biological features attached.
PY008-C Biology Summary, continued

4. Red Algae - Rhodophyta
   Bangia fuscopurpurea, Endocladia muricata, Halosaccion glandiforme,
   Lithothamnion sp., Membranoptera dimorpha, Odonthalia floccosa, Palmaria
   palmata, Petrocelis sp., Porphyra sp., Rhodomela larix

5. Higher Plants - Leymus mollis (beach rye grass)

II. Marine Animals
1. Sponges - Porifera - Halichondria bowerbankii?
2. Anemones - Anthopleura artemesia, Epiactis prolifera?, Metridium senile,
   Urticina crassicornis,
6. Nemertean Worms - Ribbon Worms - Emplectonema gracile
8. Polychaete Worms
   Glyceridae
   Nepthidae
   Nereidae - Nereis spp.
   Serpulidae - Serpula sp., Crucigeria sp., Eudistylia polymorpha
   Spirobranchidae - Spirorbis sp.
9. Peanut worms - Sipunculids - Phascolosoma agassizii
10. Crustaceans
   a. Amphipods - Orchestia sp.?, Traskorchestia traskiana
   b. Barnacles - Balanus glandula, Semibalanus cariosus
   c. Crabs - Haplogaster sp., Paguridae (hermit crabs)
   d. Isopods - Cirdana harfordi, Idotea wosnesenskii, Gnorimorsphaeroma
     oregonensis
11. Mollusca
   a. Chitons - Cryptochiton stelleri, Mopalia sp., M. mucosa, Katharina
      tunicata, Tonicella lineata,
   b. Snails - Gastropods
      Littorina sitkana, L. keenae, Nucella lamellosa, N. lima,
      Searlesia dira
   c. Limpets - Lottia digitalis, L. persona, Tectura fenestrata, T.
      persona, T. scutum, Siphonaria thersites
   e. Bivalves - Chlamys hastata, Mytilus edulis, Pododesmus cepio
12. Echinoderms
   a. Brittle Stars - Ophiolus aculeatus?, Ophiothrix spiculata?,
      Amphipholis?
   b. Sea stars - Crossaster papposus, Dermasterias imbricata, Henricia
      leviuscula, Leptasterias hexactis, Orthasterias keohleri,
      Pisaster ochraceus, Pycnopodia helianthoides, Solaster
      dawsoni,
   c. Sea Cucumbers - Holothurians - Eupentacta sp.
   d. Urchins - Strongylocentrotus droebachiensis
15. Fishes
   Cottidae -
   Stichaeidae - Xiphister atropurpureus, X. mucosus

IV. Birds -
   Bald Eagle (1), Glaucous-winged Gull (5), Black-legged Kittiwake (3)
   Western Sandpiper (3) Fox Sparrow (1), Crow (1)
PYOOB-C Biology Summary, continued

General Features of PYOOB-C

This is a cobble beach at the inner portion of a small cove. The beach was heavily oiled and has experienced extensive cleanup efforts. The moderately rounded cobble suggest that medium sized waved occasionally or frequently scour the shore. The high to middle zone cobble have only sparse to moderate coverage or density of biota. The low zone has thick red and brown algal cover.

Littorine snail densities are patchy and often dense in the cobble beach. Recruitment of littorines, amphipods, mussels, barnacles, and several species of algae is evident.

Miscellaneous Observations

An adult bald eagle picked a dead kittiwake from the water and ate it in a nearby tree. Two other dead gulls were seen on the water.

General Zonation Pattern along PYOOB-C

<table>
<thead>
<tr>
<th>Biota: Marine Plants</th>
<th>Tide Level</th>
<th>Supratidal</th>
<th>Upper</th>
<th>Middle</th>
<th>Low</th>
<th>Subtidal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil Spatters</td>
<td></td>
<td>- - +++</td>
<td>+++</td>
<td>- -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black Lichen</td>
<td>- +++++</td>
<td>- ++</td>
<td>- -</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barnacles (Balanus)</td>
<td>- - +</td>
<td>+ ++</td>
<td>- -</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Limpets/Littorines</td>
<td>- + +</td>
<td>++ +</td>
<td>- -</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crustose Red Algae (Hildenbrandia)</td>
<td>+++-+</td>
<td>++-+</td>
<td>- -</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rockweed (Fucus)</td>
<td>- - +</td>
<td>++ +</td>
<td>- -</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Red Algae (Endocladia/other)</td>
<td>+ + +</td>
<td>+ + -</td>
<td>- -</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mussels (Mytilus)</td>
<td>- + ++</td>
<td>* * -</td>
<td>- -</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Green Algae (Ulva/other)</td>
<td>- - +++++</td>
<td>- +++-</td>
<td>- -</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Palmaria and other red algae</td>
<td>- +++++</td>
<td>- +++++++</td>
<td>- -</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Red Algae</td>
<td>- +++++++</td>
<td>- +++++++</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upright Brown Algae (not Fucus)</td>
<td>- - - -+++</td>
<td>- +++++++</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Encrusting bryozoans</td>
<td>- +++++++</td>
<td>- - - -+++</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Legend: (-) Sparse to rare, (+) Moderate, (*) Abundant

List of Species from PYOOB-C

A. Marine Plants
1. Diatoms, Blue Greens
2. Green Algae - Chlorophyta
   - Cladophora sp., Enteromorpha sp., Prasiola meridionalis, Ulva sp., Urospora sp.
3. Brown Algae - Phaeophyta
   - Alaria marginata, Ectocarpus sp., Fucus distichus, Hildenbrandia sp., Laminaria groenlandica, Ralfsia sp., Syctosiphon lomentaria
MOUNTAIN HUMS
DENSE RED & BROWN ALGAE

A1

RED & BROWN ALGAE
CRYSTAL REDS

FUCUS

A2

CRUSTOSE REDS
DENSE GREEN ALGAE

A3

SPARSE BANNALETS
GREEN FILAMENTOUS ALGAE SPARSE
SPARSE FUCUS, RED ALGAE, SOME
BROWN ALGAE, AMPHIPODS

MODERATE AMPHIPODS
MODERATE LITTORINES W/EAGS ON OIL
SPARSE BANNALETS, GREEN FILAMENTOUS
ALGAE, PATCHY MUSSELS BELOW OR
BETWEEN, LOW INTENTIONAL ZONE
WITH RICH RED & BROWN ALGAE
COMMUNITY.

0
20

SLIDE AREA

DRIFT LOGS ON BOLDER

1316 SKETCH MAP
P4008-C
16 MAY 1991
821-921 AM
JP BANAY

A2, A3

SPARSE BANNALETS
GREEN FILAMENTOUS ALGAE SPARSE
SPARSE FUCUS, RED ALGAE, SOME
BROWN ALGAE, AMPHIPODS
1991 MAYSAP EVALUATION

SEGMENT: PY 008  SUB:  D  REGION:  KEN  SURVEY DATE:  5/16/91

ENVIRONMENTAL SENSITIVITIES:
Work Window(s)  OPEN

Ecological/Constraints (see page two for details)  NONE

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO Signature: Timothy O. Smith  Date:  6/01/91

RECOMMENDATIONS:

TREATMENT REQUIRED (Y or N)  N

Manual Pickup (Check as Req.)
Spot Washing
Bio-Customblen Only
Bio-Inipol/Customblen
Other

COMMENTS:
INITIAL:______________________________

TAG:---------------------------------------------------

FOSC:_________________________________

TAG APPROVAL DATE:  MAY 31 1991  FOSC APPROVAL DATE:  6/13/91

ADEC  John  EXXON  USCG  NOAA

FOSC  E. E. PAGE, CDR, USCG

CHIEF OF STAFF, FOSC
NAME: Clara J. Crosby  
SIGNATURE: Clara J. Crosby

Very P. oiling within Subdivision.

EXXON
NAME: George P. Stiles  
SIGNATURE: George P. Stiles

Parallel with ADFC very small amount of oil seen.

NDMANAGER
NAME: John P. Hardister of USFWS  
SIGNATURE: John P. Hardister

Little oil remains on that subsection. Cleanup not recommended.

USCG/NOAA
NAME: J. McNaught  
SIGNATURE: J. McNaught

There did exist some TBP which was cleaned by the VECO crew. Little or no oil remains to warrant further clean-up.

NOAA/Dwight A. MacDonnal  
Signature: Dwight A. MacDonnal
MAYSAP SHORELINE OILING SUMMARY

TEAM NO. 4
OG J.Semple
ADEC R.Crosby
MON 5/16/91

BIO: J. Barry
LANDMANAGER: Hardesty for USEWS
USCG/NOAA: McMichael/Beal

SEGMENT: P4 088
SUBDIVISION: D
DATE: MAY 16, 1991

TIME: 09:00 to 09:20
TIDE LEVEL: 3.0 ft. to 3.0 ft.
ENERGY LEVEL: M

SURVEYED FROM: FOOT BOAT HELO
WEATHER: SUN CLOUDS FOG RAIN SNOW
OVERSHORESHEEN: NONE

TOTAL LENGTH SHORELINE SURVEYED: 234 m
NEAR SHORE OIL: NONE

EST. OIL CATEGORY LENGTH:

<table>
<thead>
<tr>
<th>L</th>
<th>SURFACE OIL CHARACTER</th>
<th>SURFACE SEDIMENT TYPE</th>
<th>SHORE SLOPE VERTICAL</th>
<th>WIDTH m</th>
<th>LENGTH m</th>
<th>ZONE S MI LI</th>
</tr>
</thead>
<tbody>
<tr>
<td>OC</td>
<td>AP MS TB SO SOR CV CT ST FL DB NO</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

PICKED UP

DISTRIBUTION: C = 91-100%; 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 # MAYSAP

<table>
<thead>
<tr>
<th>PIT NO. OIL CHARACTER SUBSURFACE</th>
<th>OILED ZONE</th>
<th>CLEAN H2O SHEEN ZONE</th>
<th>PIT SURFACE-OIL SUBSURFACE</th>
<th>SURFACESEDIMENTS</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>(cm)</td>
<td>OP</td>
<td>HORIZON</td>
<td>MORLORD</td>
<td>OF TR NO</td>
<td>cm-cm</td>
</tr>
<tr>
<td>000</td>
<td>ROCK</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

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

OG COMMENTS:

Shoreline consists of rounded sloping bedrock, large angular boulders and locally associated with fault, in the bedrock. Occasional CV exceeding 10 feet found.

REVIEWED: F.W. 5/21/91
<table>
<thead>
<tr>
<th>O&amp; Sketch Map</th>
<th>Legend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Py. 008 o D</td>
<td>Rounded</td>
</tr>
<tr>
<td>J M Sampels</td>
<td>Sloping Bedrock</td>
</tr>
<tr>
<td>MAY 16/91</td>
<td>Vegetated</td>
</tr>
<tr>
<td>09 00 - 0920</td>
<td>Hinterland</td>
</tr>
</tbody>
</table>

Diagram:
- 1 CV splatter 10m downslope
- Scoured by:
- Water on bedrock

Metro:

0 50

Reviewed: S.21 G.
Reviewed: F.W. S/21/0
MAYSAP BIOLOGICAL SUMMARY FORM

TEAM # 4   DATE/TIME May 16, 1991 0920 - 0921
SEGMENT # PY008   TIDAL HEIGHT (Range) -3.0 => -3.0
SUBDIVISION D   BIOLOGIST JIM BARRY
SEA STATE Calm   WIND SPEED/DIRECTION Calm, cloudy

COMMENTS / OBSERVATIONS - OILED SUBDIVISIONS

Oil-related Comments

No oil was found on PY008-D

General Features of PY008-D

This short segment is a headland between two small coves PY008-C, PY008-E. The shore is nearly entirely bedrock outcrops and headlands that slope steeply to the subtidal. The shore is exposed to low to moderate waves. The biota have a typical profile for these shore, with black lichen in the high to supratidal zone, and increasing densities of algae and invertebrates towards the low shore. Green algae is very abundant in the high zone, along with scattered limpets, barnacles, littorine snails, and mussels in crevices. Fucus is moderately to densely abundant in the mid-shore. Red algae (mainly Odonthalia, Palmaria, Microcladia), green algae (Ulva), and brown algae dominate the low intertidal and subtidal. Invertebrates are very diverse and abundant in the low shore. Many species of sea stars, crustaceans, sea anemones, and other groups are very common.

(continued)

WILDLIFE OBSERVATIONS - Completed on all subdivisions

<table>
<thead>
<tr>
<th>BIRDS</th>
<th># OF SPECIES</th>
<th>TOTAL BIRDS</th>
<th>FISH OBSERVED SPECIES PRESENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eagles</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Seabirds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waterfowl</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gulls/Kittiwakes</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Shorebirds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corvids</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Birds</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MARINE MAMMALS</th>
<th># OBSERVED</th>
<th>LAND MAMMALS SPECIES</th>
<th># OBSERVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sea Otters</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pinnipeds (specify)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whales (specify)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Shoreline subdivision map showing important biological features attached.
List of Species from PYOOB-D

A. Marine Plants
1. Diatoms, Blue Greens
   - Enteromorpha sp., Prasiola meridionalis, Ulva sp., Urosoria sp.
2. Green Algae - Chlorophyta
   - Agarum fimbriatum, Costaria costata, Ectocarpus spp.,
   - Fucus distichus, Hildenbrandia sp., Ralfsia sp., Sycosiphon lomentaria
3. Brown Algae - Phaeophyta
   - Alaria marginata, Agarum fimbriatum, Costaria costata, Ectocarpus spp.,
   - Fucus distichus, Hildenbrandia sp., Ralfsia sp., Sycosiphon lomentaria
4. Red Algae - Rhodophyta
   - Endocladia muricata, Halosaccion glandiforme, Lithothamnion sp.,
   - Mastocarpus sp., Membranoptera dimorpha, Odonthalia floccosa, Palmaria
   - palmata, Petrocelis sp., Porphyra sp., Ptilota filicina, Rhodomela larix

II. Marine Animals
1. Sponges - Porifera - Halichondria bowerbanki?
2. Anemones - Anthopleura artemesia, E. prolifera?, Metridium senile, Urticina
   - crassicornis,
3. Hydroids - Sertulariidae, Aplidina sp., Abietinaria sp.
5. Flatworms - Platyhelminthes - Polyclads
6. Nemerteans - Polyclads - Empodisma gracile
8. Polychaete Worms
   - Nephtyidae
   - Serpulidae - Serpula sp., Cruciger sp., Eudistylia polymorpha
   - Spiorbidae - Spiorbis sp.
10. Crustaceans
   a. Amphipods - Orchestia sp.?
   b. Barnacles - Balanus glandula, Chthamalus dalli, Semibalanus cariosus
   c. Crabs - Paguridae (hermit crabs), Pugettia sp.,
11. Mollusca
   a. Chitons - Katharina tunicata
   b. Snails - Gastropods
     - Fusitriton oregonensis, Littorina sitkana, L. keenae, Nucella
     - lamellosa, Searlesia dira,
   c. Limpets - Lottia digitalis, L. persona, Tectura fenestrata, T.
     - persona, T. scutum, Siphonaria thersites
   e. Bivalves - Mytilus edulis
12. Echinoderms
   b. Sea stars - Crossaster papposus, Dermasterias imbricata, Evasterias
     - truscheii, Henricia leviuscula, Leptasterias hexactis,
     - Mediaster aequalis?, Orthasterias keholeri, Pisaster
     - ochraceus, Pycnopodia helianthoides, Solaster dawsoni, S.
     - stimpsoni,
   c. Sea Cucumbers - Holothurians - Eupentacta sp.
   d. Urchins - Strongylocentrotus droebachiensis
13. Bryozoans - Membranipora sp., Microseptina borealis, Phidolopora
   pacifica, Schizoporella sp.
15. Fishes
   - Cottidae
   - Stichaeidae - Xiphister atropurpureus, X. mucus
1991 MAYSAP EVALUATION

SEGMENT: PY 008   SUB: A   REGION: KEN   SURVEY DATE: 5/16/91

ENVIRONMENTAL SENSITIVITIES:

Work Window(s) RESTRICTED 3/1 - 9/1

Ecological/Constraints (see page two for details) Eagle nest

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO Signature:  

RECOMMENDATIONS:

TREATMENT REQUIRED (Y or N) N

INITIAL: ____________________________________

TAG: _______________________________________

FOSC: _____________________________________

COMMENTS:

INITIAL: ____________________________________

TAG: _______________________________________

FOSC: _____________________________________

TAG APPROVAL DATE: MAY 31 1991

ADEC  

FOSC  E. E. PAGE, CDR, USCG

EXXON  CHIEF OF STAFF, FOSC

USCG

NOAA
ECOLOGICAL CONSTRAINTS
1991 FIELD ACTIVITIES

Eagle Nest: Access restricted from 3/1 to 9/1. USF&WS authorization required. Maintain 1000' vertical and 1/4 mile horizontal buffer.
High energy area. No recoverable oil observed.

No recoverable oil located.

No oil located.

No oil to recover.
MAYSAP SHORELINE OILING SUMMARY

TEAM NO. 4

OG Jim Seeples

BIO Jim Barry

LANDMANAGER Headliner for USFWS

USCG/NOAA McNeel/Conrad

TIME 06:40 to 07:20

TIDE LEVEL 4.9 ft. to 4.5 ft.

ENERGY LEVEL: X H M L

SURVEYED FROM: ☑FOOT ☐BOAT ☐HELO

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

TOTAL LENGTH SHORELINE SURVEYED: 735 m

NEAR SHORE SHEEN: ☐BR ☐RB ☐SL ☐NONE

EST. OIL CATEGORY LENGTH: W m M m N m VI 70 m NO 65 m US m

---

<table>
<thead>
<tr>
<th>LOC</th>
<th>SURFACE OIL CHARACTER</th>
<th>SURFACE SEDIMENT</th>
<th>SHORE SLOPE</th>
<th>AREA WIDTH</th>
<th>LENGTH</th>
<th>ZONE</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

DISTRIBUTION: C = 91-100%; B = 81-90%; P = 71-80%; S = 61-70%; T = <1%

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

PHOTO ROLL & MAYSAP-__ FRAMES

PIT NO. DEPTH SUBSURFACE OIL CHARACTER OILED ZONE CLEAN BELOW LEVEL W2O SHEEN COLOR PIT ZONE SUBSURFACE SEDIMENTS NOTES

Bedrock on Crown Duna-

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

OG COMMENTS: See Map.

