[Shoreline evaluations, 1991].

Kenai NK-05 to PY-02

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REGION: KENAI

SEGMENT: ST/NK-05

SUBDIVISIONS: A (1 OF 1)
SHORELINE EVALUATION

SEGMENT ST/ NK-05 SUBDIVISION A (1 OF 1) DATE 4/23/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
- A Salmon stream mouth - fry outmigration (3/1 to 5/15)
- B Salmon stream mouth - spawning (7/10 to 8/31)
- 4G Alaska State Park
- 5T All bald eagle nests (3/1 to 6/1) - Active eagle nests (3/1 to 9/1)
- 6U Recreation: Tent sites (6/1 to 9/15)
- 6V Recreation: Anchorages (6/1 to 9/15)

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 0 m: Narrow 0 m: V.Light 0 m: No Oil 8861 m
- Subsurface Oil Observed: Yes___ No X___ Maximum Depth\

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

COMMENTS:

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

TAG COMMENTS:

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

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

FOSC:____________________ DATE:____________
PWS, SEWARD AND HOMER 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 Esthwaite Hatchery release (4/15 to 6/1)
1E Main Bay Hatchery release (4/20 to 5/10)
1F Sewmill Bay Hatchery release (4/15 to 6/1)
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 (7/20 to 9/30)
1K Purse seine hook-off (7/20 to 9/30)
1L Set net sites (8/11 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)
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.

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 (8/1 to 9/15)
6V Anchorages (8/1 to 9/15)
6W Forest Service cabins (6/1 to 9/15)
6X Lodge (8/1 to 9/15)
6Y Special use destination

7Z Subsistence area:
   Salmon harvesting (5/1 to 9/30)
7HJ Finfish harvesting
7II Deer harvesting (8/15 to 2/26)
7JJ Invertebrate harvesting
   For Codes 7Z through 7JJ contact ADF&G and Chenega Corporation for specific dates, locations, and constraints.
NF SHORELINE COMMENT SHEET

SEGMENT ST/NK.005  SUBDIVISION:  A  DATE 4/22/90

NAME:  Donald A. MacGuffie  SIGNATURE:  Donald A. MacGuffie

☐ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS:

Most of the segment consisted of bedrock faces which were viewed from the skiff. Large quantities of Nereocystis were present and sea otters and sea lions were seen in the water. In addition, possible signs of at least 3 animals were found on the beach at the back of the segment core. At the north-south end of the beach is an anadromous stream. The beach was fairly thoroughly surveyed and no signs of oiling were seen. While surface rocks and boulders were restricted to area due to the beach being tidal areas were subject to moderate to high wave action and would be suspected to cleaned by natural action.

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

☐ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS:

NK-05 consists of bedrock cliffs on east and west shores with a long sand beach making up the majority of the north shore. There is an anadromous stream on the eastern end of the sand beach. No oil was observed in this segment.

I agree with information on SSAT forms.

LAND MANAGER

NAME:  Shari Methuen  SIGNATURE:  Shari Methuen-Jeney

☐ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS:

Nuka Island Segment 5 Northend has numerous catchment beaches, exposed to high wave action, no oil was observed. To the east is a long black sand beach, the southern end is an anadromous stream, at this time no oil was observed and it gets high wave action. The beach can be accessible for landing planes. The area offers hiking, camping, fishing and clam digging. Wildlife in the area: Stellar sea lions, harbor seals, harlequin ducks, scoters, eulachon, merganser, bufflehead, oyster catcher, cormorantis, sea otters and bald eagles.

At this time no treatment is recommended; I would recommend a helicopter scat in May and June to survey the beach area near the anadromous stream. In May–July 1989 the southern end of the beach received mousse patties.

REVISION NO. 02/21/90
SHORELINE OILING SUMMARY

DATE: Apr 12, 1990
TIME: 08:45:10.00:00

ST. SUBDIVISION LENGTH: 15666 m
TIDE LEVEL: +1.0 -> +6.0
TEAM NO.: 18

USING FROM: Foot
SURVEYED FROM: Grass
SURFACES FROM: Grass

SLOPE: Lang 15 % Hang 50 %

OIL CATEGORY LENGTH: W 0 m M 0 m N 0 m

SURFACE OIL

<table>
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<tr>
<th>CHARACTER</th>
<th>DISTRIBUTION</th>
<th>OIL / FILM COLOR</th>
<th>IMPACTED ZONES</th>
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<tr>
<td>NO OIL</td>
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</tbody>
</table>

PAVEMENT H F S 0 sq. m by 0 cm
PATTIES / TAR BALLS 0 BAGS
NEAR SHORE SHEEN? No

OILED DEBRIS
- Logs
- Vegetation
- Trash
- Debris

DID YOU COLLECT DEBRIS?
- YES ☐
- NO ☐

Type buoy & plastic
Containers

Photographs:
Roll No. 5T-18-9
Frames 10 to 12

SUBSURFACE OIL

<table>
<thead>
<tr>
<th>PIT NO.</th>
<th>PIT DEPTH (cm)</th>
<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED DEBRIS</th>
<th>OIL FILM CHARACTER</th>
<th>OILED OIL INTERNAL</th>
<th>OIL below</th>
<th>OIL / FILM COLOR</th>
<th>PIT ZONE</th>
<th>ANA SHEEN (mm)</th>
<th>SURFACE SUBSURFACE SEDIMENTS</th>
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</table>

COMMENTS 5T/NK-5: Is a large embayment with one large beach at the east end and several small "pocket" beaches on either side. There is an anadromous stream at the southern end of the large beach. No oil was observed in this segment.

REVIEWED BAT DATE 23 Apr 90
### Subsurface Oil (Continued)

<table>
<thead>
<tr>
<th>PIT NO.</th>
<th>PIT DEPTH (cm)</th>
<th>Subsurface Oil Character</th>
<th>Oiled</th>
<th>Oiling Patterning</th>
<th>Below Oil/Film Color</th>
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<th>ANA Neers</th>
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**Comments**

Reviewed by [Signature]  Date 23Mar90
SHORELINE ECOLOGICAL SUMMARY

Segment ST: NK-5  Subdivision: A  Date (mo/day/yr): 4-22-80

- Time (24 hr): 0647  Biologist: WMR CARR

(A) Substrate type and % of segments:
   (1) Bedrock 75  (2) Boulder 10  (3) Cobble 5  (4) Pebble 0  (5) Sand 10  (6) Silt 0

(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 (G)
   Photographs:
   Roll No.: ST-18-8
   Frames: 10 to 12

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<th>Sparse</th>
<th>Rare</th>
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Wildlife Observations/General Comments:
- Stellar: sea lions (3), scoter (34), harbor seal (4), harlequin duck (5),
  glaucous-winged gulls (20), sea otter (2), bufflehead (3), merganser (3)
- Ecological Considerations: Bald eagle (4), immature, oyster catcher (2), cormorant (1)

- Dense Nerocystis beds in shallow subtidal zone.

Sensitivity codes: unavailable 5T, 1A, 1B, 4GG, 6U, 6V, 6NN
SHORELINE EVALUATION

SEGMENT ST/ NK-05 SUBDIVISION A (1 OF 1) DATE 4/23/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:

1A Salmon stream mouth - fry outmigration (3/1 to 5/15)
1B Salmon stream mouth - spawning (7/10 to 8/31)
4GG Alaska State Park
5T All bald eagle nests (3/1 to 6/1) - Active eagle nests (3/1 to 9/1)
6U Recreation: Tent sites (6/1 to 9/15)
6V Recreation: Anchorages (6/1 to 9/15)

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: [Signature] DATE: 5/1/90

OILING CATEGORIZATION:

Wide 0 m; Medium 0 m; Narrow 0 m; V. Light 0 m; No Oil 8861 m
Subsurface Oil Observed: Yes__ No X__ Maximum Depth________

RECOMMENDATIONS:

__X No Treatment Recommended
____ Treatment Recommended
____ Manual Pickup
____ Bioremediation
____ Tarmat Removal

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

COMMENTS:

____________________________________________
____________________________________________
____________________________________________

TAG COMMENTS:

____________________________________________
____________________________________________
____________________________________________

TAG APPROVAL DATE: 4/28/90
ADEC [Signature] DATE: 5-6-90
EXXON [Signature]
NOAA [Signature]
USCG [Signature]
SEGMENT STUNTS

SUBDIVISION A

DATE Apr 22 90

CHECKLIST
- N Amer
- Approx. Scale
- Seg/Sub Entry
- Oil Dist
- Wells
- Length
- % Cover
- Separate Character
- Est. HNL/D, PC
- SSL
- Profile Location(s)
- Photo(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

Photo location, direction, and number

Oil Character Length (m): AP OF PO CV CT ST MS PT TR FL 10K
REGION: KENAI

SEGMENT: ST/PD-001

SUBDIVISIONS: A (1 OF 2)
SHORELINE EVALUATION

SEGMENT ST/_PD-001  SUBDIVISION A (1 OF 2)  DATE 4/21/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:

1J  Purse seine area (7/20 to 9/30)
4GG State Marine Park Alaska State Parks
6U Recreation: Tent sites (6/1 to 9/15)
6W Recreation: Forest Service cabins (6/1 to 9/15)
6Y Recreation: Special use destination
6NN Recreation: Sportfishing

See attached Ecological Constraint sheet for specific constraints and contacts.

SUBDIVISION ECOCLOGICAL CONSTRAINTS:

Avoid any unnecessary disturbance or 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.

PHONE 564-3274 (Anchorage) OR 229-1508 (24hrs.)<<<

SHPO SIGNATURE:____________________ DATE:____________________

OILING CATEGORIZATION:

Wide_27_m: Medium_21_m: Narrow_90_m: V.Light_209_m: No Oil_0_m
Subsurface Oil Observed: Yes_X__ No___ Maximum Depth_16cm

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_Tarmac Removal ___Beach Cleaner
___Other (see comments)

COMMENTS: Recommended treatment includes: 1) manual removal of pavement, mousse accumulations and patties in areas indicated, 2) spot wash pooled oil or mousse in areas not accessible for manual pick up, and 3) bioremediate areas indicated on attached sketch map. Work should be conducted before 7/20 due to purse seine constraints.

TAG COMMENTS:________________________________

________________________________________________________

________________________________________________________

________________________________________________________

TAG APPROVAL DATE:__________
ADEC EXXON ______________________ FOSC:__________ DATE:__________
Salmon stream mouth - fry outmigration (3/1 to 5/15)
Salmon stream mouth - spawning (7/10 to 8/31)
No disturbance of stream bed or banks unless authorized by ADF&G. No fish 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 in-pool 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 257-2224

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 in-pool 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)
Cannery Creek Hatchery release (4/21 to 6/1)
Remote release sites
No use of methods which might affect nearshore oil or toxicity levels, such as hot water wash or in-pool application, prior to at least July 1 unless authorized by ADF&G and/or PWS Aquaculture Association. 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 or PWS Aquaculture Association for confirmation and authorization.
AGENCY CONTACT PERSON: ADF&G Larry Peltz 424-3214

GW 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 specific dates, locations and constraints. 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 in-pool 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. Restrict boat traffic to essential minimum. Avoid damage to uncleared intertidal and subtidal algae and seagrass. If plans for treatment include methods such as hot water wash or in-pool application which might affect nearshore oil or toxicity levels, contact ADF&G for consultation and authorization.
AGENCY CONTACT PERSON: ADF&G Evelyn Biggs 424-3228

Harbor seal and sea lion pupping (5/15 to 7/1)
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. No application of in-pool 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 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 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 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 786-3377

Subsistence area: Salmon advertising (5/1 to 9/30)
Fish harvesting
Deer harvesting (5/1 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 in-pool 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 257-2359
FIELD SHORELINE COMMENT SHEET

SEGMENT ST 180-01     SUBDIVISION: A   DATE 4/21/90

NAME: Miles D. Hayes    SIGNATURE: MONCAYO

☐ NO TREATMENT RECOMMENDED  ☑ TREATMENT SUGGESTED

COMMENTS: This complex area, which we mapped in detail, was one of the more heavily oiled sites that our group surveyed. The buried oil layer and asphalt pavement were pose two different problems. I agree with Kumile (see his comments below) that the asphalt pavement and reawd mouse paths should be removed manually. The buried mouse is a tougher problem. An alternative to Kumile's suggestion would be to leave it alone and let marine erosion remove it naturally. Otherwise, I favor Kumile's alternative no. 1.

ADEC
NAME: Russell Kumile    SIGNATURE: Russell Kumile

☐ NO TREATMENT RECOMMENDED  ☑ TREATMENT SUGGESTED

COMMENTS: Please see attached 2 page.

LAND MANAGER
NAME:          SIGNATURE:          

☐ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS: Land Manager is unavailable for comment at this time - is attending meeting in Siletown - NB.
In this subdivision there were scattered mousse asphalt patties from the UITZ to the LITZ. There were some larger mousse asphalt mats on the surface. There were areas of subsurface mousse saturated pebbles around the larger mousse asphalt mats and in an area approximately 5 M. X 80 M. immediately to the west of the larger mousse asphalt mats. The mousse layer started 5 cm. below the surface and was up to 7 cm. thick. From 15 cm. to 25 cm. below the surface the sediments were a hard soil.

Recommended treatment:

Manual pick up of the surface patties and mats.

For the subsurface layer of mousse I feel that there are three alternatives.

1. Agitation of the subsurface layer of mousse with large rakes and shovels to break up the mousy layer followed with bioremediation. Snare booms should be deployed if sheens development during treatment.

2. The use of 2" cold water fire hoses to agitate the pebbles and break up the layer of mousy sediments. Initially this would cause more of the oil to be released where pom-poms could be used to pick up the oil. This would also be better than raking for breaking up the clumps of mousse and making the remaining oiling more suitable for bioremediation. The layer of hard soil below the mousse layer would prevent the oil from being driven deeper into the sediments. A header flood should be made available during the cold water agitation with sufficient volume to flood over the soil and provide a way to float the oil out to the pom-poms for recovery.

3. Rakes and shovels should be used to remove the clean layer of sediments to remove the mousy sediment layer. This should be followed by replacing the clean sediments. This method would create a large amount of oily waste and a small amount of additional erosion but would remove more of the oil.