---

Remark: 5/15/91 m

Reviewed 5/20/91
Steep bedrock shoreline with steep talus of angular boulders in the northern part.

Very few chips/truncum all less than 10 cm diameter
No oil observed on northern part of segment.

No oil
This subdivision encompasses the outer section of a cove and is exposed to moderate surf. The shore is about 1/2 bedrock cliffs and 1/2 high angle talus boulders. The flora and fauna along the subdivision are typical of moderately exposed shores. Near the north (exposed) end of the subdivision, mussels are dense in patches near the middle and upper intertidal zones, while the south end of the segment, which is somewhat more protected, has only scattered patches of mussels. Fucus replaces mussels in the more protected areas. The lowest zones have abundant red and green algae that grade to dense brown algae (Laminaria, Alaria) in the subtidal. Barnacles, limpets, littorines and other invertebrates are generally abundant along this shore. Recruitment is evident for many species throughout the subdivision and the intertidal biota appear healthy.

Oil is restricted to one location in the high zone. At this location black lichen is moderately to sparsely abundant. Barnacles, limpets, and thin red algae (Porphyra sp.) are sparsely distributed near the oil spatters. Below the oiled area, these species are much more abundant. Barnacles (mainly Balanus glandula) form a dense band in the middle zone. Endocladia and similar branched red algae also form a patchy zone in the middle to upper zone, below which mussels, Fucus, filamentous green algae and brown algae are abundant. No particularly sensitive assemblage of species is present near or below the oiled site.

Some manual cleanup was performed along this subdivision. Additional manual removal of oiled sediments will not adversely affect this site.

(continued)

WILDLIFE OBSERVATIONS - Completed on all subdivisions

<table>
<thead>
<tr>
<th>BIRDS</th>
<th># OF SPECIES</th>
<th>TOTAL BIRDS</th>
<th>FISH OBSERVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eagles</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seabirds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waterfowl</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gulls/Kittiwakes</td>
<td>2</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Shorebirds</td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Corvids</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Birds</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MARINE MAMMALS</th>
<th># OBSERVED</th>
<th>LAND MAMMALS</th>
<th>SPECIES</th>
<th># OBSERVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sea Otters</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pinnipeds (specify)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whales (specify)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Shoreline subdivision map showing important biological features attached.
**PY008-A Biology Summary, continued**

**General Zonation Pattern along PY008-A**

<table>
<thead>
<tr>
<th>Biota</th>
<th>Tide Level</th>
<th>SupraTidal</th>
<th>Upper</th>
<th>Middle</th>
<th>Low</th>
<th>Subtidal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil Spatters</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black Lichen</td>
<td></td>
<td></td>
<td>+++++</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bare Rock</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barnacles (Balanus)</td>
<td></td>
<td></td>
<td>++++++</td>
<td>+++++++</td>
<td>-----</td>
<td>----------</td>
</tr>
<tr>
<td>Limpets</td>
<td></td>
<td></td>
<td>++++++</td>
<td>+++++++</td>
<td>-----</td>
<td>----------</td>
</tr>
<tr>
<td>Red Algae (Endocladia/other)</td>
<td></td>
<td></td>
<td>++++++</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mussels (Mytilus)</td>
<td></td>
<td></td>
<td>++++++</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rockweed (Fucus)</td>
<td></td>
<td></td>
<td>-</td>
<td>+++++++</td>
<td>-----</td>
<td>----------</td>
</tr>
<tr>
<td>Green Algae (Ulva/other)</td>
<td></td>
<td></td>
<td>-</td>
<td>+++++++</td>
<td>-----</td>
<td>----------</td>
</tr>
<tr>
<td>Odonthalia (Red Alga)</td>
<td></td>
<td></td>
<td>++++++</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Palmaria (Red Alga)</td>
<td></td>
<td></td>
<td>++++++</td>
<td>+++++++</td>
<td>-----</td>
<td>----------</td>
</tr>
<tr>
<td>Other Red Algae</td>
<td></td>
<td></td>
<td>++++++</td>
<td>+++++++</td>
<td>-----</td>
<td>----------</td>
</tr>
<tr>
<td>Crustose Brown Algae (Hildenbrandia)</td>
<td></td>
<td>++++++++</td>
<td>++++++</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upright Brown Algae (not Fucus)</td>
<td></td>
<td></td>
<td></td>
<td>+++++++</td>
<td>-----</td>
<td>----------</td>
</tr>
</tbody>
</table>

*Legend: (-) Sparse to rare, (+) Moderate, (*) Abundant*

**List of Species from PY008-A**

**A. Marine Plants**

1. Diatoms, Blue Greens
2. Green Algae - Chlorophyta
   - Acrosiphonia sp., Cladophora sp., Enteromorpha sp., Prasiola meridionalis, Ulva sp., Uropsora sp.
3. Brown Algae - Phaeophyta
   - Alaria marginata, Ectocarpus sp., Fucus distichus, Hildenbrandia sp., Laminaria groenlandica, Nereocystis leutkeana, Ralfsia sp., Systosiphon lomentaria
4. Red Algae - Rhodophyta
   - Bangia fuscopurpurea, Calliarthron sp., Corallina sp., Endocladia muricata, Halosaccion glandiforme, Lithothamnion sp., Mastocarpus sp., Membranoptera dimorpha, Mesophyllum conchatum, Odonthalia floccosa, Palmaria palmata, Petrocelis sp., Porphyra sp., Rhodomela larix
5. Higher Plants - Leymus mollis (beach rye grass)

**B. Marine Animals**

1. Sponges - Porifera - Halichondria bowerbanki?
3. Hydroids - Sertulariidae, Aglaophenia sp., Abietinaria sp.
4. Flatworms - Platyhelminthes - Polyclads
5. Nemertean Worms - Ribbon Worms - Empyelidina gracile
6. Polychaete Worms
   - Glyceridae
   - Nepthidea
   - Nereidea - Nereis spp.
   - Serpulidae - Serpula sp., Crucigera sp., Eudistylia polymorpha
   - Spriobridae - Spiorbis sp.
9. Peanut worms - Sipunculids - Phascolosoma agassizii
10. Crustaceans
   a. Amphipods - Orchestia sp.?
   b. Barnacles - Balanus glandula, Chthamalus dalli, Semibalanus cariosus
IV. Crabs - *Haelogaster* sp., *Paguridae* (hermit crabs)

d. Isopods - *Cirdana harfordi, Idotea wosnesenskii, Gnorimorsphaeroma oregonesensis*

11. Mollusca

a. Chitons - *Cryptochiton stelleri, Mopalia sp., M. mucosa, Katharina tunicata, Tonicella lineata,*

b. Snails - *Gastropods*
   *Amphissa columbiana, Littorina sitkana, L. keenae, Nucella lamellosa, N. lima, Searlesia dira*

c. Limpets - *Acmaea mitra, Lottia digitalis, L. persona, Tectura fenestrata, T. persona, T. scutum, Siphonaria thersites*

d. Nudibranches - *Lamellidoris fusca, Onchidella borealis*

e. Bivalves - *Chlamys hastata, Mytilus edulis, Pododesmus cepio*

12. Echinoderms


b. Sea stars - *Crossaster papposus, Dermasterias imbricata, Evasterias truscheli, Henricia leviuscula, H. sanguinolenta, Leptasterias hexactis, Mediaster aequalis?, Orthasterias keohleri, Pisaster ochraceus, Pycnopodia helianthoides, Solaster dawsoni, S. stimpsoni,*

c. Sea Cucumbers - *Holothurians* - *Eupentacta sp.*

d. Urchins - *Strongylocentrotus droebachiensis*


15. Fishes

Cottidae - *Xiphister atropurpureus, X. mucosus*

1991 MAYSAP EVALUATION

SEGMENT: PY 008  SUB: B  REGION: KEN  SURVEY DATE: 5/16/91

ENVIRONMENTAL SENSITIVITIES:
Work Window(s) OPEN

Ecological/Constraints (see page two for details) NONE

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO Signature: [Signature] Date: 6/03/91

RECOMMENDATIONS:

<table>
<thead>
<tr>
<th>TREATMENT REQUIRED (Y or N)</th>
<th>INITIAL</th>
<th>TAG</th>
<th>FOSC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manual Pickup (Check as Req.)</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>Spot Washing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bio-Customblen Only</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bio-Inipol/Customblen</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

COMMENTS:
INITIAL:

TAG:

FOSC:

TAG APPROVAL DATE: MAY 31 1991  FOSC APPROVAL DATE: 6/15/91

ADEC  [Signature]  FOSC  [Signature]  CHIEF OF STAFF, FOSC
EXXON [Signature]  CORE  [Signature]
USCG  [Signature]  USCG  [Signature]
NOAA  [Signature]  NOAA  [Signature]
MAYSAP FIELD SHORELINE COMMENT SHEET

TEAM NO. 4 SEGMENT PY 308 SUBDIVISION B DATE MAY 16, 1981

ADEC
NAME Clara S. Crosby
SIGNATURE Clara S. Crosby

NTR □ TREATMENT RECOMMENDED.
There are 3 subdivisions within this seg. which could be worked on in conjunction with one another to remove 'hot spots' & surface oiling. There are B, C & E I have seen crews work on areas with less accessible oil & recover a significant portion. Recommended treatment is manual removal through pipes. All 3 subd. should take less than one day.

EXXON
NAME George P. Stiles
SIGNATURE George P. Stiles

NTR □ The patches of MS at the southern most end of this segment were partially worked. (18 bags) during the survey. The MS is in the bed rock crevices and around the edges of the large boulders. Further cleanup would be difficult due to the boulder size and would recover a very insignificant amount of weathered oil.

LANDMANAGER
NAME John L. Harkost of USFWS
SIGNATURE John P. Harkost, State

NTR □ Patches of oil remain from previous cleanup operations. Some of this oil was removed during the survey. The remainder would be difficult to remove and an insufficient amount would be recovered for time expended. Thus, further cleanup is not recommended.

USCG/NOAA
NAME Bob J. McElroy
SIGNATURE

□ NTR
What oil remains is highly inaccessible. Cleanup pressures would be excessively costly in view of the insignificant contribution.

NOAA / Donald M. MacDermid  |  DONALD M. WILSON
MAYSAP SHORELINE OILING SUMMARY

SEGMENT: P4.002
SUBDIVISION: B
DATE: MAY 16, 1991

TEAM NO.: 4
OG: Emmons
BIO: Barry
ADEC: Crosby
LANDMANAGER: Harden for USFWS
ON: George P. Styles
USCG/NOAA: Vice Admiral Meador

TIME: 06:30 to 08:10
TIDE LEVEL: 2.5 ft. to 6.9 ft.
ENERGY LEVEL: H M L

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

TOTAL LENGTH SHORELINE SURVEYED: 9.66 m
NEAR SHORE SHEEN: BR RB SL N

EST. OIL CATEGORY LENGTH:

<table>
<thead>
<tr>
<th>LOC</th>
<th>SURFACE OIL CHARACTER</th>
<th>SURFACE SEDIMENT TYPE</th>
<th>SLOPE</th>
<th>WIDTH</th>
<th>LENGTH</th>
<th>ZONE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>V</td>
<td>m</td>
<td>m</td>
<td></td>
</tr>
<tr>
<td>A1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AO</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AV</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

DISTRIBUTION: C = 91-100%; B = 61-90%; P = 11-60%; S = 1-10%; T = <1%
SLOPE: V = VERTICAL; H = HIGH ANGLE; M = MEDIUM ANGLE; L = LOW ANGLE

<table>
<thead>
<tr>
<th>PIT NO.</th>
<th>DEPTH (cm)</th>
<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED ZONE</th>
<th>CLEAN BELOW</th>
<th>H2O LEVEL</th>
<th>SHEEN COLOR</th>
<th>PIT ZONE</th>
<th>SURFACE-SUBSURFACE SEDIMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

OG COMMENTS:

See map. Long segment of steep bedrock with boulder talus. Oiling concentrated to the northern end of the segment, just below ridge around base of boulder. Boulders picked up as indicated on map. Access difficult due to slope and boulder size.
no access in mountain part
surveyed by godlac, no
cr observed.

Average intertidal width ~ 20.15 m.

May sap 4.4.11 to 3
examples of pilings
worked on but
not completed.

All picked up

1x5 cm Jutz ~ 10%
p-91

1x166 x 1%
location map

PY008 B

Subdivision Field Map
Map Key:  XEMPY008B
Name:  
Date:  May 15, 1998

REVIEWED: RW. 5/23/98

AK State Plane Zone 4

drawn by
book
MAYSA BIODIVERSITY SUMMARY FORM

TEAM #: 4
SEGMENT #: PY008
SUBDIVISION #: B
SEA STATE: Calm
DATE/TIME: May 16, 1991 0720 - 0820
TIDAL HEIGHT (Range): +2.5 => -0.9

COBILOGIST: JIM BARRY
WIND SPEED/DIRECTION: Calm, cloudy

COMMENTS / OBSERVATIONS - OILED SUBDIVISIONS

A1 Oil at this location is splatter in the high upper intertidal zone along a boulder talus shore. Black lichen and scattered limpets, as well as a few littorine snails are the only biota very near the oiled area. Barnacles, limpets, littorine snails, and ephemeral red and green algae become abundant slightly below the oiled area (ca 1-2 ft). Fucus is moderately to densely abundant in the mid-to-low shore. Mussels are less abundant in this inner portion of the bay and form patches in crevices from mainly in the middle zone. The low intertidal has abundant red and green algae, with dense brown algae in the subtidal.

Manual pickup was performed (completed?) at this site. Additional manual removal, if performed, would not negatively impact the biota at this location.

A2 Oil (CT, MS) at this location occurs in the upper intertidal zone and extends towards the middle intertidal zone. Black lichen is the most abundant conspicuous species very near the oil on this boulder/cobble talus shore. Limpets and littorine snails are present in sparse to moderate patches, with some individuals found directly on the oil. Small patches of dead mussels are partially to completely buried by the oil, and are likely a remnant of the initial impact of the spill. Live mussels are present in crevices in the boulder talus, with small adults and moderate densities of juveniles, mostly at tidal levels below the oiled area. Fucus is sparsely distributed on boulders near the oiled area, and is more abundant in the middle to lower zone. Red and green algae are dense in the low shore, with dense cover of kelps in the subtidal.

Manual pickup was performed at this site during the survey. Additional manual pickup will not harm the biota at the site. (continued)

WILDLIFE OBSERVATIONS - Completed on all subdivisions

<table>
<thead>
<tr>
<th>BIRDS</th>
<th># OF SPECIES</th>
<th>TOTAL BIRDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eagles</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Seabirds</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waterfowl</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gulls/Kittiwakes</td>
<td>2</td>
<td>30</td>
</tr>
<tr>
<td>Shorebirds</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Corvids</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Other Birds</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MARINE MAMMALS</th>
<th># OBSERVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sea Otters</td>
<td></td>
</tr>
<tr>
<td>Pinnipeds (specify)</td>
<td></td>
</tr>
<tr>
<td>Whales (specify)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LAND MAMMALS</th>
<th># OBSERVED</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Shoreline subdivision map showing important biological features attached.
PYOOB-B Biology Summary, continued

A3, A4 This oiled site (MS) extends occurs in the upper and middle zone. Biota near the oiled area is similar to A2, with black lichen in the highest oiled area, and more typical intertidal species, such as limpets, litterine snails, barnacles, and Fucus, in the middle zone area. Mussels also are sparsely to moderately abundant in the oiled area. Crustose red algae (Hildenbrandia) is abundant on many boulders near the oiled area and is in direct contact with oil. All of these species are found in direct or nearly direct contact with the oiled sediments, though their abundances are appear to be slightly greater in adjacent non-oiled areas. Nevertheless, the site appears to be quite ‘healthy’, in that all of the major species are present in all life stages. The algal community below the oiled area has dense red and green algae, with dense brown algae in the subtidal. Many invertebrates are abundant from the upper to the lower zone. In particular, the bryozoan Schizoporella sp. is very abundant under low zone cobble.

Some manual pickup was performed at this site. Additional cleanup, if recommended will not have negative impacts on the biota at the site.

Miscellaneous Observations

An adult bald eagle picked a dead kittiwake from the water and ate it in a nearby tree. Two other dead gulls were seen on the water.

General Zonation Pattern along PYOOB-B

<table>
<thead>
<tr>
<th>Biota:</th>
<th>Tide Level</th>
<th>SupraTidal</th>
<th>Upper</th>
<th>Middle</th>
<th>Low</th>
<th>Subtidal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil Spatters</td>
<td>- - -+++ -+++ - - -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black Lichen</td>
<td>-+++---</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barnacles (Balanus)</td>
<td>- - ++++++++********+++--- - - -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Limpets/Litortines</td>
<td>- - - +++++++--------+++ - - -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crustose Red Algae (Hildenbrandia)</td>
<td>-+++----</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rockweed (Fucus)</td>
<td>- -+++++++--- - - -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Red Algae (Endocladia/other)</td>
<td>-+++----</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mussels (Mytilus)</td>
<td>- - - ++xx **x -- -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Green Algae (Ulva/other)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Palmaria and other red algae</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Red Algae</td>
<td>-++++- +++++-+++</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upright Brown Algae (not Fucus)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Encrusting bryozoaens</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Legend: (-) Sparse to rare, (+) Moderate, (*) Abundant

List of Species from PYOOB-B

A. Marine Plants
1. Diatoms, Blue Greens
2. Green Algae - Chlorophyta
   Cladophora sp., Enteromorpha sp., Prasiola meridionalis, Ulva sp., Uropora sp.
3. Brown Algae - Phaeophyta
   Alaria marginata, Ectocarpus sp., Fucus distichus, Hildenbrandia sp., Laminaria groenlandica, Ralfsia sp., Syctosiphon lomentaria
4. Red Algae - Rhodophyta
   Bangia fuscopurpurea, Endocladia muricata, Halosaccion glandiforme,
   Lithothamnion sp., Membranoptera dimorpha, Odonthalia floccosa, Palmaria
   palmata, Petrocelis sp., Porphyra sp., Rhodomela larix
5. Higher Plants - Leymus mollis (beach rye grass)

II. Marine Animals
1. Sponges - Porifera - Halichondria bowerbanki?
2. Anemones - Anthopleura artemesia, Epiactis proliferata?, Metridium senile,
   Urticina crassicornis,
6. Nemertean Worms - Ribbon Worms - Emplectonema gracile
8. Polychaete Worms
   Glyceridae
   Nephtyidae
   Nereidae - Nereis spp.
   Serpulidae - Serpula sp., Crucigera sp., Eudistylia polymorpha
   Spiorbidae - Spirorbis sp.
9. Peanut worms - Sipunculids - Phascolosoma agassizii
10. Crustaceans
   a. Amphipods - Orchestia sp.?; Traskorchestia traskiana
   b. Barnacles - Balanus glandula, Semibalanus cariosus
   c. Crabs - Haplogaster sp., Paguridae (hermit crabs)
   d. Isopods - Cirdana harfordi, Idotea wosnesenskii, Gnorimorsphaeroma
   oregonensis
11. Mollusca
   a. Chitons - Cryptochiton stelleri, Mopalia sp., M. mucosa, Katharina
      tunicata, Tonicella lineata,
   b. Snails - Gastropods
      Littorina sitkana, L. keenae, Nucella lamellosa, N. lima,
      Searlesia dira
   c. Limpets - Lottia digitalis, L. persona, Tectura fenestrata, T.
      persona, T. scutum, Siphonaria thersites
   e. Bivalves - Chlamys hastata, Mytilus edulis, Pododesmus cepio
12. Echinoderms
   a. Brittle Stars - Ophiolus aculeatus?, Ophiophrictx spiculata?,
      Amphipholis?
   b. Sea stars - Crossaster papposus, Dermasterias imbricata, Henricia
      leviuscula, Leptasterias hexactis, Orthasterias keohleri,
      Pisaster ochraceus, Pycnopodia helianthoides, Solaster
      dawsoni,
   c. Sea Cucumbers - Holothurians - Eupentacta sp.
   d. Urchins - Strongylocentrotus droebachiensis
15. Fishes
   Cottidae -
   Stichaeidae - Xiphister atropurpureus, X. mucosus
IV. Birds - Bald Eagle (1), Glaucous-winged Gull (15), Black-legged Kittiwake (15),
Western Sandpiper (5), Fox Sparrow (2), Crow (1)
1991 MAYSAP EVALUATION

SEGMENT: PY 008  SUB:  E  REGION:  KEN  SURVEY DATE:  5/16/91

ENVIRONMENTAL SENSITIVITIES:
Work Window(s)  OPEN

Ecological/Constraints (see page two for details)  NONE

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO Signature:________________________ Date:____________________

RECOMMENDATIONS:

<table>
<thead>
<tr>
<th>TREATMENT REQUIRED (Y or N)</th>
<th>INITIAL</th>
<th>TAG</th>
<th>FOSC</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Manual Pickup (Check as Req.)
Spot Washing
Bio-Customblen Only
Bio-Inipol/Custombolein
Other

COMMENTS:
INITIAL:_________________________________________________________

TAG:________________________________________________________________________

FOSC:________________________________________________________________________

TAG APPROVAL DATE:________________ FOSC APPROVAL DATE:_________________

ADEC________________________ FOSC_______________________________

EXXON________________________

USCG________________________

NOAA________________________
<table>
<thead>
<tr>
<th>TEAM NO.</th>
<th>SEGMENT</th>
<th>PY: 008</th>
<th>SUBDIVISION</th>
<th>DATE</th>
<th>DATE</th>
<th>DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>41</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>11/16/91</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ADEC NAME</th>
<th>Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clark S. Crosby</td>
<td>Clark S. Crosby</td>
</tr>
</tbody>
</table>

| NTR | Recommend Treatment — Treatment (manual removal) is recommended at this Subdivision in conjunction with B/C. There is an area of SOR (approximately 5 x 40 m; 3 to 2 cm thick). This subsurface oiling pattern would be labor intensive to remove manually, if there are no options for mechanical due to terrain. Surface oiling within this Subdivision, however, can be recovered using hand tools. The estimated time for manual removal of surface oiling is: 12 twelve hour day by an 8 man crew. |

<table>
<thead>
<tr>
<th>EXXON NAME</th>
<th>Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td>George L. Stykes</td>
<td>George L. Stykes 5/20/90</td>
</tr>
</tbody>
</table>

| NTR | Very little oil remains that could be effectively removed due to the large size obstacles. |

<table>
<thead>
<tr>
<th>LANDMANAGER NAME</th>
<th>USFWS Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td>John R. Hardister</td>
<td>John R. Hardister 10/9</td>
</tr>
</tbody>
</table>

| NTR | Some oil remains from the cleanup operation: I observed in July 1989. Part of this oil was removed during the present survey. I do not recommend any further cleanup effort. |

<table>
<thead>
<tr>
<th>USCG/NOAA NAME</th>
<th>Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gordon M. Carter</td>
<td>Gordon M. Carter</td>
</tr>
</tbody>
</table>

| NTR | Some regions of vegetation that remain that can to 60% Chart, the vegetation, algal, and aquatic life at the environment. This crew picked up a sizable amount on some. |

<table>
<thead>
<tr>
<th>NOAA/ Donald A. MacDonald</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not removing oil very close in vegetation and water would be very detrimental and potentially would not reduce significantly reduce the effects of the oil on the environment.</td>
</tr>
</tbody>
</table>

Donald A. MacDonald
**MAYSAP SHORELINE OILING SUMMARY**

**TEAM NO.**

**OG Sample**

**ADEC Crosby**

**TS 105**

**BIO**

**LANDMANAGER**

**McArthur/McDonald**

**SUBDIVISION**

E

**DATE**

5/16/91

**TIME**

09:30 to 09:55

**TIDE LEVEL**

-3.0 ft. to -3.0 ft.

**ENERGY LEVEL**

☐ H ☐ M ☐ L

**SURVEYED FROM**

☐ FOOT ☐ BOAT ☐ HELO

**WEATHER**

☐ SUN ☐ CLOUDS ☐ FOG ☐ RAIN ☐ SNOW

**TOTAL LENGTH SHORELINE SURVEYED**

79 m

**NEAR SHORE SHEEN**

☒ BR ☐ RB ☐ SL ☐ NONE

**EST. OIL CATEGORY LENGTH**

W _ m M _ m N _ m VL _ m US _ m

---

### SURFACE OIL CHARACTER

<table>
<thead>
<tr>
<th>LOC</th>
<th>SURFACE OIL CHARACTER</th>
<th>SURFACE SEDIMENT</th>
<th>SHORE SLOPE</th>
<th>AREA</th>
<th>ZONE</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

### DISTRIBUTION

C = 91-100%; B = 51-90%; P = 11-50%; S = 1-10%; T = 0%

**SLOPE**

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

**PHOTO ROLL #**

MAYSAP 4-5-8-16

---

### PIT NO. DEPTH

<table>
<thead>
<tr>
<th>PIT NO.</th>
<th>DEPTH (cm)</th>
<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED ZONE</th>
<th>CLEAN H2O</th>
<th>SHEEN COLOR</th>
<th>PIT ZONE</th>
<th>SURFACE-SUBSURFACE SEDIMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>S</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>15</td>
<td>X</td>
<td>-10</td>
<td></td>
<td></td>
<td>S</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>15</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>S</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>15</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>S</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>10</td>
<td>X</td>
<td>10</td>
<td></td>
<td></td>
<td>S</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>8</td>
<td>X</td>
<td>3-6</td>
<td></td>
<td></td>
<td>S</td>
<td></td>
</tr>
</tbody>
</table>

---

### SHEEN COLOR

B = BROWN; R = RAINBOW; S = SILVER; N = NONE

---

**OG COMMENTS:**

See map.
Small pocket accumulation of mixed sediment over and among bedrock outcrop. Bedrock ramp on the eastern part of the segment. Boulderine bedrock decision.

Board of scattered marine and ASOR patches in white and on the bedrock ramp. Subsurface oil present and is associated with the area where patches of surface oil are present.

Reviewed: 5-21-99
Reviewed: F.W. 5/24/99
MAYSAP BIOLOGICAL SUMMARY FORM

TEAM #: 4  
SEGMENT #: PY008  
SUBDIVISION #: E  
SEA STATE: Calm

DATE/TIME: May 16, 1991 0921 - 1000
TIDAL HEIGHT (Range): -3.0 => -3.0
WIND SPEED/DIRECTION: Calm, rain

BIOLOGIST: JIM BARRY

COMMENTS / OBSERVATIONS - OILED SUBDIVISIONS

Oil-related Comments

A1 Oil (MS-HSOR) is present in the cobble of the upper zone. Little biota is present at this location or tidal level. Sparse filamentous green algae are found on the cobble, with scattered sparse barnacles, littorine snails and limpets. Below the oiled area, filamentous green algae are dense on the beach cobble.

A2 This oiled area (MS-HSOR) is in the upper zone and extends lower in that zone towards the middle intertidal zone than A1. Filamentous green algae, along with other film-forming species (brown algae?), are abundant very near the oiled site. Fucus and other red algae (Halosaccion) are sparse at the site. Limpets and littorines are dense in patches under cobble and are present directly on the oiled sediments. Amphipods are moderately abundant, as are oligochaete worms.

The lower intertidal below both A1 and A2 is densely covered with red and brown algae, with a diverse invertebrate community.

Cleanup Recommendations

For both A1 and A2, cleanup activities, if recommended, will have little negative impact on the biota at the site.

(continued)

WILDLIFE OBSERVATIONS - Completed on all subdivisions

<table>
<thead>
<tr>
<th>BIRDS</th>
<th>N OF SPECIES</th>
<th>TOTAL BIRDS</th>
<th>FISH OBSERVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eagles</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Seabirds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waterfowl</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gulls/Kittiwakes</td>
<td>2</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Shorebirds</td>
<td>1</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Corvids</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Other Birds</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MARINE MAMMALS</th>
<th># OBSERVED</th>
<th>SPECIES</th>
<th># OBSERVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sea Otters</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pinnipeds (specify)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whales (specify)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Shoreline subdivision map showing important biological features attached.
General Features of PY008-E

This subdivision is a very small cove with bedrock outcrops, headlands, and a small beach of cobble and boulders, and low to medium exposure. Little biota is present on the cobble and boulders of the upper zone. Barnacles and mussels are present in moderately to high densities on the bedrock outcrops in the middle zone of this site. Dense red and brown algae are abundant in the low zone. Invertebrates are more abundant in the low zone of this subdivision than in most areas surveyed, probably due to the heterogeneous habitat types in that zone.

Generalized Zonation Pattern of PY008-E

<table>
<thead>
<tr>
<th>Biota:</th>
<th>Tide Level</th>
<th>SupraTidal</th>
<th>Upper</th>
<th>Middle</th>
<th>Low</th>
<th>Subtidal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil</td>
<td>* * - **</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black Lichen</td>
<td>---+*-----</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bare Rock</td>
<td></td>
<td>--- - - - -</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Filamentous Green Algae</td>
<td></td>
<td>--- ++*+---</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crustose red and brown Algae</td>
<td></td>
<td>- ++++++---</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rockweed (Fucus)</td>
<td></td>
<td>--- +++++* +*** ++++++-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barnacles (Balanus)</td>
<td></td>
<td>- +++++-*-x-*x++---</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upright Red Algae</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Green Algae (Ulva/other)</td>
<td></td>
<td>- - + + - - - - +++</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mussels (Mytilus)</td>
<td></td>
<td>- - ++++ * * *</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upright Brown Algae (not Fucus)</td>
<td></td>
<td>- - - - - - - -</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Limpet and Littorines</td>
<td></td>
<td>- - - - - - - -</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Legend: (-) Sparse to rare, (+) Moderate, (*) Abundant

Common Species on PY008-E

A. Marine Plants
1. Diatoms, Blue Greens
   - Diatoms, Blue Greens
   - Acrosiphonia sp., Cladophora sp., Enteromorpha sp., Prasiola meridionalis, Ulva sp., Urospora sp.
2. Green Algae - Chlorophyta
   - Acrosiphonia sp., Cladophora sp., Enteromorpha sp., Prasiola meridionalis, Ulva sp., Urospora sp.
3. Brown Algae - Phaeophyta
   - Phaeophyta
   - Dictyota alaria marginata, Agarum fimbriatum, Costaria costata, Ectocarpus spp.,
   - Fucus distichus, Hildenbrandia sp., Laminaria groenlandica, L.
   - Saccharina, Ralfsia sp., Sycatosiphon lomentaria
4. Red Algae - Rhodophyta
   - Bangia fuscopurpurea, Bossiella sp., Calliarthron sp., Corallina sp.,
   - Cryptosiphonia woodii, Endocladiadaculata, Halosaccion glandiforme,
   - Iridea sp., Lithothamnion sp., Mastocarpus sp., Membranoptera dimorpha,
   - Mesophyllum conchatum, Odonthalia floccosa, Palmaria palmata, Petrocelis sp., Porphyra sp., Ptilota filicina, Rhodomela larix
5. Higher Plants - Leymus mollis (beach rye grass)

II. Marine Animals
1. Sponges - Porifera
   - Halichondria bowerbanki?, Ophlitaspongia pennata,
2. Anemones - Anthopleura artemesia, A. elegantissama, Cribinopsis fernaldi, E.

5. Flatworms – Platyhelminthes – Polyclads


8. Polychaete Worms
   - Glyceridae
   - Nepthidae
   - Nereidae – Nereis spp.
   - Serpulidae – Serpula sp., Cruciger a sp., Eudistylia polymorpha
   - Soriobridae – Spiorbis sp.

9. Peanut worms – Sipunculids – Phascolosoma agassizii

10. Crustaceans
    a. Amphipods – Orchestia sp., Traskorchestia traskian a
    b. Barnacles – Balanus glandula, Chthamalus dalli, Semibalanus cariosus
    c. Crabs – Haplogaster sp., Paguridae (hermit crabs),
    d. Isopods – Cirdana harfordi, Idotea wosnesenskii, Gnorimorsphaeroma oregonensis

11. Mollusca
    a. Chitons – Cryptochiton stelleri, Mopalia sp., M. mucosa, Katharina tunicata, Tonicella lineata,
    b. Snails – Gastropods
       Amphissa columbiana, Fusitriton oregonensis, Lirularia sp.,
       Littorina sitkana, L. keenae, Natica clausa, Nucella lamellosa, N. lima, Searlesia dira
    c. Limpets – Acmaea mitra, Lottia limatula, L. persona, Tectura fenestrata, T. persona, T. scutum, Siphonaria thersites
    d. Nudibranches – Lamellidoris fusca, Onchidella borealis
    e. Bivalves – Clinocardium nuttalli, Modiolus modiolus, Mytilus edulis,
       Pododesmus cepio, Prototheca staminea

12. Echinoderms
    a. Brittle Stars – Ophiolus aculeatus?, Ophiobothria spiculata?,
       Amphipholis?
    b. Sea stars – Crossaster papposus, Dermasterias imbricata, Evasterias truscheli, Henricia levi scula, H. sanguinolenta,
       Leptasterias hexactis, Mediaster aequalis?, Orthasterias kechleri, Pisaster ochraceus, Pycnopodia helianthoides,
       Solaster dawsoni, S. stimpsoni,
    c. Sea Cucumbers – Holothurians – Eupentacta sp.
    d. Urchins – Strongylocentrotus droebachiensis

13. Bryozoans – Eucratea loricata, Membranipora sp., Microporina borealis,
    Philodopora pacifica, Schizoporella sp.


15. Fishes
    - Cottidae –
    - Stichaeidae – Xiphister atropurpureus, X. mucosus

III. Birds
   - Black-legged kittiwake (3), glaucous-winged gull (2), western Sandpiper (10), raven (2), Bald eagle (1)
Biosketch Map
PY008-E
JP Bakery
0920-0955
16 mm 91

Legend
- Bedrock
- Coarse angular rubble
- P6/06/sd.

A1 (Ms-H20l) Spark filamentous
creen algae, scattered barnacles,
limpets, littorines. Dense filamentous
creen algae in the middle to upper zone below A1.

Reviewed: F.W. 5/24/14
1991 MAYSAP EVALUATION

SEGMENT: PY 008 SUB: F REGION: KEN SURVEY DATE: 5/16/91

ENVIROMENTAL SENSITIVITIES:
Work Window(s) OPEN

Ecological/Constraints (see page two for details) NONE

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO Signature: __________________ Date: _____________

RECOMMENDATIONS:

<table>
<thead>
<tr>
<th>TREATMENT REQUIRED (Y or N)</th>
<th>INITIAL</th>
<th>TAG</th>
<th>FOSC</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Manual Pickup (Check as Req.)
Spot Washing
Bio-Customblen Only
Bio-Inipol/Customblen
Other ____________________
Other ____________________

COMMENTS:
INITIAL: _____________________________________________________

TAG: _____________________________________________________

FOSC: _____________________________________________________

TAG APPROVAL DATE: ___________ FOSC APPROVAL DATE: ___________

ADEC ______________________ FOSC ______________________
EXXON ______________________ USCG ______________________
NOAA ______________________
ADEC
NAME: Clara S. Crosby
SIGNATURE: Clara S. Crosby

(EX) NTR
At oil remains in Subdivision - Survey Crew removed as much accessible oil observed as possible.