Of the three treatment methods outlined above #3 is the preferred method. This is because low tide mouth to the anadromous Slide Creek is located only 200 M. to the west and the strong currents which run in this area pose a threat to carry any mousse or sheen released during treatment up either Slide Creek or Port Dick Creek.

With any agitation of this area care should be taken not to trench in to the soil layer and provide a space for the oil to pool deeper in the sediments. Because this layer of mousse is close to the surface this oil should be treated this season. The thickness of the subsurface mousse in its present condition far exceeds the recommended thickness for bioremediation and therefore bioremediation alone is not recommendation. Failure to take
measures to remove this oil now would leave a possible source of sheens and mousse which could threaten the Port Dick salmon fisheries for years to come.

Russell Hamblen

page 2 of 2
### SHORELINE OILING SUMMARY

**OG: Glenn Heyman, NOAA USCG Mugs Hayes**  
**BIO: Daniel Raider, ADEC Land Rep Roger A. Maloney**  
**EXXON: John Dean**  
**TIME: 1:31 PM 22 Jan 90**  
**DATE: 2/12/90 1900**  
**TIDE LEVEL: 375 m**  
**EST SUBDIVISION LENGTH: 375 m**  
**SURFACE SEDIMENTS: A 5% B 10% C 5% P 80% G 8% O 8% M 8% SLOPE: Lang 90% Hang 5% Ven 5% WAVE EXPOSURE: Low**

#### SURFACE OIL

<table>
<thead>
<tr>
<th>CHARACTER</th>
<th>DISTRIBUTION</th>
<th>OIL / FILM COLOR</th>
<th>IMPACTED ZONES</th>
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<tbody>
<tr>
<td>ASPHALT PAVEMENT</td>
<td>X X</td>
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<td>POOLED</td>
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<tr>
<td>COVER</td>
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<td>TARBALLS</td>
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<th>OILED DEBRIS</th>
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<td>Trash</td>
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<td>Debris</td>
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**PAVEMENT H F**  
**NEAR SHORE SHEEN? NO**  
**ROLL NO. 3**  
**FRAMES 4-6**

#### SUBSURFACE OIL

<table>
<thead>
<tr>
<th>PIT NO</th>
<th>PIT DEPTH (cm)</th>
<th>OILED CHARACTERS</th>
<th>OILED DEBRIS</th>
<th>OIL / FILM COLOR</th>
<th>PIT ZONE</th>
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<td>3 X</td>
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<td>X</td>
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</table>

**COMMENTS:**  
- *X: Oil has O/B R moussey appearance*  
- **X: Pit 3 @ base of storm surge**  
- **X: Pits 4 & 5 bottom in palaeo-oil**

**REVIEWED BAT DATE 30 Aug 90**
### Subsurface Oil (Continued)

<table>
<thead>
<tr>
<th>Pit No</th>
<th>Pit Depth (cm)</th>
<th>Subsurface Oil Character</th>
<th>Oiled Internal</th>
<th>Below Oil Film Color</th>
<th>Pit Zone</th>
<th>Anaerobic Sheen (mm)</th>
<th>Surface Subsurface Sediment</th>
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**Comments:**

Subdivision PD-001-A consists of 2 beaches (labeled A and B) with rock outcrops between them and on either end. Both surface and subsurface oil were observed along the subdivision, with highest concentrations on the east end of Beach A, west end of Beach B, and on the...
<table>
<thead>
<tr>
<th>PIT NO</th>
<th>PIT DEPTH (cm)</th>
<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED INTERVAL (cm)</th>
<th>BELOW</th>
<th>OIL FILM COLOR</th>
<th>PIT ZONE</th>
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<th>SURFACE SEDIMENT</th>
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<td>cP</td>
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Narrow beach segment connecting A to B. Surface oiling is concentrated on the west end of Beach B, where a large layer of AP with lower MS, CT & PO can be seen even from a far distance due to the green algal growth on the oil. The AP is very soft and is sticky and sometimes wet. A layer beneath the surface, the AP with a DBR mousey appearance. The AP layer extends into the subsurface, but is covered above a fine-grained palaeosol which was observed in nearly every pit dug within this subdivision. The palaeosol is typically 10-25 cm below the cobble/pebble surface. Other surface oil noted on the attached sketch map on AP PT has a similar appearance, as the PT are small pits.

REVIEWED DATE 30 AM 70
**SHORELINE ECOLOGICAL SUMMARY**

Segment ST: P001  Subdivision: A  Date (mo/day/yr): 4/20/90

Time (24 hr): 18:45  Biologist: DANIEL RAIDER

(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 10  Moderate 10  Low 80

(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**

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**MYTILUS**

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**GASTROPODS**

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**FUCUS**

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</tbody>
</table>

**Wildlife Observations/General Comments:**

- Many dune mussel beds - often in close proximity to oil; examples
- New real (in map) when just 5 meter distance and located two Mytilus

**Ecological Considerations:**

- Care should be taken during clean up not to

- W, Y, NN
Subsurface oil is generally DBR and occurs as a pore filled corer near a pore filled layer beneath the cobble-pebble and occasional boulder surface and above the finer palosol. The oil in the layer is sticky and locally "runny" with a mouse appearance. DBR MS was also common on the base of surface cobble and boulder within the mapped subsurface oil area. The subsurface layer "surfaced" with an appearance of tar patties generally less than 1 ft in diameter.
Bio Comments  PO01A  20 April 1970

This segment has a pretty extensive band of vegetation and fauna; there are very few areas without some type of both in a dense state.

Special attention should be given to the Mytilus (mussel) beds located throughout the segment in order to moderate to sparse clusters of mussels. Many of these occur close to the heaviest oiled areas in the segment and could be potentially damaged severely during clean up practice.

The interesting feature of PO01A is the constant time of flora appearing in dense clusters one after the next. They do not alternate in any one particular order. Dense mussel may grow very to dense bunches, then later one by dense clusters. This does not show though too well on the B&G form as it demands that we average data for throughout the segment.

Special consideration should be given to this fact of alternating densities especially when deciding what clean up will take place and how much traffic will be created.

An interesting note:

On many of the heavily oiled areas, with pavement especially, I have seen often green filaments and green growing profusely on the rocks just around the oil and even on the oil itself, although less dense than on the rocks sticking from the pavement. This may possibly be a reaction to the barren water that took place or some of the algae actually thrives on the oil. This is in a section the algae is much less profuse or non-existent.
<table>
<thead>
<tr>
<th>Name</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Harlequin Duck</td>
<td>23</td>
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<td>2) Double-crested Cormorant</td>
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<tr>
<td>3) Red-necked Grebe</td>
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</tr>
<tr>
<td>4) Bald Eagle</td>
<td>1</td>
</tr>
<tr>
<td>5) Rough-legged Hawk</td>
<td>1</td>
</tr>
<tr>
<td>6) Glaucous-winged Gull</td>
<td>6</td>
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</table>

Comments:
- Premature
- Too off; hard to be positive
REGION: KENAI

SEGMENT: ST/PD-001

SUBDIVISIONS: B (2 OF 2)
SEGMENT ST/ PD-001 SUBDIVISION B (2 OF 2) DATE 4/21/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:

1F Purse seine area (7/20 to 9/30)
3GG State Marine Park Alaska State Parks
6U Recreation: Tent sites (6/1 to 9/15)
6W Recreation: Forest Service cabins (6/1 to 9/15)
6Y Recreation: Special use destination
6MN Recreation: Sportfishing

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 cultural resources are uncovered during shoreline treatment, stop work in the vicinity, mark the location of the find and contact Exxon's Cultural Resource Program immediately (564-3274 (Anchorage) or 229-1508 (24 hrs.).

SHPO SIGNATURE: __________________________ DATE: __________________________

OILING CATEGORIZATION:

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<th>Wide 0 m</th>
<th>Medium 0 m</th>
<th>Narrow 47 m</th>
<th>V.Light 1537 m</th>
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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: 1) manual removal of mousse or 2) spot wash where mousse not accessible, and 3) bioremediation of areas shown on attached sketch maps. Work should be conducted before 7/20 due to purse seine constraints.

TAG COMMENTS: __________________________________________________________

TAG APPROVAL DATE: ______________________
ADEC EXXON ____________________________ FOSC: __________________________ DATE: __________
Salmon stream mouth - fry outmigration (3/1 to 5/15)
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 Inchip application, prior to 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 Inchip 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)
Cannery Creek Hatchery release (4/21 to 6/1)
Remotes release site

No use of methods which might affect nearshore oil or toxicity levels, such as hot water wash or Inchip application, prior to at least July 1 unless authorized by ADF&G and/or PWS Aquaculture Association. 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 or PWS Aquaculture Association for confirmation and authorization.

AGENCY CONTACT PERSON: 1E ADF&G Larry Peltz 424-3214 1D 1F 1G PWS Aquaculture Association John McMillan or Bruce Suzumoto 424-7511

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

Contact ADF&G for specific dates, locations and constraints. 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 Inchip 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

Herring spawning (4/1 to 6/15)

Contact ADF&G for confirmation - dates and locations may vary. Restrict boat traffic to essential minimum. Avoid damage to unooled intertidal and subtidal algae and seagrass. If plans for treatment include methods such as hot water wash or Inchip 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 (5/15 to 7/1)
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. No application of Inchip 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 Calkins 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 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

ADF&G Tom Rothby 267-2209

All Bald Eagle nests (3/1 to 6/1)
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 786-3377

Recreation:
Tent sites (6/1 to 9/15)
Anchorage areas (8/1 to 9/15)
Forest Service cabins (6/1 to 9/15)
Lodge (6/1 to 9/15)
Special use designation

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

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 Inchip which might affect intertidal or nearshore oil or toxicity levels, contact ADF&G and appropriate Native Corporation for authorization - see Native Corporation

AGENCY CONTACT PERSON: ADF&G Jim Fall 267-2359
USCG: NOAA

NAME: Miles O. Hayes
SIGNATURE:

☐ NO TREATMENT RECOMMENDED  ☑ TREATMENT SUGGESTED

COMMENTS
This is a long and narrow, generally steep sandy segment composed mostly of coarse sediment up to boulders in size. Several slacks and some gravelly coarse material lie in the water. The remaining oil is scattered across patches or small areas. Some small isolated areas of subsurface mousse and scattered mousse patches should be treated.

The amount of recoverable oil will be minimal. This area joins the Redwood Bay State Wilderness Park and required pickup of the mousse and mousse patches is recommended.

ADEC

NAME: Russell Kunibe
SIGNATURE: Russell Kunibe

☐ NO TREATMENT RECOMMENDED  ☑ TREATMENT SUGGESTED

COMMENTS

LAND MANAGER

NAME: ___________________________________ SIGNATURE: ___________________________________

☐ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS

Land Manager unavailable for comment at time of permitted attending meeting in Seldovia.
SHORELINE OILING SUMMARY

SEGMENT ST / PD 001

DATE: 9/12/23 9:00 - 11:30 AT

TIDE LEVEL: +2.0 TO +6.5

TIDAL RANGE: +2.0 TO +6.5

SURVEYED FROM: Foot, Boat, Helo

WORKING DIRECTION: E to W

ULPLANDS DESCRIPTION: Grass, Forest, Rock

SURFACE SEDIMENTS: R: 10%, B: 20%, C: 30%, P: 40%, G: 0%, S: 0%, M: 0%, V: 0%, O: 0%

SLOPE: Lang: 90%, Hang: 0%, Vert: 10%

WAVE EXPOSURE: Low, Med, High

OIL CATEGORY LENGTH: W: 0 m, M: 0 m, N: 45 m, V: 1650 m, NO: 100 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 Paving</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Pooled</td>
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</tr>
<tr>
<td>Cover</td>
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</tr>
<tr>
<td>Coat</td>
<td>X</td>
<td>X</td>
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</tr>
<tr>
<td>Stain</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Mousse</td>
<td>X</td>
<td>X</td>
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</tr>
<tr>
<td>Patties</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Tarballs</td>
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<td>Film</td>
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<tr>
<td>No Oil</td>
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</table>

PAVEMENT H F S D_Sq. m by X_cm

PATTIES / TARBALLS: 5 BAGS

NEAR SHORE SHEEN? NO BR RW SL TL

OILED DEBRIS:

<table>
<thead>
<tr>
<th>AMOUNT</th>
<th>SM</th>
<th>MD</th>
<th>LG</th>
</tr>
</thead>
</table>

DID YOU COLLECT DEBRIS?

YES □ NO X

TYPE:

#BAGS:

Photographs:

Roll No.: 4
Frames: 6-11

SUBSURFACE OIL

<table>
<thead>
<tr>
<th>PIT NO.</th>
<th>PIT DEPTH (cm)</th>
<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED MATERIAL</th>
<th>OIL / FILM COLOR</th>
<th>PIT ZONE</th>
<th>A N A SHEEN (cm)</th>
<th>SUBSURFACE SEDIMENTS</th>
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<td>19 (PH)</td>
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<tr>
<td>6</td>
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<td></td>
<td>X</td>
<td>X</td>
<td>N</td>
<td>-</td>
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COMMENTS

Very faint organic - HS odor from below oiled layer

This is a long segment of very narrow shoreline and shallow pocket beaches on the west end. Oil generally occurs as a binding for fine sediments between boulders or as patties on the snow covered kauri. In the

REVIEWED DATE 3/1/23
### 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>Below</th>
<th>Oil / Film Color</th>
<th>Pit Zone</th>
<th>Ana. Sheen (Y/N)</th>
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</table>

### Comments
- 1 foot found @ -15 cm w/ CT/5 pbl.
- 1 pit in pbl over 6cm blufs ~ 30%, blufs, 60 pbl
- 2 - brown mousse texture

**REVIEWED** Bat Date 3May90
**SHORELINE ECOLOGICAL SUMMARY**

Segment ST / R 1 Subdivision ____________ Date (mo / day / yr) ____________

Time (24 hr) ____________ Biologist ____________

(A) Substrate type and % of segments:
- (1) Bedrock: 10
- (2) Boulder: 20
- (3) Cobble: 30
- (4) Pebble: 40
- (5) Sand: 50
- (6) Silt: 60

(B) Overall % cover of biota (% of segment):
- Dense: 10
- Moderate: 20
- Low: 30
- None: 40

(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. 4 | Frames: 6-11 |

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**BARNACLES**

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**MYTILUS**

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**GASTROPODS**

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**FUCUS**

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</tbody>
</table>

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Wildlife Observations/General Comments:
- See attached wildlife spray sheet
- Many small mussel beds; bands of dense flora & fauna in groupings

Ecological Considerations:

I T
4 G 4
w, y, NN
**Wildlife Sights - P00018**

<table>
<thead>
<tr>
<th>Name</th>
<th>Amount</th>
<th>Comment</th>
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<tbody>
<tr>
<td>1) Abreagum Duck</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>2) Double-Crested Cormorant</td>
<td>2</td>
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</tr>
<tr>
<td>3) Red-Necked Grebe</td>
<td>3</td>
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<tr>
<td>4) Bald Eagle</td>
<td>1</td>
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<tr>
<td>5) Rough-legged Hawk</td>
<td>1</td>
<td>(not positive I.o.)</td>
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<tr>
<td>6) Glaucous-Winged Gull</td>
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</tr>
<tr>
<td>7) Mountain Goats</td>
<td>7</td>
<td>on hillside</td>
</tr>
<tr>
<td>8) All Others (sew)</td>
<td>2</td>
<td>off-shore</td>
</tr>
</tbody>
</table>
1991 MAYSAP EVALUATION

SEGMENT: PD 001  SUB: A  REGION: KEN  SURVEY DATE: 5/21/91

ENVIRONMENTAL SENSITIVITIES:
Work Window(s)  OPEN

Ecological/Constraints (see page two for details)  Fish harvest area

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. PHONE 564-3276; 564-3657; (Anchorage) or 222-1514 (24 hrs.).

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>Y</td>
<td>Y</td>
<td></td>
</tr>
</tbody>
</table>

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

COMMENTS:
INITIAL:

TAG: MANUAL P/I of AP/HSOR (EASILY ACCESSIBLE)
A2 A5 + A6 FOLLOWED BY CUSTOMBLEN APPLICATION

FOSC:

TAG APPROVAL DATE: June 4 1991  FOSC APPROVAL DATE:
ADEC  John Bauer
EXXON  
USCG  
NOAA  

E. E. PAGE, CDR, USCG
CHIEF OF STAFF, FOSC
ECOLOGICAL CONSTRAINTS
1991 FIELD ACTIVITIES

Fish Harvest Area: Unlimited treatment unless otherwise directed by ADF&G. Sheen containment/recovery procedures required for mechanical treatment.
TREATMENT RECOMMENDED

This segment is located next to an anadromous stream. An estuary was submitted by the Helo Bio team in 1990 and was never addressed. I am recommending manual removal of HSOR/MsOR - B/C which should be rolled up access dikes. This segment is located within Kachemak Bay State Wilderness Park.

Several large areas of surface and subsurface HSOR exist that were worked manually in 1990. The amount was too much for the survey to pickup so it was left. A different method may be needed here.

Manual pickup of exposed A/P - HSOR recommended. Perhaps TANJ can offer alternatives for the remainder. This is obvious gross oiling of sediments, and is within Kachemak Bay State Wilderness Park, in an area with high recreational value. The survey team would definitely have picked this up but it was too large to handle.

The situation here was of appropriate scope for a thin coat of weathered oil across this portion of the oil below the coat allows, the majority of the visible oil is located in a triangular area in the gravel and layer. Just be low the visible kernel of these two oiled areas would require a manipulation effort and would have little impact on the local environment.
### MAYSAP SHORELINE OILING SUMMARY

**Team No.:**

**OG:** J. Sampson

**ADEC:** Crosby

**INXON:** Stiles

**BIO:** J. Barry

**Land Manager:** Johnson

**USCG/NOAA:** McMenon/McDonald

**Date:** 7/1/91

**Segment:** PD.001

**Subdivision:** A

**Time:** 12:55 to 14:42

**Tide Level:** +3.8 ft. to +5.1 ft.

**Energy Level:** M

**Surveyed From:** Foot

**Weather:** Sunny

**Total Length Shoreline Surveyed:** 346 m

**Near Shore Sheen:** None

**Estimated Oil Category Length:** __m__

### Surface Oil Character

<table>
<thead>
<tr>
<th>LOC</th>
<th>Surface Character</th>
<th>Surface Sediment</th>
<th>Shore Slope</th>
<th>Area Width</th>
<th>Area Length</th>
<th>Zone</th>
<th>Notes</th>
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<td>P</td>
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<td>H</td>
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</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

**Photo Roll #:** MAYSAP 4

**Frames:** 1-15

### Subsurface Oil Character

<table>
<thead>
<tr>
<th>Pit No.</th>
<th>Pit Depth (cm)</th>
<th>Subsurface Oil Character</th>
<th>Oiled Zone</th>
<th>Clean Zone</th>
<th>H2O Level</th>
<th>Sheen Color</th>
<th>Pit Zone</th>
<th>Surface Subsurface Sediments</th>
<th>Notes</th>
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</table>

**Sheen Color:** B = Brown; R = Rainbow; S = Silver; N = None

### OG Comments:

Relatively uniform beach of boulder/cobble or cobble/pebble sediments. Subsurface oil present in the western part. Surface oil present in the rest.

**Revised:** 5/26/91

**Revised 5/25/91**
<table>
<thead>
<tr>
<th>PIT NO.</th>
<th>PIT DEPTH (cm)</th>
<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED ZONE cm-cm</th>
<th>CLEAN BELOW LEVEL (cm)</th>
<th>H2O RESN</th>
<th>SHEEN COLOR</th>
<th>PIT ZONE</th>
<th>SURFACE-SUBSURFACE SEDIMENTS</th>
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</tbody>
</table>

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

≤ 5 cm DEEP DOES NOT CONSTITUTE SUBSURFACE OIL

OG COMMENTS:

[Blank space for comments]
MAYSAP BIOLOGICAL SUMMARY FORM

TEAM # 4
SEGMENT # PD001
SUBDIVISION A
SEA STATE Calm

DATE/TIME May 21, 1991 1217 - 1339
TIDAL HEIGHT (Range) +3.8 => +5.1
BIOLIGIST JIM BARRY
WIND SPEED/DIRECTION NW 5-10 kt., clear

COMMENTS / OBSERVATIONS - OILED SUBDIVISIONS

Oil Related Comments

A1 Mouse patches were found in the upper zone bedrock/cobble outcrop. Very few biota were found at this site. A few scattered barnacles and littorine snails and a very sparse film of green filamentous algae on some cobble or bedrock.

A2 Pooled oil was present in the upper zone of a cobble/pebble beach near the upper berm. The only apparent live organism was a thin film of green filamentous algae on some cobble. Some organic debris was present as well. Very little biota is present in the upper zones of the beach. The lower zone has a sparse to moderately abundant bed or rockweed (Fucus), where several other species are common.

A3 A4 Small patches of MOR are present in the beach cobble/pebbles, near the upper part of the beach. Biota are sparse or completely absent, as in A1, above.

A5 A6 Asphalt pavement or MSOR in the upper zone cobble. Littorines and limpets are fairly common at this location, and are in close proximity to the oil (often within 1-5 mm), but are rarely found alive in the most heavily oiled sediments. Barnacles are found under most cobble, where they are denser than on the upper side of the cobble.

(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>
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<tbody>
<tr>
<td>Eagles</td>
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<td>Seabirds</td>
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<tr>
<td>Waterfowl</td>
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<tr>
<td>Gulls/Kittiwakes</td>
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<tr>
<td>Shorebirds</td>
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<tr>
<td>Corvids</td>
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<tr>
<td>Other Birds</td>
<td></td>
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</table>

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

Shoreline subdivision map showing important biological features attached.
Lower in the intertidal the abundance of barnacles increases, as does the cover of Fucus, mussels, and the densities of several invertebrates (littorines, limpets, isopods, oligochaete, hermit crabs, amphipods).

Cleanup Considerations

Manual cleanup activities were performed on the oil during the survey. Additional cleanup, if necessary, will not cause adverse affect to the biota.

General Characteristics of PD001-A

This section of beach is generally straight, with a moderate to high sloping shoreline of cobbles or pebbles or both. The abundance of most species is very low on these beaches, except for the very low zone where Fucus, molluscan invertebrates, and red, green, and brown algae are found. Mussels are sparse to moderate in the middle zone and low zone amongst beach cobbles.

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>
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<tr>
<td>Oil Distribution</td>
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<tr>
<td>Bare Rock</td>
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<tr>
<td>Green Filamentous Algae</td>
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<tr>
<td>Rockweed (Fucus)</td>
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<tr>
<td>Barnacles (Balanus)</td>
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<tr>
<td>Littorine Snails</td>
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<tr>
<td>Limpets</td>
<td>- - - - - - - - - - - - - -</td>
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<tr>
<td>Red Algae</td>
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<tr>
<td>Green Algae (Ulva/other)</td>
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<tr>
<td>Mussels (Mytilus)</td>
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<tr>
<td>Upright Brown Algae (not Fucus)</td>
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</table>

Legend: (-) Sparse to rare, (+) Moderate, (*) Abundant

Common Species on PD001-A

A. Marine Plants
1. Diatoms, Blue Greens
2. Green Algae - Chlorophyta
   Enteromorpha sp., Ulva sp., Urospora sp.
3. Brown Algae - Phaeophyta
   Alaria marginata, Ecklonia spp., Fucus distichus, Hildenbrandia sp., Ralfsia sp., Systosiphon lomentaria
4. Red Algae - Rhodophyta
   Cumingia andersonii, Endocladia muricata. Halosaccion glandiflora, sp., Mastocarpus sp., Membranoptera dimorpha, Odonalhia 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 artemisia, Urticina crassicornis,
3. Flatworms - Platyhelminthes - Polyclads
6. Nemertean Worms - Ribbon Worms - Emplectonema gracile, Tubulanus polymorphus

8. Polychaete Worms
   Nereidae - Nereis spp.
   Spirorhidae - Spirorbis sp.

9. Peanut worms - Sipunculids - Phascolosoma agassizii

10. Crustaceans
    a. Amphipods - Traskorygidae sp.?
    b. Barnacles - Balanus glandula
    c. Crabs - Haplogaster sp., Paguridae (hermit crabs)
    d. Isopods - Cirdana harfordii, Idotea wosnesenskii, Gnorimorsphaeroma oregonensis

11. Mollusca
    a. Chitons - Mopalia mucosa, Tonicella lineata,
    b. Snails - Gastropods
       Amphissa columbiana, Littorina sitkana, L. keenae, Natica clausa, Nucella lamellosa, N. lima, Searlesia dira, Tachyrhynchus sp.
    c. Limpets - Lottia digitalis, L. personia, L. limatula, T. persona, T. scutum
    d. Bivalves - Clinocardium sp., C. nuttalli, Macoma nasuta, Modiolus modiolus, Mytilus edulis, Pododesmus cepio, Prototheca staminea, Saxidomus giganteus

12. Echinoderms
    a. Brittle Stars - Ophiolus aculeatus?, Ophiothrix spiculata?, Amphipholis?
    b. Sea stars - Dermoasterias imbricata, Evasterias truscheli, Leptasterias hexactis, Pycnopodia helianthoides, Solaster dawsoni
    c. Sea Cucumbers - Holothurians Eupentacta sp.,
    d. Urchins - Strongylocentrotus droebachiensis


15. Fishes
    Cottidae -
    Stichaeidae - Xiphister atropurpureus, X. mucosus

III. Birds -
    Glaucous-winged Gull (5), Harlequin Duck (2)
**Bio Sketch Map**

**PO001-A**

**JP Barry**

21 May 1991

1222-NNZ

**Legend**

- **Mort. Upper Zone**
  - Very few biota
  - Scattered barnacles
  - Lithic sands
  - Tow from sea
  - Few intertidal
  - Upper coral

- **Mort. Lower Zone**
  - Few biota
  - Scattered barnacles
  - Lithic sands
  - Tow from sea
  - Few intertidal
  - Upper coral

- **Poole**

- **Rocky Shore**

- **Rocks/Mussels**

- **Mort. Lower Zone**
  - Few biota
  - Scattered barnacles
  - Lithic sands
  - Tow from sea
  - Few intertidal
  - Upper coral

**Map Notes**

- **Mort:** Casual beach debris. Transition to filamentous green algae, some organic debris. Lower zone has fewer features.

**Scale**

0 - 50 meters
1991 MAYSAP EVALUATION

SEGMENT: PD 001 SUB: B REGION: KEN SURVEY DATE: 5/21/91

ENVIRONMENTAL SENSITIVITIES:
Work Window(s) OPEN

Ecological/Constraints (see page two for details) Fish harvest area

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

COMMENTS:

INITIAL: __________________________ Date: __________________________

TAG: ______________________________ Date: __________________________

FOSC: ______________________________ Date: __________________________

TAG APPROVAL DATE: __________ FOSC APPROVAL DATE: __________

ADEC________________________ FOSC ______________________________
EXXON________________________
USCG________________________
NOAA________________________
ECOLOGICAL CONSTRAINTS
1991 FIELD ACTIVITIES

Fish Harvest Area: Unlimited treatment unless otherwise directed by ADF&G. Sheen containment/recovery procedures required for mechanical treatment.
ADEC NAME: Clara S. Crosby  
SIGNATURE: Clara S. Crosby

NTR

Dying occurred in a splash distribution - little would be recovered or is considered treatable.

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

NTR

Overall no significant oils found.

LANDMANAGER NAME: Jeff Johnson  
OF: ADEC  
SIGNATURE: Jeff

NTR

Concur with other reps. Scattered tar-NP in small amounts would take a lot of time to locate, and would be impractical to remove.

USCG/NOAA NAME: Miranda  
SIGNATURE: Miranda

NTR

Small amounts of weathered marine were spread out which were picked up on shore when sampled.