EXXON
NAME: George P. Stiles
SIGNATURE: George P. Stiles

(XX) NTR
Concur with ADEC little recoverable oil still remains.

LANDMANAGER
NAME: John P. Hardister of USFWS
SIGNATURE: John P. Hardister

(NTR) NTR
Trace amounts of oil. No cleanup necessary.

USCG/NOAA
NAME: Chief J. McDonald
SIGNATURE: Chief J. McDonald

(NTR) NTR
Very little oil.

NOAA/Donald A. McDonald

Andrey McDonald
### MAYSAP SHORELINE OILING SUMMARY

**Segment:** FY-008-F  
**Subdivision:** F  
**Date:** May 16, 1991  
**Surveyed From:** FOOT BOAT HELO  
**Weather:** SUN CLOUDS FOG RAIN SNOW

#### Surface Oil Character

<table>
<thead>
<tr>
<th>Location</th>
<th>Surface Oil Character</th>
<th>Surface Sediment Type</th>
<th>Shore Slope</th>
<th>Width</th>
<th>Length</th>
<th>Zone</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Trace along complete segment.</td>
</tr>
</tbody>
</table>

#### Pit Pit

<table>
<thead>
<tr>
<th>Location</th>
<th>Pit Depths (cm)</th>
<th>Subsurface Oil Character</th>
<th>Oiled Zone</th>
<th>Clean Level Below</th>
<th>H2O Level</th>
<th>Sheen Color</th>
<th>Pit Zone</th>
<th>Subsurface Sediments</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2.0</td>
<td></td>
<td>X</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Sheen Color:** B = Brown; R = Rainbow; S = Silver; N = None

### Og Comments:

Long segment of sloping bedrock locally with buildup near or fringe of large angular boulders. Very little oil in core. No trees throughout segment. No anhinga. It is very slight to low condition. Very little oil present.

**Revise:** 5-21-91 MC  
**Revised:** 5-21-91
Oil Related Comments

Oil on this subdivision was sparsely distributed as spatters of MS or CT throughout the upper intertidal shore. No specific sites were designated. Few species are found at this level of the intertidal zone and those present are low in abundance. Black lichen is the most abundant species, with scattered patches throughout the upper zone along the subdivision. Filamentous green algae forms a film or sparse cover on cobble and boulders at this level, but is much denser below (ca 1-3 ft) the level of the oiling. Limpets, littorine snails, and barnacles also are scattered on and under the cobble near the oiled site and are much more abundant in lower zones. The surface of the oil is weathered in many cases, and barnacles, limpets, and littorine snails are often found directly in contact with the oil.

Cleanup Recommendations

Some manual cleanup was performed during the survey. Additional manual cleanup, if performed, will not adversely affect the biota along the subdivision.

WILDLIFE OBSERVATIONS - Completed on all subdivisions

<table>
<thead>
<tr>
<th>BIRDS</th>
<th># OF SPECIES</th>
<th>TOTAL BIRDS</th>
<th>FISH OBSERVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eagles</td>
<td>1</td>
<td>22</td>
<td></td>
</tr>
<tr>
<td>Seabirds</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Waterfowl</td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Gulls/Kittiwakes</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Shorebirds</td>
<td>1</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Corvids</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Other Birds</td>
<td></td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MARINE MAMMALS</th>
<th># OBSERVED</th>
<th>SPECIES</th>
<th># OBSERVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sea Otters</td>
<td></td>
<td>Black Bear</td>
<td>1 Dead Cub</td>
</tr>
<tr>
<td>Pinnipeds (specify)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sea Lion</td>
<td>1 (Carcass)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whales (specify)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Shoreline subdivision map showing important biological features attached.
General Characteristics of PYOOB-F

This subdivision has sloping bedrock shores and is fairly well protected from all but small waves. The flora and fauna are typical of similarly protected steep shores, with sparse macroalgae, barnacles and limpets in the upper zones, Fucus, mussels in the mid-shore, and dense red and brown algae in the low zone. No sensitive species assemblages were found on the subdivision. Small patches or zones of mussels are present, but do not constitute a major feature of the subdivision.

General Zonation Pattern

<table>
<thead>
<tr>
<th>Biota:</th>
<th>Tide Level</th>
<th>SupraTidal</th>
<th>Upper</th>
<th>Middle</th>
<th>Low</th>
<th>Subtidal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil Spatters</td>
<td>- -</td>
<td>- -</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black Lichen</td>
<td>- - - - - -</td>
<td>- - - - - -</td>
<td>- -</td>
<td>- -</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Filamentous Green Algae</td>
<td>- - - - - -</td>
<td>- - - - - -</td>
<td>- -</td>
<td>- -</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Crustose Red Algae (Hildenbrandia)</td>
<td>- - - - - -</td>
<td>- - - - - -</td>
<td>- -</td>
<td>- -</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Bare Rock</td>
<td>- - -</td>
<td>- - -</td>
<td>- -</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Rockweed (Fucus)</td>
<td>- - - - + -</td>
<td>- - - - + -</td>
<td>- -</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Barnacles (Balanus)</td>
<td>- - - + - +</td>
<td>- - - + - +</td>
<td>- -</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Odonthalia (Red Alga)</td>
<td>- - - + - +</td>
<td>- - - + - +</td>
<td>- -</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Palmaria (Red Alga)</td>
<td>- - - + - +</td>
<td>- - - + - +</td>
<td>- -</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Other Red Algae</td>
<td>- - - - - -</td>
<td>- - - - - -</td>
<td>- -</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Green Algae (Ulva/other)</td>
<td>- - - - - -</td>
<td>- - - - - -</td>
<td>- -</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Mussels (Mytilus)</td>
<td>- - - - - -</td>
<td>- - - - - -</td>
<td>- -</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Upright Brown Algae (not Fucus)</td>
<td>- - - - - -</td>
<td>- - - - - -</td>
<td>- -</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Eel Grass</td>
<td>- - - - - -</td>
<td>- - - - - -</td>
<td>- -</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Clams</td>
<td>- - - - - -</td>
<td>- - - - - -</td>
<td>- -</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

Legend: (-) Sparse to rare, (+) Moderate, (*) Abundant

Common Species on PYOOB-F

A. Marine Plants
1. Diatoms, Blue Greens
2. Green Algae - Chlorophyta
   Cladophora sp., Enteromorpha sp., Prasiola meridionalis, Ulva sp., Urospora sp.
3. Brown Algae - Phaeophyta
   Chorda marginata, Agarum fimbriatum, Costaria costata, Ectocarpus spp.,
   Fucus distichus, Hildenbrandia sp., Laminaria saccharina, Ralfsia sp.,
   Sctosiphon lomantaria
4. Red Algae - Rhodophyta
   Bossiella sp., Corallina sp., Endocladia murica, Halosaccion
   glandiforme, Lithothamnion sp., Mastocarpus sp., Membranoptera dimorpha,
   Odonthalia floccosa, Palmaria palmata, Petrocelis sp., Porphyra sp.,
   Rhodoidea larix
5. Higher Plants - Zostera marina (eel grass), Leymus mollis (beach rye grass)

II. Marine Animals
1. Spong - Porifera - Halichondria bowerbanki?, Halichondria panicea
2. Anemones - Anthopleura artemesia, A. elegantissama, Epiactis ritteri, E.
   prolifera?, Metridium senile, Urticina crassicornis,
3. Hydroids - Sertulariidae, sp., Abietinaria sp.
5. Flatworms - Platyhelminthes - Polyclads
6. Nemertean Worms - Ribbon Worms - Eumolpidae gracile
8. Polychaete Worms
   Glyceridae
   Nephtyidae
   Nereidae - Nereis spp.
   Serpulidae - Serpula sp., Crucigera sp., Eudistylia polymorpha
   Spiroboridae - Spirobis sp.
9. Peanut worms - Sipunculids - Phascolosoma agassizii
10. Crustaceans
    a. Amphipods - Orchestia sp.?  
    b. Barnacles - Balanus glandula, Chthamalus dalli, Semibalanus cariosus  
    c. Crabs - Haplogaster sp., Paguridae (hermit crabs), Pugettia sp.,  
    d. Isopods - Cirridana harfordi, Idotea wosnesenskii, Gnorimorph opensens
11. Mollusca
    a. Chitons - Cryptochiton stelleri, Mopalia sp., M. mucosa, Katharina tunicata, Tonicella lineata,  
    b. Snails - Gastropods  
       Lirularia sp., Littorina sitkana, L. keenaee, N. lima, N. emarginata, Searlesia dira  
    c. Limpets - Lottia digitalis, L. limatula, L. persona, Tectura fenestrata, T. persona, Siphonaria thersites  
    d. Nudibranchs - Lamellidorsis fusca, Melibe leonina, Onchidella borealis  
    e. Bivalves - Clinocardium nuttalli, Macoma nasuta, Modiolus modiolus, My arenaria (soft-shell clam), Mytilus edulis, Pododesmus cepio, Prototheca staminea
12. Echinoderms
    a. Brittle Stars - Ophiolus aculeatus?, Ophiothrix spiculata?, Amphipholis?  
    b. Sea stars - Crossaster papposus, Dermasterias imbricata, Evasterias truscheli, Henricia leviuscula, Leptasterias hexactis, Orthasterias keohleri, Pycnopodia helianthoides, Solaster dawsoni,  
    c. Sea Cucumbers - Holothurians - Eupentacta sp.  
    d. Urchins - Strongylocentrotus droebachiensis
15. Fishes
    a. Cottidae -  
    b. Stichaeidae - Xiphister atropurpureus, X. mucous
III. Birds - Fox Sparrow (3), Western Sandpiper (2), Glaucous-winged Gull (22), Raven (3)
OIL DEPOSIT OR ENTIRELY CONFINED TO WILK. LITTLE BIOFA PRESENT AT THAT LEVEL. BLACK LICHEN OCCURS AS SCATTERED PATCHES. SPARSE LITTERING SNAILS, LIMPETS, AND BARNACLES. GREEN FILAMENTOUS ALGAE FORM FILM ON SOME COBBLE/PAVEMENTS.

LOWER ZONES - DENSE GREEN FILAMENTOUS ALGAE, SPARSE MUSSEL IN CAVITY, MODERATE FCCS IN MALT. RED & BROWN ALGAE ABUNDANT IN LOW ZONE.
1991 MAYSAP EVALUATION

SEGMENT: PY 008  SUB: B  REGION: KEN  SURVEY DATE: 5/16/91

ENVIRONMENTAL SENSITIVITIES:
Work Window(s) OPEN

Ecological/Constraints (see page two for details) NONE

ARCHEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO Signature: _______________ Date: _______________

RECOMMENDATIONS:

<table>
<thead>
<tr>
<th>TREATMENT REQUIRED (Y or N)</th>
<th>INITIAL</th>
<th>TAG</th>
<th>FOSC</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Manual Pickup (Check as Req.)
Spot Washing
Bio-Customblen Only
Bio-Inipol/Customblen
Other
Other

COMMENTS:
INITIAL:

TAG:

FOSC:

TAG APPROVAL DATE: ___________  FOSC APPROVAL DATE: ___________

ADEC
EXXON
USCG
NOAA
TEAM NO. 4  SEGMENT 24  008  SUBDIVISION B  DATE May 16, 1991

ADEC  NAME: Clara S. Crosby   SIGNATURE: Clara S. Crosby

☐ NTR  TREATMENT RECOMMENDED

There are 3 subdivisions within this Seg. which could be worked on in conjunction with one another to remove 'hot spots' of surface oiling. There are C, C & E, 3, & 3 have been crude work on areas with less accessible oil & recover a significant portion. Recommended treatment is manual removal, hand pumps. All 3 subdivisions should take less than one day.

EXXON  NAME: George P. Stiles   SIGNATURE: George P. Stiles

☐ NTR  The patches of MS at the southern most end of this segment were partially worked (18 days) during the survey. The MS is in the bed rock crevices and around the edges of the large boulders. Further cleanup would be difficult due to the boulder size and would recover a very insignificant amount of weathered oil.

LANDMANAGER  NAME: John F. Harder  OF: USFWS   SIGNATURE: John F. Harder

☐ NTR  Patches of oil remain from previous cleanup operations. Some of the oil was removed during the survey. The remainder would be difficult to recover and an insufficient amount would be recovered for time expended. Thus, further cleanup is not recommended.

USCG/NOAA  NAME: Lt. J. McElheny   SIGNATURE: J. McElheny

☐ NTR  Fuel oil remains is highly inaccessible. Cleanup measures worked & excessively costly in light of the insignificant contribution.

NOAA  Donald H. McDougal

The majority of the remaining oil is located along the shoreline in crevices between boulders and under large rocks. It would require a significant effort...
**MAYSAP SHORELINE OILING SUMMARY**

**Team No.** 4

**OG** for Samples: [Name]  
**ADEC**: [Name]  
**BIO**  
**USCG/NOAA**

**Land Manager**  
**Date** May 16, 1991

**Surveyed From:**  
**Weather:**  
**Tide Level:**  
**Energy Level:**  
**Length Surveyed:** 966 m

**Near Shore Sheen:**  
**Total Length Surveryed:** 966 m

**Estimated Oil Category Length:**

<table>
<thead>
<tr>
<th>LOC</th>
<th>Surface Oil Character</th>
<th>Surface Sediment Type</th>
<th>Shore Slope</th>
<th>Area Width</th>
<th>Area Length</th>
<th>Zone</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td></td>
<td></td>
<td></td>
<td>11</td>
<td></td>
<td>S</td>
<td></td>
</tr>
<tr>
<td>A2</td>
<td></td>
<td></td>
<td></td>
<td>11</td>
<td></td>
<td>S</td>
<td></td>
</tr>
<tr>
<td>A3</td>
<td></td>
<td></td>
<td></td>
<td>11</td>
<td></td>
<td>S</td>
<td></td>
</tr>
<tr>
<td>A4</td>
<td></td>
<td></td>
<td></td>
<td>11</td>
<td></td>
<td>S</td>
<td></td>
</tr>
</tbody>
</table>

**Distribution:**  
**Slope:**  
**Photo Roll:** MAYSAP 4  
**Frames:** 4  

**Pit Pit No. Depth (cm) Subsurface Oil Character Oil Zone Clean H2O Level Sheen Color Oil Zone Subsurface Sediments Notes**

| P1  |                   |                    |               |            |            | S    |       |

**Sheen Color:**  
**Notes:**

**OG Comments:** See map. Long segment of steep ledgown with boulder talus. Oiling confined to the seaward end of the segment as patch of oil around base of boulders. Patches picked up as indicated on map. Access difficult due to slope and boulder size.
No access in northern part surveyed by godiac, no oc observed.

Average intertidal width A = 20.25m.

May 16/91
0720-0820

Legend

Py. 008 B

Steep bedrock / talus

Large boulders fallen / steep bedrock

A1

Few ct. cv 75%
All < 20cm. Picked up as much as possible during survey.

A2

4x8 ct. cv. 20%
Amount Ban 3/4 boulders/cobble

Worked on in
not completed

May 4 - 4/34

A5

1x10 < 1%
Few cut MS teeth < 20mm

On Hitz 6/34

Revision: 5.22.91
Reviewed: F.W. 5/22/91
MAYSAP BIOLOGICAL SUMMARY FORM

TEAM # 4       DATE/TIME      May 16, 1991  0720 - 0820
SEGMENT # PY008       TIDAL HEIGHT (Range) +2.5 => -0.9
SUBDIVISION B          BIOLOGIST        JIM BARRY
SEA STATE Calm          WIND SPEED/DIRECTION Calm, cloudy

COMMENTS / OBSERVATIONS - OILED SUBDIVISIONS

A1 Oil at this location is splatter in the high upper intertidal zone along a boulder talus shore. Black lichen and scattered limpets, as well as a few littorine snails are the only biota very near the oiled area. Barnacles, limpets, littorine snails, and ephemeral red and green algae become abundant slightly below the oiled area (ca 1-2 ft). Fucus is moderately to densely abundant in the mid-to-low shore. Mussels are less abundant in this inner portion of the bay and form patches in crevices from mainly in the middle zone. The low intertidal has abundant red and green algae, with dense brown algae in the subtidal.

Manual pickup was performed (completed?) at this site. Additional manual removal, if performed, would not negatively impact the biota at this location.

A2 Oil (CT,MS) at this location occurs in the upper intertidal zone and extends towards the middle intertidal zone. Black lichen is the most abundant conspicuous species very near the oil on this boulder/cobble talus shore. Limpets and littorine snails are present in sparse to moderate patches, with some individuals found directly on the oil. Small patches of dead mussels are partially to completely buried by the oil, and are likely a remnant of the initial impact of the spill. Live mussels are present in crevices in the boulder talus, with small adults and moderate densities of juveniles, mostly at tidal levels below the oiled area. Fucus is sparsely distributed on boulders near the oiled area, and is more abundant in the middle to lower zone. Red and green algae are dense in the low shore, with dense cover of kelps in the subtidal.

Manual pickup was performed at this site during the survey. Additional manual pickup will not harm the biota at the site.