Handwritten Signature: Miranda
TEAM NO. __________________________

OG SAMPLE __________________________

ADEC __________________________

EXXON __________________________

TIME ________________ to ____________

TIDE LEVEL __________ ft. to __________ ft.

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

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

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

TOTAL LENGTH SHORELINE SURVEYED: ____________ m

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

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

SURFACE OIL CHARACTER

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<tr>
<th>LOC</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>
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SLOPE: V = VERTICAL; H = HIGH ANGLE; M = MEDIUM ANGLE; L = LOW ANGLE

AREA

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>WIDTH</th>
<th>LENGTH</th>
<th>ZONE</th>
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</thead>
</table>

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

PHOTO ROLL & MARKAP: ____________ FRAMES ____________

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

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

OG COMMENTS: See map.
Og Sketch Map

PD 002.8

J. Sempels
May 21, 91
1442-1530

Legend
- Boulder
- Ch/Pe
- Pe/Ch

(II) Scoping Bedrock / Unconsolidated material

A1
3 Tar patches
≤ 20cm dia around base of boulder

A3
1 Tar ch
≤ 20cm dia on boulder

A4
4 Ap patches ≤ 1m²
in WITZ P. W.

A5
2 Tar ch
≤ 20cm dia on boulder

Maysap 4 0 11
Maysap 4 0 17

Metres
0 200

Reviewed: F.W. 5/25
Oil Related Comments

A1 Tar splatters were found in the upper zone bedrock/boulder outcrop. Limpets are rare on bedrock outcrops and boulders. Barnacles are sparse, and present on boulders, bedrock and under cobble.

A2 A few tar CT spatters were present on the upper zone boulders. Barnacles (sparse) were the only species found at the site.

A3 Oil (CT, MSOR) was present in a patch in the upper zone of the cobble/boulder beach. Barnacles (Balanus) were the most common species, and were sparse to moderately abundant, particularly under cobble. A few littorine snails and limpets were present. Slightly below the oiled zone, the cobble leads to a dense zone of barnacles and mussels, with Fucus moderately abundant in the mid-to-low zone.

A4 A few small patches of asphalt pavement was removed from the upper zone of the pebble/cobble beach. Barnacles were the most prominent species on this beach. The lower zones had a sparse mussel bed and moderately dense cover of Fucus.

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>
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<tr>
<td>Eagles</td>
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<td>Seabirds</td>
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<tr>
<td>Waterfowl</td>
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<td>Corvids</td>
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<tr>
<td>Other Birds</td>
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MARINE MAMMALS

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

Shoreline subdivision map showing important biological features attached.
Cleanup Considerations

Manual cleanup activities were performed on the oil during the survey. Additional cleanup, if necessary, will not cause adverse affect to the biota.

General Characteristics of PD001-B

This beach is nearly identical to PD001-A, with a long beach with sediments varying from pebbles to boulder, and mostly cobble. The shore is moderate to high sloping. The abundance of most species is very low on these beaches, except for the very low zone where Fucus, molluscan invertebrates, and red, green, and brown algae are found. Mussels are sparse to moderate in the middle zone and low zone amongst beach cobble.

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>
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<tr>
<td>Oil Distribution</td>
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</table>

Bare Rock

Green Filamentous Algae

Rockweed (Fucus)

Barnacles (Balanus)

Littorine Snails

Limpets

Red Algae

Mussels (Mytilus)

Legend: (-) Sparse to rare, (+) Moderate, (*) Abundant

Common Species on PD001-B

A. Marine Plants
1. Diatoms, Blue Greens
2. Green Algae - Chlorophyta
   Enteromorpha sp., Ulva sp., Urospora sp.
3. Brown Algae - Phaeophyta
   Alaria marginata, Ectocarpus spp., Fucus distichus, Hildenbrandia sp., Ralfsia sp., Sycjtosiphon lomentaria
4. Red Algae - Rhodophyta
   Cumaqloia andersonii, Endocladiu muricata, Halosaccion glandiforme, sp., Mastocarpus sp., Membranoptera dimorpha, Odontalia floccosa, Palmaria palma, 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, Urticina crassicornis,
5. Flatworms - Platytelmintaes - Polyclads
6. Nemertean Worms - Ribbon Worms - Emplectonema gracile, Tubulanus polymorphus
8. Polychaete Worms
   Nereidae - Nereis spp.
   Spiorbidae - Spiorbis sp.
9. Peanut worms - Sipunculids - Phascolosoma agassizii

10. Crustaceans
   a. Amphipods - Traskorchestia sp.?
   b. Barnacles - Balanus glandula
   c. Crabs - Haplogaster sp., Paguridae (hermit crabs)
   d. Isopods - Cirdana harfordi, Idotea wosnesenskii, Gnorimorsphaeroma oregonensis

11. Mollusca
   a. Chitons - Mopalia mucosa, Tonicella lineata,
   b. Snails - Gastropods
      Amphissa columbiana, Littorina sitkana, L. keenae, Natica clausa, Nucella lamellosa, N. lima, Searlesia dira, Tachyrhynchus sp.
   c. Limpets - Lottia digitalis, L. persona, L. limatula, T. persona, T. scutum
   e. Bivalves - Clinocardium sp., C. nuttalli, Macoma nasuta, Modiolus modiolus, Mytilus edulis, Pododesmus cepio, Prototheca staminea, Saxidomus giganteus

12. Echinoderms
   a. Brittle Stars - Ophiolus aculeatus?, Ophiobrix spiculata?, Amphipolis?
   b. Sea stars - Dermasterias imbricata, Evasterias truscheli, Leptasterias hexactis, Pycnopodia helianthoides, Solaster dawsoni
   c. Sea Cucumbers - Holothurians Eupentacta sp.,
   d. Urchins - Strongylocentrotus droebachiensis


15. Fishes
   Cottidae -
   Stichaeidae - Xiphister atropurpureus, X. mucosus

III. Birds -
   Glaucous-winged Gull (3), Harlequin Duck (2), Lesser Scaup (30), Common Merganser (1), Fox Sparrow (5), Pacific Loon (1 dead on beach)
1991 MAYSAP EVALUATION

SEGMENT: PD 001  SUB: A  REGION: KEN  SURVEY DATE: 5/21/91

ENVIRONMENTAL SENSITIVITIES:
Work Window(s): OPEN

Ecological/Constraints (see page two for details): Fish harvest area

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>FOssc</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
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</tbody>
</table>

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

COMMENTS:
INITIAL:

TAG:

FOssc:

TAG APPROVAL DATE: ___________  FOssc APPROVAL DATE: ___________

ADEC: 
EXXON: 
USCG: 
NOAA: 

ECOLOGICAL CONSTRAINTS
1991FIELD ACTIVITIES

Fish Harvest Area: Unlimited treatment unless otherwise directed by ADF&G. Sheen containment/recovery procedures required for mechanical treatment.
TEAM NO. 4  SEGMENT FD-001  SUBDIVISION A  DATE 5/12/91

ADEC
NAME: Clara Crosby  SIGNATURE: Clara Crosby

☐ NTR  ☑ Treatment Recommended - Effluent

This segment is located next to an anomalous stream. A referendum was submitted by the Holo Bio Team in 1990, and was never addressed. I am recommending manual removal of HSR/MSOR. B/C should be verbally notified. This segment is located within Kochernak Bay State Wilderness Park.

EXXON
NAME: George P. Stiles  SIGNATURE: George P. Stiles 5/12/91

☐ NTR  ☑ Several large areas of surface and subsurface HSR exist that were worked manually in 1990. The amount was too much for the survey to pick up so it was left. A different method may be needed here.

LANDMANAGER
NAME: Jeff Johnson  OF ADEC  SIGNATURE: jjjjjjjjjj

☐ NTR  ☑ Treatment Recommended

Manual pickup of exposed A/P HSR recommended. Perhaps TANF group can offer alternatives to the remainder. This is obvious, gross oiling of sediments, and is within Kochernak Bay State Wilderness Park in an area with high recreational values. The survey team would definitely have picked this up but it was too large to handle.

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

[Illegible] space area of oil spill is fresh, a thin coat of weathered oil over a more concentrated layer below the water flows readily. The majority of the oil is located in a triangular area in the gravel bottom layer just below the surface. Removal of these two areas would require a minimum effort but would have little impact on the local environment.

Concur: [Signature]
### SURFACE OIL CHARACTER

<table>
<thead>
<tr>
<th>LOC</th>
<th>AP</th>
<th>MS</th>
<th>TB</th>
<th>SR</th>
<th>CV</th>
<th>CT</th>
<th>ST</th>
<th>FL</th>
<th>DB</th>
<th>NO</th>
<th>SURFACE OIL CHARACTER</th>
<th>SURFACE SEDIMENT TYPE</th>
<th>SLOPE</th>
<th>V</th>
<th>H</th>
<th>W</th>
<th>L</th>
<th>AREA</th>
<th>ZONE</th>
<th>NOTES</th>
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</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

### PHOTO ROLL:
- MAYSAP 4
- "11-15"

### SURFACE-OIL CHARACTER

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

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

### OG COMMENTS:
Relatively uniform beach of boulders/cobbles or cobble-pebble sediments. Subsurface oil present in the western part. Sheen at 7:50 AM present in the west.

Revised: M. S. 12/25/94.
<table>
<thead>
<tr>
<th>PIT NO.</th>
<th>PIT DEPTH (cm)</th>
<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED ZONE cm-cm</th>
<th>CLEAN BELOW cm</th>
<th>H2O LEVEL cm</th>
<th>SHEEN COLOR</th>
<th>PIT ZONE S U M L</th>
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</table>

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

< 5 cm DEEP DOES NOT CONSTITUTE SUBSURFACE OIL

OG COMMENTS:
MAYSAP BIOLOGICAL SUMMARY FORM

TEAM # 4
SEGMENT # PDO01
SUBDIVISION A
SEA STATE Calm

DATE/TIME May 21, 1991 1217 - 1339
TIDAL HEIGHT (Range) +3.8 => +5.1
BIOLOGIST JIM BARRY
WIND SPEED/DIRECTION NW 5-10 kt., clear

COMMENTS / OBSERVATIONS - OILED SUBDIVISIONS

Oil Related Comments

A1 Mouse patches were found in the upper zone bedrock/cobble outcrop. Very few biota were found at this site. A few scattered barnacles and littorine snails, and a very sparse film of green filamentous algae on some cobble or bedrock.

A2 Pooled oil was present in the upper zone of a cobble/pebble beach near the upper berm. The only apparent live organism was a thin film of green filamentous algae on some cobble. Some organic debris was present as well. Very little biota is present in the upper zones of the beach. The lower zone has a sparse to moderately abundant bed or rockweed (Fucus), where several other species are common.

A3,A4 Small patches of MDR are present in the beach cobble/pebbles, near the upper part of the beach. Biota are sparse or completely absent, as in A1, above.

A5,A6 Asphalt pavement or MSOR in the upper zone cobble. Littorines and limpets are fairly common at this location, and are in close proximity to the oil (often within 1-5 mm), but are rarely found alive in the most heavily oiled sediments. Barnacles are found under most cobble, where they are denser than on the upper side of the cobble.

(continued)

WILDLIFE OBSERVATIONS - Completed on all subdivisions

<table>
<thead>
<tr>
<th>BIRDS</th>
<th># OF SPECIES</th>
<th>TOTAL BIRDS</th>
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<tbody>
<tr>
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<tr>
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<tr>
<td>Waterfowl</td>
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<td>2</td>
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<td>1</td>
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<tr>
<td>Shorebirds</td>
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<tr>
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<tr>
<td>Other Birds</td>
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</table>

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

Shoreline subdivision map showing important biological features attached.
Lower in the intertidal the abundance of barnacles increases, as does the cover of Fucus, mussels, and the densities of several invertebrates (littorines, limpets, isopods, oligochaetes, hermit crabs, amphipods).

**Cleanup Considerations**

Manual cleanup activities were performed on the oil during the survey. Additional cleanup, if necessary, will not cause adverse affect to the biota.

**General Characteristics of PD001-A**

This section of beach is generally straight, with a moderate to high sloping shoreline of cobbles or pebbles or both. The abundance of most species is very low on these beaches, except for the very low zone where Fucus, molluscan invertebrates, and red, green, and brown algae are found. Mussels are sparse to moderate in the middle zone and low zone amongst beach cobble.

**General Zonation Pattern**

<table>
<thead>
<tr>
<th>Biota</th>
<th>Tide Level</th>
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<th>Middle</th>
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<tr>
<td>Bare Rock</td>
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<tr>
<td>Green Filamentous Algae (Fucus)</td>
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<tr>
<td>Rockweed (Fucus)</td>
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<tr>
<td>Barnacles (Balanus)</td>
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<tr>
<td>Littorine Snails</td>
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<tr>
<td>Limpets</td>
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<td>Red Algae</td>
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<td>Green Algae (Ulva/other)</td>
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<td>Upright Brown Algae (not Fucus)</td>
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</tbody>
</table>

Legend: (-) Sparse to rare, (+) Moderate, (*) Abundant

**Common Species on PD001-A**

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

II. Marine Animals
1. Sponges - Porifera - Halichondria bowerbanki?,
2. Anemones - Anthopleura artemesia, Urticina crassicornis,
3. Flatworms - Platyhelminthes - Polyclads
6. Nematode Worms - Ribbon Worms - Emplectonema gracile, Tubulanus polymorphus
8. Polychaete Worms
   Nereidae - Nereis spp.
   Spiorbidae - Spiorbis sp.
9. Peanut worms - Sipunculids - Phascolosoma agassizii
10. Crustaceans
    a. Amphipods - Traskorchestia sp.?
    b. Barnacles - Balanus glandula
    c. Crabs - Haplogaster sp., Paguridae (hermit crabs)
    d. Isopods - Cirdana harfordi, Idotea wosnesenskii, Gnorimorsphaeroma oregonensis
11. Mollusca
    a. Chitons - Mopalia mucosa, Tonicella lineata,
    b. Snails - Gastropods
       Amphissa columbiana, Littorina sitkana, L. keenae, Natica clausa, Nucella lamellosa, N. lima, Searlesia dira,
       Tachyrhynchus sp.
    c. Limpets - Lottia digitalis, L. persona, L. limatula, T. persona, T.
       scutum
    e. Bivalves - Clinocardium sp., C. nuttalli, Macoma nasuta, Modiolus
       modiolus, Mytilus edulis, Pododesmus cepio, Prototheca
       staminea, Saxidomus giganteus
12. Echinoderms
    a. Brittle Stars - Ophiolus aculeatus?, Ophiothrix spiculata?,
       Amphipholis?
    b. Sea stars - Dermasterias imbricata, Evasterias truscheli,
       Leptasterias hexactis, Pycnopodia helianthoides, Solaster
       dawsoni
    c. Sea Cucumbers - Holothurians Eupentacta sp.,
    d. Urchins - Strongylocentrotus droebachiensis
15. Fishes
    Cottidae -
    Stichaeidae - Xiphius atropurpureus, X. muscosus
III. Birds - Glaucous-winged Gull (5), Harlequin Duck (2)
1991 MAYSAP EVALUATION

SEGMENT: PD 001  SUB:  B  REGION:  KEN  SURVEY DATE:  5/21/91

ENVIRONMENTAL SENSITIVITIES:
Work Window(s)  OPEN

Ecological/Constraints (see page two for details)  Fish harvest area

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

SHPO Signature:  Timothy A. 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:
________________________________________________________
________________________________________________________
________________________________________________________
________________________________________________________

TAG:
________________________________________________________
________________________________________________________
________________________________________________________
________________________________________________________

FOSC:
________________________________________________________
________________________________________________________
________________________________________________________
________________________________________________________

TAG APPROVAL DATE: June 4, 1991  FOSC APPROVAL DATE: 6/17/91

ADEC  Joy Bann  FOSC  E. E. Page, CDR, USCG
EXXON  Jack  CHIEF OF STAFF, FOSC
USCG  E. Moore
NOAA  Jack
ECOLOGICAL CONSTRAINTS
1991 FIELD ACTIVITIES

Fish Harvest Area: Unlimited treatment unless otherwise directed by ADF&G. Sheen containment/recovery procedures required for mechanical treatment.
ADEC
NAME: Claude S. Crosby
SIGNATURE: Claude S. Crosby

Oiling occurred in a splash distribution. Little would be recovered or is considered treatable.

EXXON
NAME: George L. Stiles
SIGNATURE: George L. Stiles

Overall no significant oiling found.

ANDMANAGER
NAME: Jeff Johnson
SIGNATURE: Jeff Johnson

Concur with other reps. scattered drips. API in small amounts would take a lot of time to leach, and would be impractical to remove.

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

Small amounts of weathered marine very spread out which were picked up in some taken samples.

[Signature: [redacted]]
MAYSAP SHORELINE OILING SUMMARY

TIME: 14:45 to 15:30
TIDE LEVEL: +1.1 ft. to +1.3 ft.
ENERGY LEVEL: H M L
SURVEYED FROM: FOOT BOAT HELO
WEATHER: SUN CLOUDS FOG RAIN SNOW
TOTAL LENGTH SHORELINE SURVEYED: 17/16 m
NEAR SHORE SHEEN: BR RB SL X
EST. OIL CATEGORY LENGTH: W m M m N m VL 1/6 m NO 1/20 m US 0 m

<table>
<thead>
<tr>
<th>LOC</th>
<th>SURFACE OIL CHARACTER</th>
<th>SURFACE SEDIMENT TYPE</th>
<th>SHORE SLOPE</th>
<th>WIDTH m</th>
<th>LENGTH m</th>
<th>ZONE</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>T</td>
<td></td>
<td></td>
<td>0.5</td>
<td>0.5</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>A2</td>
<td>T</td>
<td></td>
<td></td>
<td>0.5</td>
<td>0.5</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>A3</td>
<td>T</td>
<td></td>
<td></td>
<td>5</td>
<td>15</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>A4</td>
<td>Picked Up</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 = 1-10%; T = <1%
**SLOPE**: V = VERTICAL; H = HIGH ANGLE; M = MEDIUM ANGLE; L = LOW ANGLE

**PIT NO.**

**SUBSURFACE OIL CHARACTER**: OP HORIZ MOR LOR OF TR NO cm-cm YIN cm B R N S U M L

**OILED ZONE**: PICKED UP

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

**NOTES**

OG COMMENTS:

See map.
Legend:

- Boulder
- cob/poc
- p8/1ch

VI. Overlying Redrock
unconsolidated material.

A3
- CT, MSO R
- H x 15, < 1.0
- < 1 m², max 5 cm
- Stick, under
- 10 cm cob/poc

A4
- HAT pocket < 1 m²
- in HAT P/LW.
Oil Related Comments

A1 Tar splatters were found in the upper zone bedrock/boulder outcrop. Limpets are rare on bedrock outcrops and boulders. Barnacles are sparse, and present on boulders, bedrock and under cobble.

A2 A few tar CT spatters were present on the upper zone boulders. Barnacles (sparse) were the only species found at the site.

A3 Oil (CT, MSOR) was present in a patch in the upper zone of the cobble/boulder beach. Barnacles (Balanus) were the most common species, and were sparse to moderately abundant, particularly under cobble. A few littorine snails and limpets were present. Slightly below the oiled zone, the cobble leads to a dense zone of barnacles and mussels, with Fucus moderately abundant in the mid-to-low zone.

A4 A few small patches of asphalt pavement was removed from the upper zone of the pebble/cobble beach. Barnacles were the most prominent species on this beach. The lower zones had a sparse mussel bed and moderately dense cover of Fucus.

(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></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seabirds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waterfowl</td>
<td>3</td>
<td>343</td>
<td></td>
</tr>
<tr>
<td>Gulls/Kittiwakes</td>
<td>1</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>1</td>
<td>5</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>Black Bear Tracks</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.
Cleanup Considerations

Manual cleanup activities were performed on the oil during the survey. Additional cleanup, if necessary, will not cause adverse affect to the biota.

General Characteristics of PD001-B

This beach is nearly identical to PD001-A, with a long beach with sediments varying from pebbles to boulder, and mostly cobble. The shore is moderate to high sloping. The abundance of most species is very low on these beaches, except for the very low zone where Fucus, molluscan invertebrates, and red, green, and brown algae are found. Mussels are sparse to moderate in the middle zone and low zone amongst beach cobble.

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 Distribution</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>Green Filamentous 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>Littorine Snails</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</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>
</tbody>
</table>

Legend: (-) Sparse to rare, (+) Moderate, (*) Abundant

Common Species on PD001-B

A. Marine Plants
1. Diatoms, Blue Greens
2. Green Algae - Chlorophyta
   Enteromorpha sp., Ulva sp., Urosperma sp.
3. Brown Algae - Phaeophyta
   Alaria marginata, Ectocarpus spp., Fucus distichus, Hildenbrandia sp., Ralfsia sp., Systosiphon lomentaria
4. Red Algae - Rhodophyta
   Cumagloia andersonii, Endocladia muricata, Halosaccion glandiforme, sp., Mastocarpus sp., Membranoptera dimorph, Odonthalia floccosa, Palmaria palmata, Petrocelis sp., Porphyras sp., Rhodomela larix
5. Higher Plants - Leymus mollis (beach rye grass)

II. Marine Animals
1. Sponges - Porifera - Halichondria bowerbankii?,
2. Anemones - Anthopleura artemesia, Urticina crassicornis,
3. Flatworms - Platyzelmithes - Polyclads
4. Nemerteans Worms - Ribbon Worms - Emplectonema gracile, Tubulanus polymorphus
5. Polychaete Worms
   Nereidae - Nereis spp.
   Spiorbidae - Spirobris sp.
9. Peanut worms - Sipunculids - Phascolosoma agassizii
10. Crustaceans
   a. Amphipods - Traskorchestia sp.?
   b. Barnacles - Balanus glandula
   c. Crabs - Haplogaster sp., Paguridae (hermit crabs)
   d. Isopods - Cirdana harfordi, Idotea wosnesenskii, Gnorimorsphaeroma oregonensis
11. Mollusca
   a. Chitons - Mopalia mucosa, Tonicella lineata,
   b. Snails - Gastropods
      Amphissa columbiana, Littorina sitkana, L. keenae, Natica clausa, Nucella lamellosa, N. lima, Searlesia dira, Tachyrhynchus sp.
   c. Limpets - Lottia digitalis, L. persona, L. limatula, T. persona, T. scutum
   e. Bivalves - Clinocardium sp., C. nuttalli, Macoma nasuta, Modiolus modiolus, Mytilus edulis, Pododesmus cepio, Prototheca staminea, Saxidomus giganteus
12. Echinoderms
   a. Brittle Stars - Ophiolus aculeatus?, Ophiothrix spiculata?, Amphipholis?
   b. Sea stars - Dermasterias imbricata, Evasterias truscheli, Leptasterias hexactis, Pycnopodia helianthoides, Solaster dawsoni
   c. Sea Cucumbers - Holothurians Eupentacta sp.,
   d. Urchins - Strongylocentrotus droebachiensis
15. Fishes
   Cottidae -
   Stichaeidae - Xiphister atropurpureus, X. mucosus
III. Birds - Glaucous-winged Gull (3), Harlequin Duck (2), Lesser Scaup (30), Common Merganser (1), Fox Sparrow (5), Pacific Loon (1 dead on beach)
BIO SKETCH MAP
PDOC1 B
J. P. Baxley
May 21, 1991
1442  30

CT, Spleakers
Some access to pool

CT, Mussels - small Barnacles, sparse
Littorina - common
Mussels/Barnacles
20-30' located
- cobble bottom

Mussels/Barnacles
Fucus

AP - Barnacles, little else

METERS
SEGMENT ST/PD-002

STREAM NO:  242-42-10450  DATE  4/29/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
1A  Salmon stream mouth - fry outmigration (3/1 to 5/15)
1B  Salmon stream mouth - spawning (7/10 to 8/31)
1J  Purse seine area (7/20 to 9/30)
4GA  State Marine Park Alaska State Wilderness Park
6NN  Recreation: Sportfishing
8AA  Sensitive estuary

See attached Ecological Constraint sheet for specific constraints and contacts.

SUBDIVISION ECOLOGICAL CONSTRAINTS:

Subject stream is located within subdivision A (1 of 1). Avoid landing in mussel beds.

ARCHAEOLOGICAL CONSTRAINTS:

If cultural resources are uncovered during shoreline treatment, stop work in the vicinity, mark the location of the find and contact Exxon's
Cultural Resource Program immediately (564-3276 (Anchorage) or 229-1508
(24 hrs.).)

SHPO SIGNATURE: [Signature]  DATE:  5/22/90

Subsurface Oil Observed:  Yes  No  X  Maximum Depth

RECOMMENDATIONS:

X  No Treatment Recommended

X  Treatment Recommended

X  Manual Pickup

X  Bioremediation

X  Tarmat Removal

Snare/Absorbent Booms

Oil Snare (pom poms)

Absorbents (pads, rolls, etc)

Spot Washing: Wands

Beach Cleaner

Other (see comments)

COMMENTS: Recommended treatment includes: 1) manual removal of tarmat, patties and oiled debris, 2) bioremediation of coat and cover areas as indicated on the attached sketch map. Contact ADNR for entry permit. Work from 5/16 to 7/9.

TAG COMMENTS:

_________________________________________________________________________

_________________________________________________________________________

_________________________________________________________________________

_________________________________________________________________________

TAG APPROVAL DATE:  5/19/90

ADEC  [Signature]  DATE:  MAY 25 1990

EXXON  [Signature]

NOAA  [Signature]

USCG  [Signature]
RE-SURVEYED BY ANAD TEAM 15 ON 4/29/90.

WE AGREE WITH ALL THE ABOVE DATA!
ANADROMOUS FISH STREAM EVALUATION ADDENDUM

CONSTRAINTS FOR STREAM NO. 242-42-10450

SEGMENT PD-002 SUBDIVISION A

<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 Less Than 100m From Stream</td>
</tr>
<tr>
<td>Bioremediation More Than 100m From Stream</td>
</tr>
</tbody>
</table>

ARCHAEOLOGICAL STANDARD CONSTRAINT

If cultural resources are uncovered, PHONE 564-3274.

APPLICABLE ECOLOGICAL TIME CONSTRAINTS

1A,1B Salmon Stream  
ADF&G catalogued anadromous stream (242-42-10450) is in Subdivision A. This subdivision is closed to bioremediation less than 100m from stream 7/10 to 8/31. Before 7/10, bioremediation is permitted less than 100m from stream with on-site ADF&G monitor or ADEC alternate present. No constraint to bioremediation more than 100m from stream. No constraint to manual pickup and tarmat removal.

1J Purse Seine Area  
Closed to bioremediation 7/20 to 9/5. No constraint to manual pickup and tarmat removal.

OTHER ECOLOGICAL CONSIDERATIONS

No disturbance to stream bed or bank. No flushing of pollutants or sediments into stream drainage; do not allow Inpol to enter stream flow. On-site examination and consultation by ADF&G monitor is required prior to bioremediation in order to authorize a setback distance from the stream during chemical application; if ADF&G monitor's presence is impossible, authorization may be given by the ADEC monitor. Avoid any unnecessary disturbance or damage to unooled biota and substrate. Sensitive estuary.

SEE SUBDIVISION CONSTRAINT ADDENDUM PD-002A
FOR ADDITIONAL CONSTRAINT INFORMATION.

FOSC  
Prepared by  
Date  

PHILIPS  
Prepared by  
Date 6/14/90
ANADROMOUS FISH STREAM EVALUATION

SEGMENT ST/PD-002 STREAM NO: 242-42-10450 DATE 4/29/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
1A Salmon stream mouth - fry outmigration (3/1 to 5/15)
1B Salmon stream mouth - spawning (7/10 to 8/31)
1J Purse seine area (7/20 to 9/30)
4GA State Marine Park Alaska State Wilderness Park
6NN Recreation: Sportfishing
8AA Sensitive estuary

See attached Ecological Constraint sheet for specific constraints and contacts.

SUBDIVISION ECOLOGICAL CONSTRAINTS:

Subject stream is located within subdivision A (1 of 1). Avoid landing in mussel beds.