(continued)

WILDLIFE OBSERVATIONS - Completed on all subdivisions

<table>
<thead>
<tr>
<th>BIRDS</th>
<th># OF SPECIES</th>
<th>TOTAL BIRDS</th>
<th>FISH OBSERVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eagles</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Seabirds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waterfowl</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gulls/Kittiwakes</td>
<td>2</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Shorebirds</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Corvids</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Other Birds</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MARINE MAMMALS</th>
<th># OBSERVED</th>
<th>SPECIES</th>
<th># OBSERVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sea Otters</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pinnipeds (specify)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whales (specify)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Shoreline subdivision map showing important biological features attached.
PYOO8-B  Biology Summary, continued

A3, A4 This oiled site (MS) extends occurs in the upper and middle zone. Biota near the oiled area is similar to A2, with black lichen in the highest oiled area, and more typical intertidal species, such as limpets, littorine snails, barnacles, and Fucus, in the middle zone area. Mussels also are sparsely to moderately abundant in the oiled area. Crustose red algae (Hildenbrandia) is abundant on many boulders near the oiled area and is in direct contact with oil. All of these species are found in direct or nearly direct contact with the oiled sediments, though their abundances are appear to be slightly greater in adjacent non-oiled areas. Nevertheless, the site appears to be quite 'healthy', in that all of the major species are present in all life stages. The algal community below the oiled area has dense red and green algae, with dense brown algae in the subtidal. Many invertebrates are abundant from the upper to the lower zone. In particular, the bryozoan Schizoporella sp. is very abundant under low zone cobble.

Some manual pickup was performed at this site. Additional cleanup, if recommended will not have negative impacts on the biota at the site.

Miscellaneous Observations

An adult bald eagle picked a dead kitiwake from the water and ate it in a nearby tree. Two other dead gulls were seen on the water.

General Zonation Pattern along PYOO8-B

<table>
<thead>
<tr>
<th>Biota:</th>
<th>Tide Level</th>
<th>SupraTidal</th>
<th>Upper</th>
<th>Middle</th>
<th>Low</th>
<th>Subtidal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil Spatters</td>
<td></td>
<td>- - +++ -+-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black Lichen</td>
<td>--++*-----</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barnacles (Balanus)</td>
<td>- - ++-+++<em><strong>+</strong></em>+++---++-+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Limpets/Littorines</td>
<td>- - -+++++++---------++</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crustose Red Algae (Hildenbrandia)</td>
<td>-+-***++-++</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rockweed (Fucus)</td>
<td>- - ++-+++<em><strong>+</strong></em>+++---++-+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Red Algae (Endocladia/other)</td>
<td>-+++++-+++---++</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mussels (Mytilus)</td>
<td>- - - ++*** *** -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Green Algae (Ulva/other)</td>
<td>- - - - - - - - - -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Palmaria and other red algae</td>
<td>+++* -+++-+++++++---++-+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Red Algae</td>
<td>-+++++***+++---++</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upright Brown Algae (not Fucus)</td>
<td>+++* -+++-+++++++---++-+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Encrusting bryozoans</td>
<td>- - ++++++++***+++---++-+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Legend: (-) Sparse to rare, (+) Moderate, (*) Abundant

List of Species from PYOO8-B

A.  Marine Plants
1. Diatoms, Blue Greens
2. Green Algae - Chlorophyta
   Cladophora sp., Enteromorpha sp., Prasiola meridionalis, Ulva sp., Urospora sp.
3. Brown Algae - Phaeophyta
   Alaria marginata, Ectocarpus sp., Fucus distichus, Hildenbrandia sp., Laminaria groenlandica, Ralfsia sp., Sycatosiphon lomentaria
Red Algae - Rhodophyta
Banxia fuscopurpurea, Endoclada muricata, Halosaccion glandiforme, Lithothamnion sp., Membranoptera dimorpha, Odonalthalia floccosa, Palmaria palmata, Petrocelis sp., Porphyra sp., Rhodomela larix

Higher Plants - Leymus mollis (beach rye grass)

II. Marine Animals
1. Sponges - Porifera - Halichondria bowerbanki?
2. Anemones - Anthopleura artemesia, Epiactis prolifera?, Metridium senile, Urticina crassicornis,
6. Nemertean Worms - Ribbon Worms - Emplectonema gracile
8. Polychaete Worms
   Glyceridae
   Nepthidae
   Nereidae - Nereis spp.
   Serpulidae - Serpula sp., Crucigera sp., Eudistylia polymorpha
   Spiorbidae - Spirobranchus sp.
9. Peanut worms - Sipunculids - Phascolosoma agassizii
10. Crustaceans
    a. Amphipods - Orchestia sp.?, Traskorchestia traskiana
    b. Barnacles - Balanus glandula, Semibalanus cariosus
    c. Crabs - Hoplogaster sp., Paguridae (hermit crabs)
    d. Isopods - Cirdana harfordi, Idotea wosnesenskii, Gnorrinopsphaera oregonensis
11. Mollusca
    a. Chitons - Cryptochiton stelleri, Mopalia sp., M. mucosa, Katharina tunicata, Tonicella lineata,
    b. Snails - Gastropods
       Littorina sitkana, L. keenae, Nucella lamellosa, N. lima,
       Sealesia dira
    c. Limpets - Lottia digitalis, L. persona, Tectura fenestrata, T. persona, T. scutum, Siphonaria thersites
    e. Bivalves - Chlamys hastata, Mytilus edulis, Pododesmus cepio
12. Echinoderms
    a. Brittle Stars - Ophiolus aculeatus?, Ophiothrix spiculata?, Amphipholis?
    b. Sea stars - Crossaster papposus, Dermasterias imbricata, Henricia leviुsula, Leptasterias hexactis, Orthasterias keohleri, Pisaster ochraceus, Pycnopodia helianthoides, Solaster dawsoni,
    c. Sea Cucumbers - Holothurians - Eupentacta sp.
    d. Urchins - Strongylocentrotus droebachiensis
15. Fishes
    Cottidae -
    Stichaeidae - Xiphisteratropurpureus, X. mucosus

IV. Birds - Bald Eagle (1), Glaucous-winged Gull (15), Black-legged Kittiwake (15), Western Sandpiper (5), Fox Sparrow (2), Crow (1)
Legend

- Steep bedrock / talus
- Large boulders / talus / steep bedrock

Area 1 (ct, cu, ms)

Area 2 (ms, ct, cu)
Black lichen, barnacles, limpets - all sparse. Some of these from directly contacting oil. Some dead mussels, probably from the initial spill. Juvenile mussels, limpets, barnacles, limpets. Lower zone - dense red, green algae. Brown algae in subtidal.

Area 3 - similar to A2 - black lichen, limpets, snails, barnacles, some in contact with oil. Mussels are n/a, and in contact with oil (sparse patches). Richer intertidal below. Fucus, red, green algae abundant below.

Area 4 -
1991 MAYSAP EVALUATION

SEGMENT: PY_008  SUB: D  REGION: KEN  SURVEY DATE: 5/16/91

ENVIRONMENTAL SENSITIVITIES:
Work Window(s) OPEN

Ecological/Constraints (see page two for details)  NONE

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO Signature: __________________________ Date: __________________________

RECOMMENDATIONS:

<table>
<thead>
<tr>
<th>TREATMENT REQUIRED (Y or N)</th>
<th>INITIAL</th>
<th>TAG</th>
<th>FOSC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manual Pickup (Check as Req.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spot Washing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bio-Customblen Only</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bio-Inipol/Customblen</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

COMMENTS:

INITIAL:
_________________________________________________________

TAG:
________________________________________________________

FOSC:
________________________________________________________

TAG APPROVAL DATE: __________  FOSC APPROVAL DATE: __________

ADEC __________________________  FOSC __________________________

EXXON __________________________

USCG __________________________

NOAA __________________________
TEAM NO. 4

SEGMENT 24 - 608

SUBDIVISION D

DATE 7/16/1981

ADEC
NAME: Clara S. Crosby
SIGNATURE: Clara S. Crosby

Very Pt. oiling within Subdivision

EXXON
NAME: George R. Stiles
SIGNATURE: George R. Stiles 5/23/81

Concur with ADEC - very small amount of oil seen.

LANDMANAGER
NAME: John P. Hardister of USFWS
SIGNATURE: John P. Hardister

Little oil remains on this subd. Cleanup not recommended.

USCG/NOAA
NAME: Cool J. MacMahon
SIGNATURE: J. J. MacMahon

There did exist some TB which was cleaned up by the VECO crew. Little or no oil remains to warrant further clean-up.

NOAA/Donald A. MacDonald

Donald A. MacDonald
TEAM NO. 4  
OG Sent Co  
ADEC Crosby  
EXXON 54.65

TIME 07:00 to 09:20  
TIDE LEVEL -3.0 ft. to -3.0 ft.  
ENERGY LEVEL: □ H □ M □ L

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

TOTAL LENGTH SHORELINE SURVEYED: 234 m  
NEAR SHORE SHEEN: □ BR □ RB □ SL □ NONE

EST. OIL CATEGORY LENGTH: W ___ m M ___ m N ___ m VL ___ m NO ___ m US ___ m

<table>
<thead>
<tr>
<th>L</th>
<th>SURFACE OIL CHARACTER</th>
<th>SURFACE SEDIMENT</th>
<th>SLOPE</th>
<th>WIDTH</th>
<th>LENGTH</th>
<th>ZONE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q</td>
<td>AP</td>
<td>MS</td>
<td>TB</td>
<td>SOF</td>
<td>CV</td>
<td>CT</td>
</tr>
<tr>
<td>O</td>
<td>TYPE</td>
<td>V</td>
<td>H</td>
<td>M</td>
<td>L</td>
<td>S</td>
</tr>
<tr>
<td></td>
<td>NOTES</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

DISTRIBUTION: C = 01-100%; 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 # MAYSAP- ___________ FRAMES ___________

<table>
<thead>
<tr>
<th>PIT</th>
<th>OIL CHARACTER</th>
<th>OILED ZONE</th>
<th>OILED SUBSURFACE</th>
<th>CLEAN</th>
<th>H2O</th>
<th>SHEEN</th>
<th>ZONE</th>
<th>PIT</th>
<th>SUBSURFACE</th>
<th>SURFACE-</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO.</td>
<td>DEPTH (cm)</td>
<td>OPI</td>
<td>HOR</td>
<td>MOR</td>
<td>LOR</td>
<td>OF</td>
<td>TR</td>
<td>NO</td>
<td>cm-cm</td>
<td>Y/N</td>
<td>(cm)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

OG COMMENTS: Shoreline consists of rounded sloping bedrock. Large angular boulders are locally associated with fault. On the bedrock, small clay particles were found.
MAYSAP BIOLOGICAL SUMMARY FORM

TEAM # 4                  DATE/TIME May 16, 1991 0920 - 0921
SEGMENT # PY008           TIDAL HEIGHT (Range) -3.0 => -3.0
SUBDIVISION D              BIOMARKER JIM BARRY
SEA STATE Calm             WIND SPEED/DIRECTION Calm, cloudy

COMMENTS / OBSERVATIONS - OILED SUBDIVISIONS

Oil-related Comments

No oil was found on PY008-D

General Features of PY008-D

This short segment is a headland between two small coves PY008-C, PY008-E. The shore is nearly entirely bedrock outcrops and headlands that slope steeply to the subtidal. The shore is exposed to low to moderate waves. The biota have a typical profile for these shores, with black lichen in the high to supratidal zone, and increasing densities of algae and invertebrates towards the low shore. Green algae is very abundant in the high zone, along with scattered limpets, barnacles, littorine snails, and mussels in crevices. Fucus is moderately to densely abundant in the mid-shore. Red algae (mainly Odonthalia, Palmaria, Microcladia), green algae (Ulva), and brown algae dominate the low intertidal and subtidal. Invertebrates are very diverse and abundant in the low shore. Many species of sea stars, crustaceans, sea anemones, and other groups are very common.

(continued)

WILDLIFE OBSERVATIONS - Completed on all subdivisions

<table>
<thead>
<tr>
<th>BIRDS</th>
<th># OF SPECIES</th>
<th>TOTAL BIRDS</th>
<th>FISH OBSERVED SPECIES PRESENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eagles</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Seabirds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waterfowl</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gulls/Kittiwakes</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Shorebirds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corvids</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Birds</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MARINE MAMMALS</th>
<th># OBSERVED</th>
<th>SPECIES</th>
<th># OBSERVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sea Otters</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pinnipeds (specify)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whales (specify)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Shoreline subdivision map showing important biological features attached.
List of Species from PY008-D

A. Marine Plants
1. Diatoms, Blue Greens
   Enterosperma sp., Prasiola meridionalis, Ulva sp., Urospora sp.
2. Green Algae - Chlorophyta
   Enteromorpha sp., Prasiola meridionalis, Ulva sp., Urospora sp.
3. Brown Algae - Phaeophyta
   Alaria marginata, Agarum fimbriatum, Costaria costata, Ectocarpus spp.
   Fucus distichus, Hildenbrandia sp., Ralfsia sp., Syctosiphon lomentaria
4. Red Algae - Rhodophyta
   Endocladia muricata, Halosaccion glandiforme, Lithothamnion sp.
   Mastocarpus sp., Membranoptera dimorpha, Palmaria palmata, Petrocelis sp., Porphyra sp., Ptilota filicina, Rhodomela larvae

II. Marine Animals
1. Sponges - Porifera - Halichondria bowerbanki?
2. Anemones - Anthopleura artemesia, E. prolifera?, Metridium senile, Urticina crassicornis
3. Hydroids - Sertulariidae, Aqlaophenia sp., Abietinaria sp.
5. Flatworms - Platyhelminthes - Polyclads
6. Nemertean Worms - Ribbon Worms - Empioctonema gracile
8. Polychaete Worms
   Serpulidae - Serpula sp., Crucigera sp., Eudistyla polymorpha
   Spriorbidae - Spirophis sp.
10. Crustaceans
   a. Amphipods - Orchestia sp.?
   b. Barnacles - Balanus glandula, Chthamalus dalli, Semibalanus cariosus
   c. Crabs - Paguridae (hermit crabs), Pugettia sp.,
11. Mollusca
   a. Chitons - Katharina tunicata
   b. Snails - Gastropods
      Fusitriton oregonensis, Littorina sitkana, L. keenae, Nucella lamellosa, Searlesia dira
   c. Limpets - Lottia digitalis, L. persona, Tectura fenestrata, T. persona, T. scutum, Siphonaria thersites
   e. Bivalves - Mytilus edulis
12. Echinoderma
   a. Sea stars - Crossaster papposus, Dermasterias imbricata, Evasterias truscheli, Henricia leviuscula, Leptasterias hexactis
   b. Sea stars - Crossaster papposus, Dermasterias imbricata, Evasterias truscheli, Henricia leviuscula, Leptasterias hexactis
   c. Sea stars - Crossaster papposus, Dermasterias imbricata, Evasterias truscheli, Henricia leviuscula, Leptasterias hexactis
   d. Urchins - Strongylocentrotus droebachiensis
15. Fishes
   Cottididae
   Stichaeidae - Xiphister atropurpureus, X. mucosus
1991 MAYSAP EVALUATION

SEGMENT: PY 008  SUB: F  REGION: KEN  SURVEY DATE: 5/16/91

ENVIRONMENTAL SENSITIVITIES:
Work Window(s)  OPEN

Ecological/Constraints (see page two for details)  NONE

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO Signature:  
Date: 6/13/91

RECOMMENDATIONS:

<table>
<thead>
<tr>
<th>Treatment Required (Y or N)</th>
<th>INITIAL</th>
<th>TAG</th>
<th>FOSC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manual Pickup (Check as Req.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spot Washing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bio-Customblend Only</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bio-Inpol/Customblend</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

COMMENTS:

INITIAL: ________________________________

TAG: ____________________________________

FOSC: __________________________________

TAG APPROVAL DATE:  May 5 1991  FOSC APPROVAL DATE:  6/15/91

ADEC  
EXXON  
USCG  
NOAA  

E. E. PAGE, CDR, USCG  
CHIEF OF STAFF, FOSC
Name: Clara S. Crosby
Signature: Clara S. Crosby

(Name: George P. Stiles)
Signature: George P. Stiles

Comment:

(Area remains in Subdivision - Survey Crew removed as much accessible oil spilled as possible.

Comment:

Concur with ADEC - little recoverable of oil still remains.

Comment:

Trace amounts of oil. No cleanup necessary.

Comment:

Very little oil.

Date: May 16, 1991

Comments:

Survey conducted.

(Note: The comments are written in fragmented and informal handwriting, indicating personal observations and decisions.)
MAYSAP SHORELINE OILING SUMMARY

TEAM NO. 4

OG: J. Sample

EC: Crosby

EXON: George P. Stites

BIO: J. Barry

LANDMANAGER: Frank for USGS

USCG/NOAA: M. Murphy/M. Deavel

TIME: 9:55 to 11:31

TIDE LEVEL: -3.3 ft to -1.6 ft

ENERGY LEVEL: □ H □ M □ L

SURVEYED FROM: □ FOOT □ BOAT □ HELO

WEATHER: □ SUN □ CLOUDS □ FOG □ RAIN □ SNOW

TOTAL LENGTH SHORELINE SURVEYED: 1322 m

NEAR SHORE SHEEN: □ BR □ RB □ SL □ NONE

EST. OIL CATEGORY LENGTH:

<table>
<thead>
<tr>
<th>LOC.</th>
<th>SURFACE OIL CHARACTER</th>
<th>SURFACE SEDIMENT TYPE</th>
<th>SHORE SLOPE</th>
<th>WIDTH</th>
<th>LENGTH</th>
<th>ZONE</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. 1</td>
<td>T</td>
<td>T</td>
<td>R</td>
<td>M</td>
<td>1322</td>
<td>X</td>
</tr>
</tbody>
</table>

TRACE ALONG COMPLETE SEGMENT

DISTRIBUTION: C = 91-100%; 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: #MAYSAP-4605-17-24

PIT NO. | PIT DEPTH (cm) | SUBSURFACE OIL CHARACTER | OILED ZONE | CLEAN H2O | SHEEN COLOR | PIT ZONE | SURFACE-SUBSURFACE EROSION | NOTES |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>20</td>
<td>X</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>X</td>
<td>14</td>
<td>50/65</td>
</tr>
</tbody>
</table>

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

OG COMMENTS:

Long segment of sloping bedrock locally with boulders on shores of large angular boulders. Very little oil found scattered throughout segment no assign. If a very dry or hot condition, very little oil present.

Reviewed: Stephen M.

Revised: 5/21/91
Oil Related Comments

Oil on this subdivision was sparsely distributed as spatters of MS or CT throughout the upper intertidal shore. Few specific sites were designated. Few species are found at this level of the intertidal zone and those present are low in abundance. Black lichen is the most abundant species, with scattered patches throughout the upper zone along the subdivision. Filamentous green algae forms a film or sparse cover on cobble and boulders at this level, but is much denser below (ca 1-3 ft) the level of the oiling. Limpets, littorine snails, and barnacles also are scattered on and under the cobble near the oiled site and are much more abundant in lower zones. The surface of the oil is weathered in many cases, and barnacles, limpets, and littorine snails are often found directly in contact with the oil.

Cleanup Recommendations

Some manual cleanup was performed during the survey. Additional manual cleanup, if performed, will not adversely affect the biota along the subdivision.

(continued)

WILDLIFE OBSERVATIONS - Completed on all subdivisions

<table>
<thead>
<tr>
<th>BIRDS</th>
<th># OF SPECIES</th>
<th>TOTAL BIRDS</th>
<th>FISH OBSERVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eagles</td>
<td>1</td>
<td>22</td>
<td></td>
</tr>
<tr>
<td>Seabirds</td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Waterfowl</td>
<td>1</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Gulls/Kittiwakes</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Shorebirds</td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Corvids</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Other Birds</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MARINE MAMMALS</th>
<th># OBSERVED</th>
<th>SPECIES</th>
<th># OBSERVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sea Otters</td>
<td>Black Bear</td>
<td>1 Dead Cub</td>
<td></td>
</tr>
<tr>
<td>Pinnipeds (specify)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sea Lion</td>
<td>1 (Carcass)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whales (specify)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Shoreline subdivision map showing important biological features attached.
General Characteristics of PYOOB-F

This subdivision has sloping bedrock shores and is fairly well protected from all but small waves. The flora and fauna are typical of similarly protected steep shores, with sparse macroalgae, barnacles and limpets in the upper zones, Fucus, mussels in the mid-shore, and dense red and brown algae in the low zone. No sensitive species assemblages were found on the subdivision. Small patches or zones of mussels are present, but do not constitute a major feature of the subdivision.

General Zonation Pattern

<table>
<thead>
<tr>
<th>Biota:</th>
<th>Tide Level</th>
<th>SupraTidal</th>
<th>Upper</th>
<th>Middle</th>
<th>Low</th>
<th>Subtidal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil Spatters</td>
<td>- - -</td>
<td>- - -</td>
<td>- - -</td>
<td>- - -</td>
<td>- - -</td>
<td>- - -</td>
</tr>
<tr>
<td>Black Lichen</td>
<td>-+++++++</td>
<td>-+++++++</td>
<td>-++++++</td>
<td>-++++++</td>
<td>-++++++</td>
<td>-++++++</td>
</tr>
<tr>
<td>Filamentous Green Algae</td>
<td>-+++++++</td>
<td>-+++++++</td>
<td>-+++++++</td>
<td>-+++++++</td>
<td>-+++++++</td>
<td>-+++++++</td>
</tr>
<tr>
<td>Crustose Red Algae (Hildenbrandia)</td>
<td>-+++++++</td>
<td>-+++++++</td>
<td>-+++++++</td>
<td>-+++++++</td>
<td>-+++++++</td>
<td>-+++++++</td>
</tr>
<tr>
<td>Bare Rock</td>
<td>- - -</td>
<td>- - -</td>
<td>- - -</td>
<td>- - -</td>
<td>- - -</td>
<td>- - -</td>
</tr>
<tr>
<td>Rockweed (Fucus)</td>
<td>- - -</td>
<td>- - -</td>
<td>- - -</td>
<td>- - -</td>
<td>- - -</td>
<td>- - -</td>
</tr>
<tr>
<td>Barnacles (Balanus)</td>
<td>- - -</td>
<td>- - -</td>
<td>- - -</td>
<td>- - -</td>
<td>- - -</td>
<td>- - -</td>
</tr>
<tr>
<td>Odonthalia (Red Alga)</td>
<td>- - -</td>
<td>- - -</td>
<td>- - -</td>
<td>- - -</td>
<td>- - -</td>
<td>- - -</td>
</tr>
<tr>
<td>Palmaria (Red Alga)</td>
<td>- - -</td>
<td>- - -</td>
<td>- - -</td>
<td>- - -</td>
<td>- - -</td>
<td>- - -</td>
</tr>
<tr>
<td>Other Red Algae</td>
<td>- - -</td>
<td>- - -</td>
<td>- - -</td>
<td>- - -</td>
<td>- - -</td>
<td>- - -</td>
</tr>
<tr>
<td>Green Algae (Ulva/other)</td>
<td>- - -</td>
<td>- - -</td>
<td>- - -</td>
<td>- - -</td>
<td>- - -</td>
<td>- - -</td>
</tr>
<tr>
<td>Mussels (Mytilus)</td>
<td>- - -</td>
<td>- - -</td>
<td>- - -</td>
<td>- - -</td>
<td>- - -</td>
<td>- - -</td>
</tr>
<tr>
<td>Upright Brown Algae (not Fucus)</td>
<td>- - -</td>
<td>- - -</td>
<td>- - -</td>
<td>- - -</td>
<td>- - -</td>
<td>- - -</td>
</tr>
<tr>
<td>Eel Grass</td>
<td>- - -</td>
<td>- - -</td>
<td>- - -</td>
<td>- - -</td>
<td>- - -</td>
<td>- - -</td>
</tr>
<tr>
<td>Clams</td>
<td>- - -</td>
<td>- - -</td>
<td>- - -</td>
<td>- - -</td>
<td>- - -</td>
<td>- - -</td>
</tr>
</tbody>
</table>

Legend: (−) Sparse to rare, (+) Moderate, (++) Abundant

Common Species on PYOOB-F

A. Marine Plants
1. Diatoms, Blue Greens
2. Green Algae - Chlorophyta
   Cladophora sp., Enteromorpha sp., Prasiola meridionalis, Ulva sp., Urospora sp.
3. Brown Algae - Phaeophyta
   Alaria marginata, Agarum fimbriatum, Costaria costata, Ectocarpus spp., Fucus distichus, Hildenbrandia sp., Laminaria saccharina, Ralfsia sp., Sycosiphon lomentaria
4. Red Algae - Rhodophyta
   Bossiella sp., Corallina sp., Endocladia muricata, Halosaccion glandiforme, Lithothamnion sp., Mastocarpus sp., Membranoptera dimorpha, Odonthalia floccosa, Palmaria palmata, Petrocelis sp., Porphyra sp., Rhodomel larix
5. Higher Plants - Zostera marina (eel grass), Leymus mollis (beach rye grass)

B. Marine Animals
1. Sponges - Porifera - Halichondria bowerbankii?, Halichondria panicea
2. Anemones - Anthopleura artemisia, A. elegantissama, Epiactis ritteri, E. prolifera?, Metridium senile, Urticina crassicornis
3. Hydroids - Sertulariidae, sp., Abietinaria sp.
5. Flatworms - Platyhelminthes - Polyclads
6. Nemertean Worms - Ribbon Worms - Emplectonema gracile
8. Polychaete Worms
   Glyceridae
   Nepthyidae
   Nereidae - Nereis spp.
   Serpulidae - Serpula sp., Cruciger a sp., Eudistylia polymorpha
   Spiorbidae - Spiorbis sp.
9. Peanut worms - Sipunculids - Phascolosoma agassizii
10. Crustaceans
    a. Amphipods - Orchestia sp.? 
    b. Barnacles - Balanus glandula, Chthamalus dalli, Semibalanus cariosus 
    c. Crabs - Haplogaster sp., Paguridae (hermit crabs), Pugettia sp., 
    d. Isopods - Cirdana harfordi, Idotea wosnesenskii, Gnirimosphaeroma oregonensis
11. Mollusca
    a. Chitons - Cryptochiton stelleri, Mopalia sp., M. mucosa, Katharina tunicata, Tonicella lineata,
    b. Snails - Gastropods 
       Lirularia sp., Littorina sitkana, L. keenae, N. lima, N. emarginata, Searlesia dira
    c. Limpets - Lottia digitalis, L. limatula, L. persona, Tectura fenestrata, T. persona, Siphonaria thersites
    d. Nudibranchs - Lamellidoris fusca, Melibeleonina, Onchidella borealis
    e. Bivalves - Clinocardium nuttalli, Macoma nasuta, Modiolus modiolus, Mya arenaria (soft-shell clam), Mytilus edulis, Pododesmus cepio, Prototheca staminea
12. Echinoderms
    a. Brittle Stars - Ophiolus aculeatus?, Ophiothrix spiculata?, Amphipholis?
    b. Sea stars - Crossaster papposus, Dermasterias imbricata, Evasterias truscheli, Henricia leviuscula, Leptasterias hexactis, Orthasterias keohleri, Pychnopoida helianthoides, Solaster dawsoni,
    c. Sea Cucumbers - Holothurians - Eupentacta sp.
    d. Urchins - Strongylocentrotus droebachiensis
15. Fishes
   Cottidae - Stichaeidae - Xiphister atropurpureus, X. mucosus
III. Birds - Fox Sparrow (3), Western Sandpiper (2), Glaucous-winged Gull (22), Raven (3)
Oil nearly or entirely confined to Unit 1. Little biota present at that level. Black limestone occurs as scattered patches. Sparse epibenthic snails, limpets, and barnacles. Green filamentous algae form film on some codals/rocks.


OIL = trace (occasional wet spot) throughout.
1991 MAYSAP EVALUATION

SEGMENT: PY 008  SUB: A  REGION: KEN  SURVEY DATE: 5/16/91

ENVIRONMENTAL SENSITIVITIES:
Work Window(s)  RESTRICTED 3/1 - 9/1

Ecological/Constraints (see page two for details)  Eagle nest

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO Signature: __________________________ Date: __________________________

RECOMMENDATIONS:  INITIAL  TAG  FOSC

TREATMENT REQUIRED (Y or N)  N  ______  ______

Manual Pickup (Check as Req.)  ______  ______  ______
Spot Washing  ______  ______  ______
Bio-Customblen Only  ______  ______  ______
Bio-Inipol/Customblen  ______  ______  ______
Other  __________________________  ______  ______
Other  __________________________  ______  ______

COMMENTS:

INITIAL: __________________________________________

TAG: __________________________________________

FOSC: __________________________________________

TAG APPROVAL DATE:  ______  FOSC APPROVAL DATE:  ______

ADEC  __________________________________________
EXXON  __________________________________________
USCG  __________________________________________
NOAA  __________________________________________
ECOLOGICAL CONSTRAINTS
1991 FIELD ACTIVITIES

Eagle Nest: Access restricted from 3/1 to 9/1. USF&WS authorization required. Maintain 1000' vertical and 1/4 mile horizontal buffer.
<table>
<thead>
<tr>
<th>ADEC</th>
<th>NAME: Clara E. Crosby</th>
<th>SIGNATURE: Clara E. Crosby</th>
</tr>
</thead>
<tbody>
<tr>
<td>✔️ NTR</td>
<td>High energy area. No recoverable oil observed.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EXXON</th>
<th>NAME: George L. Stiles</th>
<th>SIGNATURE: George L. Stiles</th>
</tr>
</thead>
<tbody>
<tr>
<td>✔️ NTR</td>
<td>No recoverable oil located.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LANDMANAGER</th>
<th>NAME: John P. Hardister</th>
<th>SIGNATURE: John P. Hardister</th>
</tr>
</thead>
<tbody>
<tr>
<td>✔️ NTR</td>
<td>No oil located.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>USCG/NOAA</th>
<th>NAME: McImar</th>
<th>SIGNATURE: McImar</th>
</tr>
</thead>
<tbody>
<tr>
<td>✔️ NTR</td>
<td>No oil to recover.</td>
<td></td>
</tr>
</tbody>
</table>
TEAM NO. 4

OG: James Semins

ADEC: Crosby

BIO: Jim Barry

LANDMANAGER: Harold for USFWS

USCG/NOAA: McBean/Myers

DATE: May 15, 1991

TIME: 05:10 to 07:00

TIDE LEVEL: +4.9 ft to +4.5 ft.

ENERGY LEVEL: X H  M  L

SURVEYED FROM: X FOOT  X BOAT  [HELO]

WEATHER:  [SUN]  [CLOUDS]  [FOG]  [RAIN]  [SNOW]

TOTAL LENGTH SHORELINE SURVEYED: 735 m

NEAR SHORE SHEEN:  [BR]  [RB]  [SL]  [NONE]

EST. OIL CATEGORY LENGTH:  W m  M m  N m  V m  L m

TOTAL SHORELINE SURVEYED: 66.5 m

Surf ace Oil Character

<table>
<thead>
<tr>
<th>LOC</th>
<th>SURFACE SEDIMENT</th>
<th>SLOPE</th>
<th>WIDTH</th>
<th>LENGTH</th>
<th>ZONE</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Surf ace Oil Character

<table>
<thead>
<tr>
<th>LOC</th>
<th>OILED ZONE</th>
<th>CLEAN ZONE</th>
<th>H2O ZONE</th>
<th>SHEEN COLOR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Subsurface Oil Character

<table>
<thead>
<tr>
<th>PIT NO.</th>
<th>DEPTH (cm)</th>
<th>OILED ZONE</th>
<th>CLEAN ZONE</th>
<th>H2O ZONE</th>
<th>SHEEN COLOR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

OG COMMENTS:

See map.
Steep Bedrock shoulder with steep face of smaller boulders in the northern part.

Very few clasts less than 10 cm in diameter. No ice observed in northern part of cement.
COMMENTS / OBSERVATIONS - OILED SUBDIVISIONS

This subdivision encompasses the outer section of a cove and is exposed to moderate surf. The shore is about 1/2 bedrock cliffs and 1/2 high angle talus boulders. The flora and fauna along the subdivision are typical of moderately exposed shores. Near the north (exposed) end of the subdivision, mussels are dense in patches near the middle and upper intertidal zones. While the south end of the segment, which is somewhat more protected, has only scattered patches of mussels. Fucus replaces mussels in the more protected areas. The lowest zones have abundant red and green algae that grade to dense brown algae (Laminaria, Alaria) in the subtidal. Barnacles, limpets, littorines and other invertebrates are generally abundant along this shore. Recruitment is evident for many species throughout the subdivision and the intertidal biota appear healthy.

A1 Oil is restricted to one location in the high zone. At this location black lichen is moderately to sparsely abundant. Barnacles, limpets, and thin red algae (Porphyra sp.) are sparsely distributed near the oil spatters. Below the oiled area, these species are much more abundant. Barnacles (mainly Balanus glandula) form a dense band in the middle zone. Endocladia and similar branched red algae also form a patchy zone in the middle to upper zone, below which mussels, Fucus, filamentous green algae and brown algae are abundant. No particularly sensitive assemblage of species is present near or below the oiled site.

Some manual cleanup was performed along this subdivision. Additional manual removal of oiled sediments will not adversely affect this site.