ARCHAEOLOGICAL CONSTRAINTS:
If cultural resources are uncovered during shoreline treatment, stop work in the vicinity, mark the location of the find and contact Exxon's Cultural Resource Program immediately (564-3276 (Anchorage) or 229-1508 (24 hrs.)).

SHPO SIGNATURE: [signature] DATE: 5/24/90

Subsurface Oil Observed: Yes No X Maximum Depth

RECOMMENDATIONS:

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

COMMENTS: Recommended treatment includes: 1) manual removal of tarmat, patties, and oiled debris, 2) bioremediation of coat and cover areas as indicated on the attached sketch map. Contact ADNR for entry permit, work from 5/16 to 7/9.

TAG COMMENTS:

TAG APPROVAL DATE: 5/16/90
EXXON [signature] USCG [signature] NOAA [signature]
ANADROMOUS FISH STREAM ASSESSMENT

REGION: KENAI
SEGMENT: PD-002
SUBDIVISION: A
STREAM NO: 242-42-10450
ANADROMOUS FISH STREAM EVALUATION

SEGMENT ST/PD-002

STREAM NO: 242-42-10450

DATE 4/29/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
1A Salmon stream mouth - fry outmigration (3/1 to 5/15)
1B Salmon stream mouth - spawning (7/10 to 8/31)
1J Purse seine area (7/20 to 9/30)
4GA State Marine Park Alaska State Wilderness Park
6NN Recreation: Sportfishing
8AA Sensitive estuary

See attached Ecological Constraint sheet for specific constraints and contacts.

SUBDIVISION ECOLOGICAL CONSTRAINTS:

Subject stream is located within subdivision A (1 of 1). Avoid landing in mussel beds.

ARCHAEOLOGICAL CONSTRAINTS:
If cultural resources are uncovered during shoreline treatment, stop work in the vicinity, mark the location of the find and contact Exxon's Cultural Resource Program immediately (564-3276 (Anchorage) or 229-1508 (24 hrs.)).

SHPO SIGNATURE: ___________________________ DATE: ___________________________

Subsurface Oil Observed: Yes____ No____ X____ Maximum Depth_____

RECOMMENDATIONS:

____ No Treatment Recommended  ____ Snare/Absorbent Booms
____ Treatment Recommended  ____ 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: 1) manual removal of tarmat, patties and oiled debris, 2) bioremediation of coat and cover areas as indicated on the attached sketch map. Contact ADNR for entry permit. Work from 5/16 to 7/9.

TAG COMMENTS: ___________________________

_________________________

TAG APPROVAL DATE: __________________________

ADEC ___________________________ FOSC: ___________________________ DATE: ___________________________

EXXON ___________________________

NOAA ___________________________

USCG ___________________________
Salmon stream mouth - fry outmigration (3/1 to 5/15)
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 Mortson 267-2324

Salmon fry nursery area (4/21 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 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)
Cannery Creek Hatchery release (4/21 to 6/1)
Remote release sites
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 and/or PWS Aquaculture Association. 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 or PWS Aquaculture Association for confirmation and authorization.

AGENCY CONTACT PERSON: ADF&G Larry Peltz 424-3214
PWS Aquaculture Association John McMillan or Bruce Suzomoto 424-7511

Gill net area (8/1 to 8/31)
Purse seine area (7/20 to 9/30)
Purse seine hook-off (7/20 to 9/30)
Set net sites (8/11 to 7/25)
Contact ADF&G for specific dates, locations and constraints. 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 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

2M Herring spawning (4/1 to 8/15)
Contact ADF&G for confirmation - dates and locations may vary. Restrict boat traffic to essential minimum. Avoid damage to unspotted intertidal and subtidal algae and seagrass. 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 (5/15 to 7/1)
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. 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

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 786-3377

Shorebird/Avocet fowl 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 6/1)
Restrict air traffic and all disturbances 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 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)
Finfish harvesting
Deer harvesting (8/15 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 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 Felt 267-2359
FIELD SHORELINE COMMENT SHEET

SEGMENT ST/ ID - 2 SUBDIVISION: DATE 4/11/19

USCG NAME: Doug Hill SIGNATURE: Douglas D Hill

☐ NO TREATMENT RECOMMENDED ☑ TREATMENT SUGGESTED

COMMENTS

1. Manual clean-up; remove tar mats.

NOTE: Local vegetation is growing at a rapid rate and will soon cover the SMEs & tar mats making clean-up near impossible.

☐ NO TREATMENT RECOMMENDED ☑ TREATMENT SUGGESTED

LAND MANAGER
NAME: ___________________ SIGNATURE: ___________________

☐ NO TREATMENT RECOMMENDED ☑ TREATMENT SUGGESTED

COMMENTS

Manual pickup and removal at pukepukas; rapid rate of vegetation growth requires that this area be cleaned as soon as possible - now!
RE-SURVEYED BY ANAD TEAM 15 ON 4/29/90.

WE AGREE WITH ALL THE ABOVE DATA!

[Signature]

character Length (m): AP PO CV CT SO ST MS PT TB FL NO
**ADF&G Multi-Assessment Data Form**

<table>
<thead>
<tr>
<th>Field</th>
<th>Information</th>
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<td>Survey Type</td>
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<tr>
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<td>Aerial Ground Boat</td>
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<td>242-42</td>
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<td>Lat</td>
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<tr>
<td>Location</td>
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</tr>
<tr>
<td>Description</td>
<td>Head of West Arm Port Dick Grass gravel flats and lagoon area (northwest portion of flats)</td>
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<tr>
<td>Extent of Oil</td>
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<td>Categorized Anad. Fish Species</td>
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<td>Catalog No.</td>
<td>242-42-10450</td>
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<tr>
<td>Stream Name</td>
<td>Slide Creek</td>
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<tr>
<td>Oil in Stream Bed</td>
<td>Y</td>
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<tr>
<td>Oil on Stream Banks</td>
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<tr>
<td>Oil on Beach Adjacent to Marsh</td>
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<td>Oil Within 1 Mile of Stream</td>
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<tr>
<td>Oil Impacts</td>
<td>N VL L M H</td>
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<tr>
<td>Oil Type</td>
<td>Pooled Mousse Asphalt Grease</td>
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<tr>
<td>Oiled Debris</td>
<td>Y N</td>
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<tr>
<td>Shoreline Type</td>
<td>Headland Low-Lying Rocks Beach Cove Marsh</td>
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<td>Wave Exposure</td>
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<td>Bedrock Boulder Cobble Gravel Sand Mud/ slit</td>
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<td>Anadromous Fish Present</td>
<td>02</td>
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<td>Anadromous Fish Observation Species Aerial Ground</td>
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<tr>
<td>Priority Cleanup Area (ADFE-2-Rock Hill)</td>
<td></td>
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<tr>
<td>Comments</td>
<td>Recommend that a crew arrive &quot;ASAP&quot; to manually pick up and remove the &quot;numerous&quot; far balls and parties in this system found throughout the grass, flats, lagoon area, and on the gravel bars. Rapidly growing vegetation will soon obscure much of the</td>
</tr>
</tbody>
</table>
Note the presence of asphalt mats in nearby PD-2. This mat was treated with Inipol in 1989. Oil in PD-001,004 also pose a potential threat to the grass flats and lagoon area of PD-002.

Channels within the "Flats" area are used by Pink and Chum salmon, as well as the Lagoon and Slide Creek itself. Chum fry observed in the channel of the Flats.

The Flats area is also used heavily by migratory waterfowl.

Seal pups and land otters frequent the area.

Mussel beds are present at the mid to low intertidal portion of this system.

Bald eagles frequent this area.

I agree with recommendations. Michael H. Frerichs

An ADELA person will be present during the cleanup operation.
Segment P8 002
Stream No. 242-42-10450
Ecological summary

This is a large braided stream with an intertidal delta area at least 400 m wide. The lower 200 m or so consists of cobble/pebble/gravel channels, berms, and flats with large, dense populations of Fucus and mussels, with infaunal, clams, crustaceans, worms, etc.

Two sea otters were seen near the marsh, and craters in gravel flats indicate recent clam-digging by otters. The upper 200 m or so of the intertidal area consists of marsh grass-covered flats interspersed with stream channels, and a lagoon in the northeast corner. The lagoon has mussel beds, eelgrass, infaunal clams, and a soft mud bottom. Remaining oil consists of sporadic small tar mats throughout the MTZ and LTZ. Manual removal is suggested. Considering the large areal extent of the scattered tar mats, manual removal by a crew of 10 people or so can probably be accomplished with minimal damage to the intertidal biota. Skiff operators should be advised to avoid landing in mussel beds.
ENVIRONMENTAL SENSITIVITIES:
Work Window(s): OPEN 5/1 - 7/10; RESTRICTED 7/10 - 9/15

Ecological/Constraints (see page two for details) Fish harvest area, Anadromous stream

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

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

COMMENTS:
INITIAL:

TAG:

FOSC:

TAG APPROVAL DATE: 5/24/99

ADEC
EXxon
USCG
NOAA

FOSC APPROVAL DATE: 8/29/91

E. E. PAGE, CDR, USCG CHIEF OF STAFF, FOSC
ECOLOGICAL CONSTRAINTS
1991 FIELD ACTIVITIES

Fish Harvest Area: Unlimited treatment unless otherwise directed by ADF&G. Sheen containment/recovery procedures required for mechanical treatment.

Anadromous Stream: Unlimited treatment up to stream bank between May 15 and July 10. ADF&G approval required for work after July 10. Fish Habitat Permit required for instream work. ADF&G approval required for bioremediation within 100 meters of anadromous stream after July 10.
ADEC
NAME: D. Hill of ADEC  SIGNATURE: Douglas J. Will

NTR: All oil observed was not picked up. Oil remains on the shore of the lagoon among interstices of cobble and boulder, in the grass and in the mud.

I presume that further exploration would reveal more oil than has been mapped. However, the quantity of oil remaining does not warrant trampling the soft lagoon shoreline any more than it has been trampled already.

EXXON
NAME: R Coulter  SIGNATURE: Roy R. Coulter

NTR: As noted by other Reps, very little oiling remains and what remains is not recoverable. Any additional visits to this area would be more harmful than beneficial. The site looks good and should not require additional consideration for treatment.

LANDMANAGER
NAME: J. Johnson  SIGNATURE: J.

NTR: This very large segment has much improved over the last 2 years. I concur with USCG/NOAA comments. Though this segment is within Rockland Bay State Wilderness Area, there is not enough oil to justify further treatment.

USCG/NOAA
NAME: Chief Jensen of Shigenoka  SIGNATURE: R.

NTR: Category: Further removal operations would cause more environmental harm than the oil to be removed.

OG COMMENTS: This segment consists of a large Cuspate delta with several distributaries and intervening longitudinal bars. The eastern end of the segment has a small lagoon fronted by high gravel spit. Except for four SOR patches collected on one of the bars, the only oil found at this site occurred in the lagoon in three areas. The grass and sediment were in large amounts in U17Z to S17Z along short shoreline lengths. Veco workers collected a half bag of oiled sediment.
Grassy Area

Longitudinal Bar

Dead Trees

Low Cliff

Photo Sites

Fucus Bed

VECO workers retrieved 1.2 bag of oiled sediments. In addition, faunia SOL was broken up.

KENAI PENINSULA

Stream Flow

Small Stream

Lagoon

Gravel Spit

Fucus kelp and mussels growing throughout MITZ and LITZ. Snails and barnacles on larger rocks. Area mostly small pea gravel and poor substrate for most fauna.

WEST ARM OF PORT DICK
**MAYSAP BIOLOGICAL SUMMARY FORM**

<table>
<thead>
<tr>
<th>TEAM #</th>
<th>6</th>
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</thead>
<tbody>
<tr>
<td>SEGMENT #</td>
<td>PD-002</td>
</tr>
<tr>
<td>SUBDIVISION</td>
<td>A</td>
</tr>
<tr>
<td>SEA STATE</td>
<td>calm</td>
</tr>
<tr>
<td>TIDAL HEIGHT (Range)</td>
<td>0 ft - 3.5 ft</td>
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<tr>
<td>BIOLGIST</td>
<td>T. A. Schroeder</td>
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<tr>
<td>WIND SPEED/DIRECTION</td>
<td>calm</td>
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<tr>
<td>PHOTOGRAPHS: ROLL #</td>
<td>FRAME #</td>
</tr>
</tbody>
</table>

**COMMENTS/OBSERVATIONS** (to be completed in oiled subdivisions only):

(2) = 50 ft/mile. Large body of water is 200 to 400 yards across. A large amount of decaying organic matter present around shore of lagoon, creating strong flow. Seaweed is fairly dense, but with very little help at algae growth that could be observed.

Virtually, the entire beach segment is covered with seaweed. Shells and mud are occurring throughout the beaches and beach grass areas. The small faunal pool and sand provide a good substrate for most fauna. Some hermit crabs and snails were present on the four larger rocks, but were not abundant.

All was observed within 400 yards of the Anderson stream. The green backs were good and there appear to be no effects on the stream from the oil spill or strand activities. The area looks as natural as it did 17 years ago.

**WILDLIFE OBSERVATIONS**

**TO BE COMPLETED IN 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 Adult</td>
<td>2 immature</td>
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<tr>
<td>Seabirds</td>
<td>1 Adult</td>
<td>45</td>
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</tr>
<tr>
<td>Waterfowl</td>
<td>1 Adult</td>
<td>30</td>
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</tr>
<tr>
<td>Gulls/Kittiwakes</td>
<td>1 Adult</td>
<td>2.5</td>
<td></td>
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<tr>
<td>Shorebirds</td>
<td>1 Adult</td>
<td>1 2.5</td>
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</tr>
<tr>
<td>Corvids</td>
<td>1 Adult</td>
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</tr>
<tr>
<td>Other Birds</td>
<td>1 Adult</td>
<td>1</td>
<td></td>
</tr>
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</table>

**MARINE MAMMALS**

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

Shoreline subdivision map showing important biological features attached.
1991 MAYSAP EVALUATION

SEGMENT: PD 002  SUB: A  REGION: KEN  SURVEY DATE: 5/14/91

ENVIRONMENTAL SENSITIVITIES:
Work Window(s)  OPEN 5/1 - 7/10; RESTRICTED 7/10 - 9/15

Ecological/Constraints (see page two for details)  Fish harvest area, Anadromous stream

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>
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<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  
ECOLOGICAL CONSTRAINTS
1991 FIELD ACTIVITIES

Fish Harvest Area: Unlimited treatment unless otherwise directed by ADF&G. Sheen containment/recovery procedures required for mechanical treatment.