(continued)

WILDLIFE OBSERVATIONS - Completed on all subdivisions

<table>
<thead>
<tr>
<th>BIRDS</th>
<th># OF SPECIES</th>
<th>TOTAL BIRDS</th>
<th>FISH OBSERVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eagles</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seabirds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waterfowl</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gulls/Kittiwakes</td>
<td>2</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Shorebirds</td>
<td>1</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Corvids</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Birds</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MARINE MAMMALS</th>
<th># OBSERVED</th>
<th>LAND MAMMALS</th>
<th>SPECIES</th>
<th># OBSERVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sea Otters</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pinnipeds (specify)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whales (specify)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Shoreline subdivision map showing important biological features attached.
### Biotas

<table>
<thead>
<tr>
<th>Biota</th>
<th>Tide Level</th>
<th>Supratidal</th>
<th>Upper</th>
<th>Middle</th>
<th>Low</th>
<th>Subtidal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil Spatters</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black Lichen</td>
<td>++++-------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bare Rock</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barnacles (Balanus)</td>
<td></td>
<td>-</td>
<td>++++</td>
<td>++++++</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Limpets</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-------</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Red Algae (Endocladi/a/other)</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mussels (Mytilus)</td>
<td>-</td>
<td>-</td>
<td>++++++</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Rockweed (Fucus)</td>
<td>-</td>
<td></td>
<td>++++++</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Green Algae (Ulva/other)</td>
<td>-</td>
<td></td>
<td>-</td>
<td>-</td>
<td></td>
<td>++</td>
</tr>
<tr>
<td>Odonthalia (Red Alga)</td>
<td>-</td>
<td></td>
<td>++++++</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Palmaria (Red Alga)</td>
<td>-</td>
<td></td>
<td>++</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Other Red Algae</td>
<td>-</td>
<td></td>
<td>++++++</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Crustose Brown Algae (Hildenbrandia)</td>
<td>-++++++-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upright Brown Algae (not Fucus)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-+++++++</td>
</tr>
</tbody>
</table>

**Legend:** (-) Sparse to rare, (+) Moderate, (*) Abundant

### List of Species from PYO08-A

#### A. Marine Plants

1. **Diatoms, Blue Greens**
   - Acrosiphonia sp., Cladophora sp., Enteromorpha sp., Prasiola meridionalis, Ulva sp., Urospora sp.
2. **Green Algae - Chlorophyta**
   - Alaria marginata, Ectocarpus sp., Fucus distichus, Hildenbrandia sp., Laminaria groenlandica, Nereocystis leutkeana, Ralfsia sp., Syctosiphon lomentaria
3. **Brown Algae - Phaeophyta**
   - Bangia fuscopurpurea, Calliarthron sp., Corallina sp., Endocladi/a muricata,, Halosaccion glaudivorme, Lithothamnion sp., Mastocarpus sp., Membranoptera dimorpha, Mesophyllum conchatum, Odonthalia floccosa, Palmaria palmata, Petrocelis sp., Porphyra sp., Rhodomela larix
4. **Red Algae - Rhodophyta**
   - Bangia fuscopurpurea, Calliarthron sp., Corallina sp., Endocladi/a muricata,, Halosaccion glaudivorme, Lithothamnion sp., Mastocarpus sp., Membranoptera dimorpha, Mesophyllum conchatum, Odonthalia floccosa, Palmaria palmata, Petrocelis sp., Porphyra sp., Rhodomela larix
5. **Higher Plants - Leymus mollis (beach rye grass)**

#### B. Marine Animals

1. **Sponges - Porifera - Halichondria bowerbanki?**
2. **Anemones - Anthopleura artemesia, A. elegantissama, A. xanthogrammica, E. prolifera?, Metridium senile, Urticina crassicornis**
3. **Hydroids - Sertulariidae, Aqlophenia sp., Abietinaria sp.**
4. **Flatworms - Platyhelminthes - Polyclads**
5. **Nemertean Worms - Ribbon Worms - Emplectonema gracile**
6. **Polychaete Worms**
7. **Glyceridae**
   - Nephtyidae
8. **Nereidae - Nereis spp.**
   - Serpulidae - Serpula sp., Crucigera sp., Eudistylia polymorpha
   - Spirobid/e - Spiorbis sp.
9. **Peanut worms - Sipunculids - Phascolosoma agassizii**
10. **Crustaceans**
    - **a. Amphipods - Orchestia sp.?**
    - **b. Barnacles - Balanus glandula, Chthamalus dalli, Semibalanus cariosus**
IV. Birds -  Glaucous-winged Gull (5), Black-legged Kittiwake (5), Western Sandpiper (3)
1991 MAYSAP EVALUATION

SEGMENT: PY 008  SUB: E  REGION: KEN  SURVEY DATE: 5/16/91

ENVIRONMENTAL SENSITIVITIES:
Work Window(s)  OPEN

Ecological/Constraints (see page two for details)  NONE

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO Signature:  Timothy P. Smith  Date: 6/3/91

RECOMMENDATIONS:

TREATMENT REQUIRED (Y or N)  N  N  N

Manual Pickup (Check as Req.)  
Spot Washing  
Bio-Customeblen Only  
Bio-Inipol/Customeblen  
Other  
Other

COMMENTS:

INITIAL:  

TAG:  

FOSC:  

TAG APPROVAL DATE:  6/3/91  FOSC APPROVAL DATE:  6/3/91

ADEC  John Baran  
EXXON  
USCG  
NOAA  

E. E. Page, CDR, USCG  CHIEF OF STAFF, FOSC
1. Recommend Treatment - Treatment (manual removal) is recommended at this Subsite in conjunction with SECHEL. There is an area of coke (approximately 5-x-40m & 3 to 7cm thick). This subsurface oiled area would be labor intensive to recover manually if there are no options for mechanical due to terrain. Surface oiling within this Subdivision, however, can be recovered using hand shovels. The estimated time for manual removal of surface oiling is 2 to 3 hours per day by an 8-man crew. 

N. TR.

Very little oil remains that could be effectively removed due to the large size of shells.

☐ NTR

Some oil remains from the cleanup operation I observed in July 1989. Part of this oil was removed during the passant survey. I do not recommend any further cleanup effort.

☐ NTR

Some pieces of weathered debris remain, but they do not threaten the biologic, human life or the environment. This crew picked up a negligible amount on scene.

☐ NTR

Donald A. Macdonald
### MAYSAP SHORELINE OILING SUMMARY

**Team No.: 4**

**OG:** Jim Simpson  
**ADEC:** Crosby  
**BO:** Barry  
**LANDMANAGER:** Handlister  
**USCG/NOAA:** McNab/McDonald

**TIME:** 09:20 to 09:55  
**TIDE LEVEL:** -3.0 ft. to -3.0 ft.  
**ENERGY LEVEL:** □ H □ M □ L

**SURVEYED FROM:** □ FOOT □ BOAT □ HELO  
**WEATHER:** □ SUN □ CLOUDS □ FOG □ RAIN □ SNOW

**TOTAL LENGTH SHORELINE SURVEYED:** 7.9 m  
**NEAR SHORE SHEEN:** □ BR □ RB □ SL □ NONE

**EST. OIL CATEGORY LENGTH:** □ m □ m □ m □ m □ m □ m □ m

---

### SURFACE OIL CHARACTER

<table>
<thead>
<tr>
<th>LOC</th>
<th>SURFACE OIL CHARACTER</th>
<th>SURFACE</th>
<th>SLOPE</th>
<th>AREA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>SLOPE</td>
<td>WIDTH</td>
<td>LENGTH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TYPE</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>V/H/M/L</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

### SURFACE OIL CHARACTER

<table>
<thead>
<tr>
<th>LOC</th>
<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED ZONE</th>
<th>CLEAN BELOW</th>
<th>H2O LEVEL</th>
<th>SHEEN COLOR</th>
<th>PIT ZONE</th>
<th>SURFACE-SUBSURFACE OILING</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>ZONE:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>OILED</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>ZONE:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**OG COMMENTS:** See map

---

**SEGMENT:** D  
**SUBDIVISION:** E  
**DATE:** 5/16/91
Small pocket accumulation of mixed sediment over and among bedrock outcrop. Bedrock ramp on the eastern part of the segment. Boulders near bedrock. Band of scattered marine and Hsor patches in water and on the bedrock ramp. Subsurface oil present and in association with the area where patches of surface oil are present.
MAYSAP BIOLOGICAL SUMMARY FORM

TEAM # 4
SEGMENT # PY008
SUBDIVISION E
SEA STATE Calm

DATE/TIME May 16, 1991 0921 - 1000
TIDAL HEIGHT (Range) -3.0 => -3.0

BIOLOGIST JIM BARRY
WIND SPEED/DIRECTION Calm, rain

COMMENTS / OBSERVATIONS - OILED SUBDIVISIONS

Oil-related Comments

A1 Oil (MS-HSOR) is present in the cobble of the upper zone. Little biota is present at this location or tidal level. Sparse filamentous green algae are found on the cobble, with scattered sparse barnacles, littorine snails and limpets. Below the oiled area, filamentous green algae are dense on the beach cobble.

A2 This oiled area (MS-HSOR) is in the upper zone and extends lower in that zone towards the middle intertidal zone than A1. Filamentous green algae, along with other film-forming species (brown algae?), are abundant very near the oiled site. Fucus and other red algae (Halosaccion) are sparse at the site. Limpets and littorines are dense in patches under cobble and are present directly on the oiled sediments. Amphipods are moderately abundant, as are oligochaete worms.

The lower intertidal below both A1 and A2 is densely covered with red and brown algae, with a diverse invertebrate community.

Cleanup Recommendations

For both A1 and A2, cleanup activities, if recommended, will have little negative impact on the biota at the site.

(continued)

WILDLIFE OBSERVATIONS - Completed on all subdivisions

<table>
<thead>
<tr>
<th>BIRDS</th>
<th># OF SPECIES</th>
<th>TOTAL BIRDS</th>
<th>FISH OBSERVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eagles</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Seabirds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waterfowl</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gulls/Kittiwakes</td>
<td>2</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Shorebirds</td>
<td>1</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Corvids</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Other Birds</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MARINE MAMMALS</th>
<th># OBSERVED</th>
<th>LAND MAMMALS</th>
<th>SPECIES</th>
<th># OBSERVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sea Otters</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pinnipeds (specify)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whales (specify)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Shoreline subdivision map showing important biological features attached.
General Features of PYOOB-E

This subdivision is a very small cove with bedrock outcrops, headlands, and a small beach of cobble and boulders, and low to medium exposure. Little biota is present on the cobble and boulders of the upper zone. Barnacles and mussels are present in moderately to high densities on the bedrock outcrops in the middle zone of this site. Dense red and brown algae are abundant in the low zone. Invertebrates are more abundant in the low zone of this subdivision than in most areas surveyed, probably due to the heterogeneous habitat types in that zone.

Generalized Zonation Pattern of PYOOB-E

<table>
<thead>
<tr>
<th>Biota:</th>
<th>Tide Level</th>
<th>SupraTidal</th>
<th>Upper</th>
<th>Middle</th>
<th>Low</th>
<th>Subtidal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil</td>
<td>* * - +*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black Lichen</td>
<td>-++-------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bare Rock</td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Filamentous Green Algae</td>
<td>- - --+-+++- - - - + - - -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crustose red and brown Algae</td>
<td>- +++++++-- - - - - - - - - -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rockweed (Fucus)</td>
<td>- - +++++++ ** ++-** - - - - - -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barnacles (Balanus)</td>
<td>- +++++++-- ** + ++-** - - - - - -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upright Red Algae</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Green Algae (Ulva/other)</td>
<td>- - - - + - - - - + - - -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mussels (Mytilus)</td>
<td>- - +++++ ** + - -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upright Brown Algae (not Fucus)</td>
<td>- - -++++ ++****+ - - - - -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Limpet and Littorines</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Legend: (-) Sparse to rare, (+) Moderate, (*) Abundant

Common Species on PYOOB-E

A. Marine Plants
   1. Diatoms, Blue Greens
   2. Green Algae - Chlorophyta
      Acrosiphonia sp., Cladophora sp., Enteromorpha sp., Prasiola meridionalis, Ulva sp., Urospora sp.
   3. Brown Algae - Phaeophyta
      Alaria marginata, Agarum fimbriatum, Costaria costata, Ectocarpus sp.,
      Fucus distichus, Hildenbrandia sp., Laminaria groenlandica, L.
      Saccharina, Ralfsia sp., Sycotosiphon lomentaria
   4. Red Algae - Rhodophyta
      Bangia fuscopopurea, Bossiella sp., Calliarthron sp., Corallina sp.,
      Cryptosiphonia woodii, Endocladia muricata, Halosaccion glandiforme,
      Iridaea sp., Lithothamnion sp., Mastocarpus sp., Membranoptera dimorpha,
      Mesophyllum conchatum, Odonthalia floccosa, Palmaria palmata, Petrocelis sp.,
      Porphyra sp., Ptilota filicina, Rhodomela larix
   5. Higher Plants - Leymus mollis (beach rye grass)

B. Marine Animals
   1. Sponges - Porifera
      Halichondria bowerbanki?, Ophlitaspongia pennata,
   2. Anemones - Anthopleura artemesia, A. elegantissima, Cribinopsis fernaldi, E.
prolifera?, Metridium senile, Urticina crassicornis,
3. Hydroids - Sertulariidae, Aglaophenia sp., Abietinaria sp.
5. Flatworms - Platyhelminthes - Polyclads
6. Nemertean Worms - Ribbon Worms - Emplectonema gracile, Tubulanus polymorphus
8. Polychaete Worms
   Glyceridae
   Nephtyidae
   Nereidae - Nereis spp.
   Serpulidae - Serpula sp., Cruciger a sp., Eudistylia polymorpha
   Spionidae - Spiororbis sp.
9. Peanut worms - Sipunculids - Phascolosoma agassizii
10. Crustaceans
    a. Amphipods - Orchestia sp.?; Traskorchestia traskiana
    b. Barnacles - Balanus glandula, Chthamalus dalli, Semibalanus cariosus
    c. Crabs - Haplogaster sp., Paugidae (hermit crabs),
    d. Isopods - Cirdana harfordi, Idotea wosnenski, Gnorimorsphaeroma
       oregonensis
11. Mollusca
    a. Chitons - Cryptochiton stelleri, Mopalia sp., M. mucosa, Katharina
       tunicata, Tonicella lineata,
    b. Snails - Gastropods
       Amphissa columbiana, Fusitriton oregonensis, Lirularia sp.,
       Littorina sitkana, L. keena, Natica clausa, Nucella lamellosa, N.
       lima, Searlesia dira
    c. Limpets - Acmaea mitra, Lottia limatula, L. persona, Tectura
       fenestrata, T. persona, T. scutum, Siphonaria thersites
    d. Nudibranches - Lamellidoidis fusca, Onchidella borealis
    e. Bivalves - Clinocardium nuttalli, Modiolus modiolus, Mytilus edulis.
       Pododesmus cepio, Prototheca staminea
12. Echinoderms
    a. Brittle Stars - Ophiolus aculeatus?, Ophiothrix spiculata?,
       Amphipholis?
    b. Sea stars - Crossaster papposus, Dermasterias imbricata, Evasterias
       truschei, Henricia leviuscula, H. sanguinolenta, Leptasterias hexactis, Mediaster aequalis?, Orthasterias
       keohleri, Pisaster ochraceus, Pycnopodia helianthoides,
       Solaster dawsoni, S. stimpsoni,
    c. Sea Cucumbers - Holothurians - Eupentacta sp.
    d. Urchins - Strongylocentrotus droebachiensis
13. Bryozoa - Eucratea loricata, Membranipora sp., Microporina borealis,
    Phidolopora pacifica, Schizoporella sp.
15. Fishes
    Cottidae -
    Stichaeidae - Xiphister atropurpureus, X. mucosus
III. Birds - Black-legged kittiwake (3), glaucous-winged gull (2), western Sandpiper
          (10), raven (2), Bald eagle (1)
**Biosketch Map**

**P4008-D**

**Site**
- Bedrock
- Coarse angular rubble
- Pd/Cc/sd

**Legend**

- Bedrock
- Coarse angular rubble
- Pd/Cc/sd

**Stream**

**A1**

(1955-1960) Spark filamentous
crass mellor, scattered barbecues,
limps, lieskins. Dense filamentous
crass villak in the middle to upper
zone, below A1.
**ADDENDUM: SUBDIVISION CONSTRAINTS**

**SEGMENT PY-8 SUBDIVISION B (2 of 6)**

<table>
<thead>
<tr>
<th>WORK WINDOW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manual Pickup</td>
</tr>
<tr>
<td>Tarmat Removal</td>
</tr>
<tr>
<td>Bioremediation</td>
</tr>
</tbody>
</table>

**ARCHAEOLOGICAL STANDARD CONSTRAINT**

If cultural resources are uncovered, PHONE 564-3274.

**APPLICABLE ECOLOGICAL TIME CONSTRAINTS**

- **5T Bald Eagle Nest**
  - NO CONSTRAINT. Bald eagle nest is outside Subdivision B of Segment PY-8 and more than 400m from work site.

**OTHER ECOLOGICAL CONSIDERATIONS**

Avoid any unnecessary disturbance or damage to unoiled biota and substrate.

---

Prepared By: J. Phillips  
Date 6/12/90

FOSCO: [Signature]  
DATE 6/13/90
SHORELINE EVALUATION

SEGMENT ST/ PY-008 SUBDIVISION B (2 OF 6) DATE 3/30/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
5T Bald eagle nest (3/1 to 9/1)
4QQ National Wildlife Refuge.
See attached Ecological Constraint Sheet for specific constraints and contacts.

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid disturbance/damage to uncoiled biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS:
If cultural resources are uncovered during shoreline treatment, stop work in the vicinity, mark the location of the find and contact a member of Exxon's Cultural Resource Program immediately (564-3657; 564-3658 or 564-3276).

SHPO SIGNATURE: [Signature] DATE: 5/12/90

OILING CATEGORIZATION:
Wide 0 m: Medium 97 m: Narrow 479 m: V.Light 391 m: No Oil 0 m
Subsurface Oil Observed: Yes X No Maximum Depth 15 cm

RECOMMENDATIONS:
___ No Treatment Recommended ___ Snare/Absorbent Booms
X Treatment Recommended ___ Oil Snares (pom poms)
X Manual Pickup ___ Absorbents (pads, rolls, etc)
X Bioremediation ___ Spot Washing: ___ Wands
X Tarmat: ___ Breakup ___ Beach Cleaner
___ Removal ___ Other (see comments)

COMMENTS: Recommend manual pick up of mousse and removal of tarmat in area shown on attached sketch map. Conduct treatment activities after 6/1 per above eagle constraints and obtain approval from ADF&G and USFWS.

TAG COMMENTS:

TAG APPROVAL DATE: 5/12/90
ADEC Art Weine Art Weine
EXXON [Signature] DATE: 5-3-90
NOAA [Signature]
USCG [Signature]
ADDENDUM: SUBDIVISION CONSTRAINTS

SEGMENT PY-8 SUBDIVISION F (6 of 6)

WORK WINDOW

Manual Pickup

OPEN
(USFWS REP TO BE ON SCENE)

ARCHAEOLOGICAL STANDARD CONSTRAINT

If cultural resources are uncovered, PHONE 564-3274.

APPLICABLE ECOLOGICAL TIME CONSTRAINTS

5T Bald Eagle Nest

NO CONSTRAINT Bald eagle nest is outside Subdivision F of Segment PY-8 and more than 400m from work site.

OTHER ECOLOGICAL CONSIDERATIONS

Avoid any unnecessary disturbance or damage to unaltered biota and substrate.

FOSC

Date 6/29/90

Prepared by

Date 6/14/90
ECOLOGY MAP
SEGMENT PY-8
SUBDIVISION F (60 of 12)
METERS

- Seabird Colony
- Active Eagle Nest
- Inactive Eagle Nest

1 inch = 2157 feet
SHORELINE EVALUATION

SEGMENT ST/ PY-08 SUBDIVISION F (6 OF 6) DATE 3/30/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
ST Active eagle nest (3/1 to 9/1)
400 National Wildlife Refuge
Takeoff from and to seaward only. Contact USFWS prior to cleanup.
See attached Ecological Constraints Sheet for specific constraints and contacts.