Anadromous Stream: Unlimited treatment up to stream bank between May 15 and July 10. ADF&G approval required for work after July 10. Fish Habitat Permit required for instream work. ADF&G approval required for bioremediation within 100 meters of anadromous stream after July 10.
All oil observed was not picked up. Oil remains on the shore of the lagoon among interstices of cobble and boulder, in the grass and in the mud.

I presume that further exploration would reveal more oil than has been mapped. However the quantity of oil remaining does not warrant trampling the soft lagoon shoreline or more than it has been trampled already.

As noted by other RPs, very little oiling remains and what remains is not reconstructable. Any additional visits to this area would be more harmful than beneficial. The site looks good and should not require additional consideration for treatment.

This very large segment has much improved over the last 5 years. I concur with USCG/NOAA comments. Though this segment is within Kachemak Bay State Wilderness Park, there is not enough oil to justify further treatment.

The surveyed portion of the segment is a complex delta area for an anadromous stream feeding into the west arm of Port Dick. Most of the segment was surveyed, although the westernmost 300-400 m were not.

The broad tidal flat of the delta showed modest though consistent fluxus cover. No oil residues were observed south of the braided stream channels. Most of the observed oiling was located in the north-eastern portion of the segment, on the shoreline of a fairly large tidal lagoon. Much of this oil was very high in the intertidal with nearly all in the upper or supratidal. Weathered mousse was found in the marsh grass of the supra, and some sor occurred in cobble substrate in the upper intertidal. The only other area of the segment where oil was found was on the eastern side of the easternmost channel near a very high beeh. A few patches were noted and recovered by the video crew.
**OG Comments:** This segment consists of a large cusparse delta with several distributaries and intervening longitudinal bars. The eastern end of the segment has a small lagoon bordered by high gravel spit. Except for four 50R parties collected on one of the bars, the only oil found at this site occurred in the lagoon in three areas. The grass and sediment were in fair amounts in UETZ to 5UTZ along short shoreline lengths. Veco workers collected a half bag of oiled sediment.
VECO workers retrieved 1/2 bag of oil & sediment. In addition, flake SOK was broken up.

Kenai Peninsula

West Arm of Port Dick
VECO workers retrieved 1/2 bag of oil and sediment. In addition, palmate SOX was broken up.

KENAI PENINSULA

WEST ARM of Port Dick
Grassy Area

Longitudinal Bar

Dead Trees

Low Cliff

Photo Sites

Fucus Bed

KENAI PENINSULA

VECO workers retrieved 1/2 bag of oily sediment. In addition, sminkle #3 was broken up.

WEST ARM of PORT DICK
COMMENTS/OBSERVATIONS (to be completed in oiled subdivisions only):

(a) $206/73 m/s along beach of Laguna is 500 to 1000 yards

from the evidence, it seems that large amounts of decaying
organic matter resulted around water of Laguna creating
strongly smell, Laguna is very muddy bottom with
very little help at algae growth that could be observed.

Vertically, the entire beach segment is covered with
sheets of a dead, mottled growth and especially
throughout the fishing and beach grass areas.
The shallow sea grass and sand provide a poor
substrate for most fauna. Some foraged and went
very present on the few larger kelp, but were
not abundant.

The oil was observed within 200 yrs of the accidental
spill, the gray leafs very cold and there appear
to be no effect on the stranded from the oil or
leaves activities. The area looks as natural as it did
17 years ago.

WILDLIFE OBSERVATIONS
TO BE COMPLETED IN ALL SUBDIVISIONS

<table>
<thead>
<tr>
<th>BIRDS</th>
<th># OF SPECIES</th>
<th>TOTAL BIRDS</th>
<th>SPECIES PRESENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eagles</td>
<td>1 Roll</td>
<td>2 individuals</td>
<td></td>
</tr>
<tr>
<td>Seabirds</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Gulls/kittiwakes</td>
<td>1</td>
<td>45</td>
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</tr>
<tr>
<td>Shorebirds</td>
<td>1 gulls</td>
<td>30</td>
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<tr>
<td>Corvids</td>
<td>1 seagull</td>
<td>7.5</td>
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</tr>
<tr>
<td>Other Birds</td>
<td>1 Hens</td>
<td>1</td>
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MARINE MAMMALS

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

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<th>SPECIES</th>
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<tbody>
<tr>
<td></td>
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</tbody>
</table>

Shoreline subdivision map showing important biological features attached.
ANADROMOUS FISH STREAM EVALUATION

SEGMENT ST/PD-003  STREAM NO: 242-42-10460  DATE 4/29/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
1A  Salmon stream mouth - fry outmigration (3/1 to 5/15)
1B  Salmon stream mouth - spawning (7/10 to 8/31)
1J  Purse seine area (7/20 to 9/30)
4GA State Marine Park Alaska State Wilderness Park
6U  Recreation: Tent sites (6/1 to 9/15)
6W  Recreation: Forest Service cabins (6/1 to 9/15)
6Y  Recreation: Special use destination
6NN Recreation: Sportfishing
8AA  Sensitive estuary

See attached Ecological Constraint sheet for specific constraints and contacts.

SUBDIVISION ECOLOGICAL CONSTRAINTS:

Subject stream is located within subdivision A (1 of 1). No additional ecological constraints.

ARCHAEOLOGICAL CONSTRAINTS:

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

SHPO SIGNATURE: [Signature] DATE: 5/22/90

Subsurface Oil Observed: Yes  No  X  Maximum Depth

RECOMMENDATIONS:

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

COMMENTS: Recommend manual pickup of patties. Work should be scheduled in conjunction with work in PD002, 5/16 to 7/1.

TAG COMMENTS:

__________________________

TAG APPROVAL DATE: 5/8/90
ADEC  Art Weisser  Date: May 25, 1990
EXXON  [Signature]  Date:  May 25, 1990
NOAA  [Signature]  Date:  May 25, 1990
USCG  [Signature]  Date:  May 25, 1990
Surveyed by William Reid 29 Apr 90
ANADROMOUS FISH STREAM EVALUATION ADDENDUM
CONSTRAINTS FOR STREAM NO. 242-42-10460
SEGMENT PD-3 SUBDIVISION A

WORK WINDOW
Manual Pickup
OPEN

ARCHAEOLOGICAL STANDARD CONSTRAINT
If cultural resources are uncovered, PHONE 564-3274.

APPLICABLE ECOLOGICAL TIME CONSTRAINTS
1A, 1B Salmon Stream ADF&G catalogued anadromous stream (242-42-10460) is in Subdivision A. No constraint to manual pickup.
1J Purse Seine Area No constraint to manual pickup.

OTHER ECOLOGICAL CONSIDERATIONS
No disturbance to stream bed or banks. Restrict boat and air traffic to essential minimum after 7/20. Avoid any unnecessary disturbance or damage to unololed biota and substrate. Sensitive estuary.

SEE SUBDIVISION CONSTRAINT ADDENDUM PD-3A FOR ADDITIONAL CONSTRAINT INFORMATION.

FOSC
Date 6-10-90

Prepared by
Date 6/10/90
ECOLOGY MAP
SEGMENT PD-3
SUBDIVISION A (1 of 1)
METERS

Exxon Company, USA
Map Key: KE2-PD-3
ANADROMOUS FISH STREAM EVALUATION.

SEGMENT ST/PD-003 STREAM NO: 242-42-10460 DATE 4/29/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
1A Salmon stream mouth - fry outmigration (3/1 to 5/15)
1B Salmon stream mouth - spawning (7/10 to 8/31)
1J Purse seine area (7/20 to 9/30)
4GA State Marine Park Alaska State Wilderness Park
6U Recreation: Tent sites (6/1 to 9/15)
6W Recreation: Forest Service cabins (6/1 to 9/15)
6Y Recreation: Special use destination
6NN Recreation: Sportfishing
8AA Sensitive estuary

See attached Ecological Constraint sheet for specific constraints and contacts.

SUBDIVISION ECOLOGICAL CONSTRAINTS:

Subject stream is located within subdivision A (1 of 1). No additional ecological constraints.

ARCHAEOLOGICAL CONSTRAINTS:

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

SHPO SIGNATURE: __________________ DATE: 5/22/90

Subsurface Oil Observed: Yes____ No X Maximum Depth____

RECOMMENDATIONS:

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

COMMENTS: Recommend manual pick up of patties. Work should be scheduled in conjunction with work in PD 002, 5/16 to 7/1.

ANAD. FISH
SEE ADDENDUM DATED 6/16/90

TAG COMMENTS: __________________

TAG APPROVAL DATES: 5/18/90
ADEC Act Wm. Dept. Wm.
EXXON ___________ ___________ FOSC ___________ DATE: MAY 25 1990
NOAA ___________ ___________ USCG
ANADROMOUS FISH STREAM ASSESSMENT

REGION: KENAI
SEGMENT: PD-003
SUBDIVISION: A
STREAM NO: 242-42-10460
ANADROMOUS FISH STREAM EVALUATION

SEGMENT ST/PD-003 STREAM NO: 242-42-10460 DATE 4/29/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
1A Salmon stream mouth - fry outmigration (3/1 to 5/15)
1B Salmon stream mouth - spawning (7/10 to 8/31)
1J Purse seine area (7/20 to 9/30)
4GA State Marine Park Alaska State Wilderness Park
6U Recreation: Tent sites (6/1 to 9/15)
6W Recreation: Forest Service cabins (6/1 to 9/15)
6Y Recreation: Special use destination
6NN Recreation: Sportfishing
8AA Sensitive estuary

See attached Ecological Constraint sheet for specific constraints and contacts.

SUBDIVISION ECOLOGICAL CONSTRAINTS:

Subject stream is located within subdivision A (1 of 1). No additional ecological constraints.

ARCHAEOLOGICAL CONSTRAINTS:

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

SHPO SIGNATURE: ___________________________ DATE: ___________________________

Subsurface Oil Observed: Yes ___ No X ___ Maximum Depth ______

RECOMMENDATIONS:

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

COMMENTS: Recommend manual pickup of patties. Work should be scheduled in conjunction with work in PD002, 5/16 to 7/1.

__________________________________________________________

TAG COMMENTS: _____________________________

__________________________________________________________

TAG APPROVAL DATE: __________

ADEC ______________________________ FOSC: __________ DATE: _______

EXXON ______________________________

NOAA ______________________________

USCG ______________________________
PWS, SEWARD AND HOMER 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 without authorization from ADF&G. No use of methods which might affect nearshore oil or toxicity levels, such as hot water wash or Indop 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 Mortson 267-2324

1C 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 Indop 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

1D Seward Hatchery release (4/15 to 6/15)
1E Main Bay Hatchery release (4/20 to 6/15)
1F Sawmill Bay Hatchery release (4/15 to 6/1)
1G Coney Island Hatchery release (4/21 to 6/1)

Remote release sites:

No use of methods which might affect nearshore oil or toxicity levels, such as hot water wash or Indop application, prior to at least July 1 unless authorized by ADF&G and/or PWS Aquaculture Association. 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 or PWS Aquaculture Association for confirmation and authorization.

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

1I Gill net area (6/7 to 8/31)
1J Purse seine area (7/20 to 9/30)
1K Purse seine hook-off (7/20 to 9/30)
1L Set net area (6/11 to 7/25)

Contact ADF&G for specific dates, locations and constraints. Restrict boat and air traffic to essential minimum. When set net sites are present (1L) restrict boat operations to essential minimum as authorized by ADF&G. If plans for treatment include methods such as hot water wash or Indop 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

2M Herring spawning (4/1 to 6/15)

Contact ADF&G for confirmation - dates and locations may vary. Restrict boat traffic to essential minimum. Avoid damage to unciled intertidal and subtidal algae and seagrass. If plans for treatment include methods such as hot water wash or Indop application which might affect nearshore oil or toxicity levels, contact ADF&G and USFWS prior to treatment for confirmation.

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

3N, 3P Harbor seal and seal lion pupping (5/15 to 7/1)

3Q, 3G Harbor seal and seal lion molting (8/15 to 9/15)

Restrict air and boat traffic to essential minimum. No personnel within 400m. Aircraft to maintain 800m horizontal and 300m vertical distance from haulouts. No application of Indop 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 556-7235

5A 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 736-3377

5S 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 736-3377

5T All Bald Eagle nests (3/1 to 6/1)
Active Bald Eagle nests (5/1 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 736-3377

6U Recreation:

Tent sites (6/1 to 9/15)
Anchorage (8/1 to 9/15)
Forest Service cabins (6/1 to 9/15)
Lodge (6/1 to 9/15)
Special use destination

6V Subsistence area: Salmon harvesting (5/1 to 9/30)

7Z Subsistence area: Salmon harvesting (5/1 to 9/30)

7H Finfish harvesting

11 Deer 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 Inidop 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: PD-3  SUBDIVISION:  DATE: 9/27/96

☐ NO TREATMENT RECOMMENDED  ☑ TREATMENT SUGGESTED

COMMENTS
1. Manual clean-up; remove tar paties
   (see note PD 2 4/29/96)

☐ NO TREATMENT RECOMMENDED  ☑ TREATMENT SUGGESTED

Recommend manual pickup and removal of polter
sound dump distributed amongst the grass plats and
well as the paties found on the north shore (see
attached maps).
Rapid rate of vegetation growth requires that...!
be picked up as soon as possible—now!