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid disturbance/damage to unoiled biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS: If cultural resources are uncovered during shoreline treatment, stop work in the vicinity, mark the location of the find and contact a member of Exxon's Cultural Resource Program immediately (564-3657; 564-3658 or 564-3276).

SHPO SIGNATURE: [Signature] DATE: 5/13/90

OILING CATEGORIZATION:

Wide 0 m: Medium 0 m: Narrow 255 m: V.Light 1067m: No Oil 0 m
Subsurface Oil Observed: Yes X No

RECOMMENDATIONS:

X Treatment Recommended
No Treatment Recommended
X Manual Pickup
Snare/Absorbent Booms
Oil Snares (pom poms)
Absorbents (pads, rolls, etc)
Spot Washing: Wands
Bioremediation
Breakup
Tarmat: Removal

COMMENTS:

MANUAL PICKUP OF OIL/SAFETY AS INDICATED ON MAP

TAG APPROVAL DATE: 4/13/90
ADEC [Signature] FOSC: [Signature] DATE: 5-12-90
EXXON [Signature] NOAA [Signature] SCG [Signature]

USFWS Rep to be on scene.
REGION: KENAI

SEGMENT: PY-09

SUBDIVISIONS: A (1 OF 1)
SHORELINE EVALUATION

SEGMENT ST/ PY-09_______ SUBDIVISION A (1 OF 1) DATE 4/4/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
National Wildlife Refuge (4QQ). No specific constraints identified.

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid disturbance/damage to unoiled biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO SIGNATURE:_______________________ DATE:_______________________

OILING CATEGORIZATION:

Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 1235m: No Oil 1089 m
Subsurface Oil Observed: Yes X No____ Maximum Depth 20 cm

RECOMMENDATIONS:

X__No Treatment Recommended  _____Snare/Absorbent Booms
_____Treatment Recommended  _____Oil Snares (pom poms)
_____Manual Pickup  _____Absorbents (pads, rolls, etc)
_____Bioremediation  _____Spot Washing: _____Wands
_____Tarmat: _____Breakup  _____Beach Cleaner
 _____Removal  _____Other (see comments)

COMMENTS:

TAG COMMENTS:

TAG APPROVAL DATE:___________
ADEC ____________________________ FOSC:______________ DATE:___________
EXXON ____________________________
NOAA ____________________________
USCG ____________________________
FIELD SHORELINE COMMENT SHEET

SEGMENT #1: EY 09  SUBDIVISION:  E  DATE: 4/4/90

USCG/NOAA NAME:  SACQUI MICHEL  SIGNATURE:  [Signature]

☒ NO TREATMENT RECOMMENDED ☐ TREATMENT SUGGESTED

COMMENTS

Even the two areas highlighted on the sketch site maps have very light oil as scattered splatters which do not warrant further treatment.

ADEC NAME:  JOHN R. REED  SIGNATURE:  [Signature]

☒ NO TREATMENT RECOMMENDED ☐ TREATMENT SUGGESTED

COMMENTS

Very light and scattered splatters on large boulders. Does not need cleanup. I have read and agree with all data on S.S.A.T. forms.

LAND MANAGER - USEFWS
NAME:  [Name]  SIGNATURE:  [Signature]

☒ NO TREATMENT RECOMMENDED ☐ TREATMENT SUGGESTED

COMMENTS

The scattered masses is located primarily between and under very large boulders in the 2 areas outlined on the map. The oil in this subdivision would be difficult to recover with current treatment technology.
SHORELINE OILING SUMMARY

SURFACE OIL

<table>
<thead>
<tr>
<th>CHARACTER</th>
<th>DISTRIBUTION</th>
<th>OIL/FILM COLOR</th>
<th>IMPACTED ZONES</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASPHALT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PAVEMENT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>POOLED</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COVER</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>COAT</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>STAIN</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>MOUSSE</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>PATTIES</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>TARBALS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FILM</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>NO OIL</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

OIL CATEGORIZATION LENGTH: W 0 m M 0 m N 0 m VL 1390 m NO 1500 m

SURFACE SEDIMENTS: R 80 % B 20 % C 0 % P 0 % G 0 % S 0 % M 0 % V 0 %

SURFACE OIL

PAVEMENT: H F S 0 sq. m by 0 cm

PATTIES/TARBALS 0 BAGS

NEAR SHORE SHEEN? NO BR RW SL TL

OILED DEBRIS NO AMOUNT

Photographs:

Roll No. 18-3
Frames #31, 22, 23, 34

SUBSURFACE OIL

<table>
<thead>
<tr>
<th>PIT NO.</th>
<th>PIT DEPTH (cm)</th>
<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED INTERVAL</th>
<th>BELOW</th>
<th>OIL/FILM COLOR</th>
<th>PIT ZONE</th>
<th>ANA</th>
<th>SUBSURFACE SEDIMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>20</td>
<td>✓</td>
<td>0.5</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>No Boulders</td>
</tr>
<tr>
<td>2</td>
<td>20</td>
<td>✓</td>
<td>0.5</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>No &quot;</td>
</tr>
<tr>
<td>3</td>
<td>20</td>
<td>✓</td>
<td>0.20</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td></td>
<td>No &quot;</td>
</tr>
</tbody>
</table>

COMMENTS * pits are all at sketch site #1.

Typical west side shoreline on the Rye Islands: steep granite bedrock; shoreline with a sprinkling of shattered, angular boulders. A significant reduction in oiling has occurred since 1989 along the south shore of the cove comprising P1-9.
No separate sketch map - see oil category length map.

The data provided indicates that 3% of the shoreline oiling category is estimated to occur in the VL (Very Large) category. The character length for this category is 2840 feet (7.7 meters).
(this is not a subdivision sketch map)

Sitesketch #1
Py. 9
(1989 SCAT's Sale)
Mann 4 April 90

~10m

bedrock

forest

very large granite boulders

<5% cv/3, ct/s + pt/s + ms/s

- debris (vegetation) of moderate abundance but not oiled
- subsurface oil is sporadic in distribution; locally, it penetrates deeply between larger clasts.
Sketch Site 2
PY-9
(1989 SCAT's Site B)
Mann 4 April 90

10m
← N

12m long x 2m wide
S1/s, C7/s, CV/s, M5/s
approximate coverage <5%
no oiled debris

(this is not a subdivision sketch map)
**SHORELINE ECOLOGICAL SUMMARY**

Segment ST: PY 9  
Subdivision A (of A)  
Date (mo/day/yr) 4/4/90

**Biology**  M. CARR

(A) Substrate type and % of segments:

(B) Overall % cover of biota (% of segment): Dense 60  Moderate 30  Low 10

(C) Density, substrate preference (by number from A, above), vertical zonation of major taxa: (upper-U; mid-M; low tidal-L); juveniles/adults (X), new settlement (3)

### BARNACLES

<table>
<thead>
<tr>
<th></th>
<th>Dense</th>
<th>Moderate</th>
<th>Sparse</th>
<th></th>
<th>Rare</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1U</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>1M</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>1L</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

### MYTILUS

<table>
<thead>
<tr>
<th></th>
<th>Dense</th>
<th>Moderate</th>
<th>Sparse</th>
<th></th>
<th>Rare</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1U</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>1M</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>1L</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

### GASTROPODS

<table>
<thead>
<tr>
<th></th>
<th>Dense</th>
<th>Moderate</th>
<th>Sparse</th>
<th></th>
<th>Rare</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1U</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>1M</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>1L</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

### FUCUS

<table>
<thead>
<tr>
<th></th>
<th>Dense</th>
<th>Moderate</th>
<th>Sparse</th>
<th></th>
<th>Rare</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1U</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>1M</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>1L</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

Wildlife Observations/General Comments:
- White-winged Scoter (6)
- Bald Eagle (2) (both mature)
- Land Otter (1)
- Common Loon (5)

Ecological Considerations:
- Sensitivity code: 1-0 (National Wildlife Refuge)
SEGMENT EVALUATION

SEGMENT ST/ PY-09 SUBDIVISION A (1 OF 1) DATE 4/4/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
National Wildlife Refuge (4QQ). No specific constraints identified.

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid disturbance/damage to uncoiled biota and substrate.

ARCHAEOLOGICAL CONSTRAINTS:
If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO SIGNATURE: DATE: April 14, 1990

OILING CATEGORIZATION:

Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 1235m: No Oil 1089 m
Subsurface Oil Observed: Yes _ No _ Maximum Depth 20 cm

RECOMMENDATIONS:

X _ No Treatment Recommended ___ Snare/Absorbent Booms
___ Treatment Recommended ___ Oil Shores (pom poms)
___ Manual Pickup ___ Absorbents (pads, rolls, etc)
___ Bioremediation ___ Spot Washing: ___ Wands
___ Tarmat: ___ Breakup ______ Beach Cleaner
___ Removal ________ Other (see comments)

COMMENTS:

TAG COMMENTS:

TAG APPROVAL DATE: 4/14/90
ADEC ___ Art Werner ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___
EXXON ___ Andy Teg ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___
NOAA ___ Bus/US Coast ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___
USCG ___ C.A. Keiter ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___

FOSC: ___ DATE: 5/1/90
(this is not a subdivision sketch map)

Site sketch #1
Py. 9
(1989 SCAT's Site A)
Maas 4 April 90

- Debris (vegetation) of moderate abundance
  but not oiled
- Subsurface oil is sporadic in distribution; locally, it penetrates
  deeply between larger clasts.
Sketch Site 2
PY-9
(1989 SCAT's Site B)
Mann 4 April 90

12m long x 2m wide
S1/S, CT/S, CV/S, MS/S
Approximate coverage <5%
No oiled debris

(This is not a subdivision sketch map)
PY-9

PY-09

RABBIT ISLAND

PY-

Y-17

site of sketch #2

site of sketch #1

Mann 4/4/90  PYE ISLANDS
REGION: KENAI

SEGMENT: PY-010

SUBDIVISIONS: A (1 OF 1)
SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
4QQ National Wildlife Refuge (no time constraints given)

SUBDIVISION ECOLOGICAL CONSTRAINTS: Avoid disturbance/damage to unoiled substrate and biota.

ARCHAEOLOGICAL CONSTRAINTS: If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO SIGNATURE: ______________________ DATE: _______________________

OILING CATEGORIZATION:
Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 763 m: No Oil 2379 m
Subsurface Oil Observed: Yes No X Maximum Depth ______

RECOMMENDATIONS:
X No Treatment Recommended
____ Treatment Recommended
____ Manual Pickup
____ Bioremediation
____ Tarmat: ____ Breakup
____ Removal

COMMENTS:

TAG COMMENTS:

TAG APPROVAL DATE: __________
ADEC ________________________
EXXON ________________________
NOAA ________________________
USCG ________________________

FOSC: __________ DATE: ________
FIELD SHORELINE COMMENT SHEET

SEGMENT ST1 PY 10 SUBDIVISION: A DATE 4/6/90

NAME JACQUI MICHEL SIGNATURE

☐ NO TREATMENT RECOMMENDED ☐ TREATMENT SUGGESTED

COMMENTS
The very occasional splatters of oil on this exposed rocky shore and small pocket beaches do not warrant further treatment.

NAME JOHN R. REED SIGNATURE

☐ NO TREATMENT RECOMMENDED ☐ TREATMENT SUGGESTED

COMMENTS
Very light splatters on bedrock boulder substrate. No cleanup needed. I have read and agree with all data on S.S.A.T. Forms.

NAME Mary Putner SIGNATURE

☐ NO TREATMENT RECOMMENDED ☐ TREATMENT SUGGESTED

COMMENTS
Oil on this is shoreline is very light and exists primarily in the form of scattered splatters and stains. I feel this was gut answer and agree on the information on the S.S.A.T.
SHORELINE OILING SUMMARY

OG: Mann  USGS  Michel  Sегмент ст: PY-10
BIO: Carr  LAND REP: Partner: USFWS  SUBDIVISION: A
EXXON: Bayer  ADEC: Reed  TIME: 18:27 to 17:47  DATE: 4/1/90
EAM NO: 18  TIDE LEVEL: 0.7 to 0.9
ST. SUBDIVISION LENGTH: 375 Yds  SLICE: 3.3 Yds
UPLANDS DESCRIPTION: ☐ Grass ☑ Forest ☐ Rock
SURVEYED FROM: ☑ Foot ☐ Boat ☐ Helo  WORKING DIRECTION: W to E
SURFACE SEDIMENTS: ☑ 0% B ☑ 5% C ☐ 0% P ☑ 0% G ☐ 0% S ☑ 0% M ☑ 0% V ☑ 0%
SLOPE: Lang. 5%  Hang 50% Ver. 15%  WAVE EXPOSURE: ☑ Low ☐ Med ☐ High
OIL CATEGORY LENGTH: W:  ? m  M: 0 m  N: 0 m  V: 27 Yds  NO: 2870 m

SURFACE OIL

<table>
<thead>
<tr>
<th>CHARACTER</th>
<th>DISTRIBUTION</th>
<th>OIL / FILM COLOR</th>
<th>IMPACTED ZONES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphal timeouts</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pavement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pooled</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cover</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Coat</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Stain</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Mousse</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Patties</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Tarballs</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Film</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>No Oil</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

PAVEMENT: H F S 0 sq. m by 0 cm
PATTIES/TARBALLS: HA 0 BAGS
NEAR SHORE SHEEN: ☐ BR RW SL TIL
OILED DEBRIS NO AMOUNT
Logs
Vegetation
Trash
Debris

Photographs:
Roll No. ST 15-4
Frames 8

SUBSURFACE OIL

No pits dug due to bedrock and boulder substrate.

<table>
<thead>
<tr>
<th>PIT NO.</th>
<th>PIT DEPTH (cm)</th>
<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED INTERVAL</th>
<th>BELOW OIL / FILM COLOR</th>
<th>PIT ZONE</th>
<th>SUBSURFACE SEDIMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>OP</td>
<td>OR</td>
<td>OL</td>
<td>OF</td>
<td>NU</td>
<td>SU</td>
<td>ANA</td>
</tr>
<tr>
<td>OP</td>
<td>OR</td>
<td>OL</td>
<td>OF</td>
<td>NU</td>
<td>SU</td>
<td>ANA</td>
</tr>
<tr>
<td>OP</td>
<td>OR</td>
<td>OL</td>
<td>OF</td>
<td>NU</td>
<td>SU</td>
<td>ANA</td>
</tr>
<tr>
<td>OP</td>
<td>OR</td>
<td>OL</td>
<td>OF</td>
<td>NU</td>
<td>SU</td>
<td>ANA</td>
</tr>
</tbody>
</table>

COMMENTS
This is a steep and inaccessible shoreline with a wide fringe of help. Oiling is sparse and takes the form of widely-separated clusters of splashes and drips.
The oil character length was estimated based on an estimated 49\% (CT) and 60\% (ST) occurrence within the UL oil category.

Oil Character Length (m): AP 0 PO 0 CV 0 CT 40 ST 60 MS 0 PT 0 TB 0 FL 0 NO 2644
SHORELINE ECOLOGICAL SUMMARY

Segment ST  PY-10 Subdivision A (of A) Date (mo/day/yr) 4/10/80

Time (24 hr) 1827 Biologist M. CARR

(A) Substrate type and % of segments:
- Bedrock (1)
- Boulder (2)
- Cobble (3)
- Pebble (4)
- Sand (5)
- Silt (6)

(B) Overall % cover of biota (% of segment):
- Dense
- Moderate
- Low

(C) Density, substrate preference (by number from A, above), & vertical zonation of major taxa: (upper-U; mid-M; low tidal-L);
juvenile/adults (X), new settlement (3)

<table>
<thead>
<tr>
<th></th>
<th>Dense</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barnacles</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1L</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>2L</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4L</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5L</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>6L</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Dense</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mytilus</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1U</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>2L</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4L</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5L</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>6L</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Dense</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gastropods</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1L</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>2L</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4L</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5L</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>6L</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

FUCUS

<table>
<thead>
<tr>
<th></th>
<th>Dense</th>
<th>Moderate</th>
<th>Sparse</th>
<th>Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>1L</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>2L</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4L</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5L</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>6L</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

Wildlife Observations/ General Comments:
- Bald eagle (4) all mature
- Common murre (23)
- Harlequin duck (4)
- Surf scoter (8)
- White-winged scoter (2)
- Land otter (2)

Ecological Considerations:
- Sensitivity codes: 4=00 (National Wildlife Refuge)
PY-1

MAP OF SEGMENT

ADEC Segment Length: 3142m

Map Key: KEK-82c
Name: Mann / PY-10
Date: 6 April 90
blowup to show categories where the 2 maps meet

XXX Wide
/// Medium
---- Narrow
TTTT Very Light

PY-10

Map Key: KEN-82b
Name: PY-10/Wann
Date: 9/6/90
SHORELINE EVALUATION

SEGMENT ST/ PY-010  SUBDIVISION A 1 OF 1  DATE 4/6/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
4QQ National Wildlife Refuge (no time constraints given)

SUBDIVISION ECOLOGICAL CONSTRAINTS: Avoid disturbance/damage to unoiled substrate and biota.

ARCHAEOLOGICAL CONSTRAINTS: If treatment is planned, a cultural resource evaluation is required prior to shoreline treatment.

SHPO SIGNATURE:  DATE: 4/7/90

OILING CATEGORIZATION:
Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 763 m: No Oil 2379 m
Subsurface Oil Observed: Yes  No X Maximum Depth  

RECOMMENDATIONS:
X No Treatment Recommended  Snare/Absorbent Booms
TTreatment Recommended  Oil Snares (pom poms)
___ Manual Pickup  Absorbents (pads, rolls, etc)
_____ Bioremediation  Spot Washing: Wands
_____ Tarmat: Breakup  Beach Cleaner
_____ Removal  Other (see comments)

COMMENTS:

TAG COMMENTS:

TAG APPROVAL DATE: 4/10/90
ADEC  EXXON  NOAA  USCG

DATE: 4-20-90