LAND MANAGER
NAME: ___________________________ SIGNATURE: ___________________________

☐ NO TREATMENT RECOMMENDED  ☑ TREATMENT SUGGESTED

[Signature: Doug Hill]
**OG** WILLIAM LEID USCG Mc MAHON SEGMENT STPD03
**BIO** MICHAEL FAWCETT LAND REP
**EXXON** Guz CABCIA ADFG PERM WINDOW Data H:1
**TEAM NO.** 15 TIDE LEVEL
**DATE 2-9/AM/90**
**EST. SUBDIVISION LENGTH:** 450 m
**UPLANDS DESCRIPTION:** Grass Rock
**SURVEYED FROM:** Foot Boat Helo
**SURFACE SEDIMENTS:** R % B 2 % C 5 % P 50 % G 30 % S 10 % M % V
**SLOPE:** Lang 95 % Hang 5 % Ven 5 %
**WAVE EXPOSURE:** Low Med High

### 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>
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<tr>
<td>Cover</td>
<td></td>
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<tr>
<td>Coat</td>
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<td>Stain</td>
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<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>
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<td></td>
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<tr>
<td>Film</td>
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<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

**PATTIES / TARBALLS:** 8

**NEAR SHORE SHEEN?** No

**Did you Col Debris?** Yes

**DEBRIS TYPE**

**BAGS**

**Photographs:**
- Roll No. AS-15-7
- Frames 15-19

### SUBSURFACE OIL

| PIT NO. | PIT DEPTH (cm) | SUBSURFACE OIL CHARACTER | OILED INTERVAL | BELOW | OIL / FILM COLOR | PIT ZONE | A N A | SHEEN (Y/N) | SURFAT
|---------|----------------|---------------------------|----------------|-------|------------------|----------|------|-------------|--------|

**COMMENTS:**

**REVIEWS**

**DATE 5-1-96**
Segment PD 003
Stream No. 242-42-10460
Ecological Summary

This large braided stream has an intermittent portion nearly 1 km long, consisting of mobile gravel/pebble sediments. A few grassy patches occur along the edges of the floodplain. The banks of the floodplain consist of boulders, cobble, and pebbles. Little or no attached marine biota occurs beyond 200 m upstream from the ABF96 cabin. Below the cabin there are extensive beds of Fucus, mussels and clams similar to those in the adjacent segment PD 002. Remaining oil consists of sporadic small tar mats and bits of paver oil along the north bank, mostly upstream from the cabin. Manual removal is recommended.

There are no ecological constraints re. biota.

Pink and chum salmon fry were found stranded in small side channels, and a number of dead fry of both species were found stranded in a grassy area and on a pebble bank. These appeared to have died after being stranded by the recent flood.
1991 MAYSAP EVALUATION

SEGMENT: PD 003  SUB: A  REGION: KEN  SURVEY DATE: 5/14/91

ENVIRONMENTAL SENSITIVITIES:
Work Window(s) OPEN 5/1 - 7/10; RESTRICTED 7/10 - 9/15

Ecological/Constraints (see page two for details) Fish harvest area, Anadromous stream

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

SHPO Signature: 
Date: 5/24/91

RECOMMENDATIONS:

TREATMENT REQUIRED (Y or N)  INITIAL  TAG  FOSC

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

COMMENTS:

INITIAL:


TAG:


FOSC:


TAG APPROVAL DATE: 5/24/91  FOSC APPROVAL DATE: 5/27/91

ADEC  EXXON  USCG  NOAA

E. E. PAGE, ODR, USCG  CHIEF OF STAFF, FOSC
ECOLOGICAL CONSTRAINTS
1991 FIELD ACTIVITIES

Fish Harvest Area: Unlimited treatment unless otherwise directed by ADF&G. Sheen containment/recovery procedures required for mechanical treatment.

Anadromous Stream: Unlimited treatment up to stream bank between May 15 and July 10. ADF&G approval required for work after July 10. Fish Habitat Permit required for instream work. ADF&G approval required for bioremediation within 100 meters of anadromous stream after July 10.
ADEC
NAME D. Hill of ADFG  SIGNATURE Douglas D. Hill

X NTR  A trace of oil remains - looks good.

EXXON
NAME R. Coulter  SIGNATURE Ray R. Coulter

✓ NTR  I concur with comments of other reps. No further consideration is needed.

LANDMANAGER
NAME J. Johnson  OF AONR  SIGNATURE

✓ NTR  Concur with USCG/NOAA comments. Very little oil observed, no sheening observed in Port Dick Creek, minus SOR. Though this segment is within Kachemak Bay State Wilderness Park, the initiation of further cleanup activities within this segment would probably not be justified.

USCG/NOAA
NAME Chief Julian E. Shigenaka  SIGNATURE

✓ NTR  There is no longer any detectable oil present on the water.

✓ NTR  Adjoining shorelines, or places where it is likely to reach the water again.

Surveyed portion of the segment was the western end of the west arm of Port Dick, an anadromous stream which experienced a notable degree of oiling in 1989. Both north- and south-banks of the stream (Port Dick Creek) as well as any islands in the stream (Heninsquay, 1998) were assessed. Relatively minor amounts of SOR were observed on the north bank, and oiled substrate was recovered to the extent possible. One house patty was found and recovered on the south bank. Despite what was described by ADFG reps as extensive oiling in the lower reaches of the Creek, streamside vegetation appeared healthy, stranded pink salmon juveniles (live and dead) were seen along the Creek, and some were recovered by ADFG for KFD analysis.
OG D. Fitzgerald  
BIO T. Schroeder  
ADEC D. Hill of ADFG  
LANDMANAGER J. Johnson for ADFG  
USCG/NOAA Chief Jensen / G. Shigenaka  

TIME 10:35 to 11:40  
TIDE LEVEL 0 ft to 3.9 ft  
ENERGY LEVEL: □ H □ M □ L  
SURVEYED FROM: □ FOOT □ BOAT □ HELO  
WEATHER: □ SUN □ CLOUDS □ FOG □ RAIN □ SNOW  
TOTAL LENGTH SHORELINE SURVEYED: 1964 m  
NEAR SHORE SHEEN: □ BR □ RB □ SL □ NONE  
EST. OIL CATEGORY LENGTH: W——m M——m N——m VI——m VL——m NO 1958 m US——m

<table>
<thead>
<tr>
<th>LOC</th>
<th>SURFACE OIL CHARACTER</th>
<th>SURFACE SEDIMENT</th>
<th>SHORE SLOPE</th>
<th>WIDTH</th>
<th>LENGTH</th>
<th>ZONE</th>
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<tbody>
<tr>
<td>A</td>
<td></td>
<td>BR L</td>
<td></td>
<td>1</td>
<td>1</td>
<td>X</td>
</tr>
<tr>
<td>B</td>
<td></td>
<td>5-6-C</td>
<td></td>
<td>1</td>
<td>5</td>
<td>X</td>
</tr>
</tbody>
</table>

IN CRACKS OF BR, OUTCROP ON LONG. BANKS

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

PHOTO ROLL & MAYSAP- 6-14 FRAMES 14-16

<table>
<thead>
<tr>
<th>PIT NO.</th>
<th>Depth</th>
<th>Subsurface Oil Character</th>
<th>Oiled Zone</th>
<th>Clean Zone Below</th>
<th>Water Level</th>
<th>Sheen Zone</th>
<th>Pit Subsurface</th>
<th>Surface Subsurface</th>
<th>Sediments</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
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</tbody>
</table>

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

OG COMMENTS: This segment was the seaward, estuarine end of AWF #243-42-3. The oiling of this site consisted of small tar patties containing a large percentage of sediment on the longitudinal bars. The was some highly weathered mousse in the cracks of the bedrock outcrop at the mouth of the stream in one small area (1m²). The oil reported by the NOAA representative (G. Shigenaka) was not observed in the oil, but it was in a region where previous oiling was documented.
PHOTO SITES, PO-3A
ROLL 6-14, FRAMES 1A THRU 16

LONGITUDINAL BARS
Low Rock Cliff
High Angle Slope
Bedrock Outcrop
GIRASSY AREA
PHOTO SITES

A. (A) 1m² < 1%
1m² < 1%
IN CRACKS OF BEACH OR UTTZ

B. (B) 16
1 by 5m, < 1% ON LONG. BARK
ALL seen were
REMOVED

* A Both oiling sites
all oil sediments/soil
that was seen on
accessible was removed
by UECO workers
Va Bag

ANAO STREAM
(242-42-10460)
This is the most productive spawning stream in the lower Cape Bath area. No oil was observed in or along the intertidal spawning area. No oil was detected in the salt grass along the stream and the area looks very good. Filamentous algae, sea lettuce, and red algae are lush and thriving in this area. The oil evidence of past cleanup work in the area is gone. Deep holes in the ground seems adjacent to the stream. The salt grass and saltmarsh along the backbarrier have not been removed. The grass is growing and the intertidal area seems actively as it did 16 years ago.

WILDLIFE OBSERVATIONS
TO BE COMPLETED IN ALL SUBDIVISIONS

<table>
<thead>
<tr>
<th>BIRDS</th>
<th># OF SPECIES</th>
<th>TOTAL BIRDS</th>
<th>FISH OBSERVED SPECIES PRESENT</th>
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<tbody>
<tr>
<td>Eagles</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Seabirds</td>
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<td></td>
</tr>
<tr>
<td>Waterfowl</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gulls/kittiwakes</td>
<td>1 gull</td>
<td>4</td>
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</tr>
<tr>
<td>Shorebirds</td>
<td>3 subspecies</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Corvids</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Birds</td>
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</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

Shoreline subdivision map showing important biological features attached.
A. CT/105
1 m³ < 10%
In Cracks of Bedrock at UTTZ

B. TB
1 by 5m, < 15%
On Long. Bar
All seen were removed

* A both oiling sites
All oil sediments/m's
That was seen on accessible was removed
by VECO workers.
1/2 bag

LONGITUDINAL BARS
Low Rock Cliff
High Angle Slope
Bedrock Outcrop
Grassy Area
Photo Sites

ANAO. STREAM
(242-42-10460)

Flow

BRANDED CHANNELS
AND LONGITUDINAL BARS

PD04

CABIN

0 100
METERS
1991 MAYSAP EVALUATION

SEGMENT: PD 003 SUB: A REGION: KEN SURVEY DATE: 5/14/91

ENVIRONMENTAL SENSITIVITIES:
Work Window(s) OPEN 5/1 - 7/10; RESTRICTED 7/10 - 9/15

Ecological/Constraints (see page two for details) Fish harvest area, Anadromous stream

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>
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</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

Fish Harvest Area: Unlimited treatment unless otherwise directed by ADF&G. Sheen containment/recovery procedures required for mechanical treatment.

Anadromous Stream: Unlimited treatment up to stream bank between May 15 and July 10. ADF&G approval required for work after July 10. Fish Habitat Permit required for instream work. ADF&G approval required for bioremediation within 100 meters of anadromous stream after July 10.
ADEC
NAME: D. Hill of AOFG  
SIGNATURE: [Signature]

☐ NTR A trace of oil remains - looks good.

EXXON
NAME: K. Coulter  
SIGNATURE: [Signature]

☐ NTR I concur with comments of other reps. No further consideration is needed.

LANDMANAGER
NAME: J. Johnson  
OFFICE: AONK  
SIGNATURE: [Signature]

☐ NTR Concur with USCG/NOAA comments. Very little oil observed, no sheening observed in Port Dick Creek, minor SOR. Though this segment is within Kenai Fjords National Park, the nuisance of further cleanup activities within this segment would probably not be justified.

USCG/NOAA
NAME: Chief Jesse Shigemaka  
SIGNATURE: [Signature]

☒ NTR No detectable oil present on the water.

☒ NTR Adjoining shorelines, or places where it is likely to reach the water again.

Surveyed portion of the segment was the western end of the west arm of Port Dick, an anadromous stream which experienced a notable degree of oiling in 1989. Both north and south banks of the stream (Port Dick Creek) as well as any islands in the stream (Kemish Bay, 1993) were assessed. Relatively minor amounts of SOR were observed on the north bank, and oiler substrate was recovered to the extent possible. One louse was found and recovered on the south bank. Despite what was described by AOFG reps as extensive oiling in the lower reaches of the creek, stream-side vegetation appeared healthy, stranded pink salmon juveniles (live and dead) were seen along the creek, and some were recovered by AOFG for HFD analysis.
OG D. Fitzgerald  
ADEC D. Hill of ADFG  
EXXON R. Coulter  

BIO T. Schwoerer  
LANDMANAGER J. Johnson for AONR  
USCG/NOAA Chief Jensen 6. Shigenaka  

DATE 14.1.1991  
TIDE LEVEL 0 ft to 3.9 ft  
ENERGY LEVEL: □ H □ M □ L  
SURVEYED FROM: X FOOT □ BOAT □ HELO  
WEATHER: □ SUN X CLOUDS □ FOG □ RAIN □ SNOW  
TOTAL LENGTH SHORELINE SURVEYED: 1964 m  
NEAR SHORE SHEEN: □ BR □ RB □ SL □ NONE  
EST. OIL CATEGORY LENGTH: W— m M— m N— m VL— m NO—1958 m US— m

<table>
<thead>
<tr>
<th>L</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>O</td>
<td>LOC</td>
<td>TYPE</td>
<td>VHML</td>
<td>m</td>
<td>m</td>
<td>S</td>
<td>U/I</td>
</tr>
<tr>
<td>C</td>
<td>AP MS TB OR CV CT ST FL DB NO</td>
<td>BR L</td>
<td>1 1 X</td>
<td></td>
<td>IN CASE OF BR OUTCIP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>T T</td>
<td>5-6-C L</td>
<td>1 5 X</td>
<td></td>
<td>ON LONG BARS</td>
<td></td>
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</tr>
</tbody>
</table>

DISTRIBUTION: C = 0-1-100%; 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 # MAYBAP—6—14 FRAMES 14-16

<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>OIL LEVEL</th>
<th>SHEEN COLOR</th>
<th>PIT ZONE</th>
<th>SURFACE-SUBSURFACE SEDIMENTS</th>
<th>NOTES</th>
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</table>

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

OG COMMENTS: This segment was the seaward, estuarine end of Aono Stream 247-42-42. The oiling of this site consisted of small tar patches containing a large percentage of sediment on the longitudinal bars. The was some highly weathered mousse in the cation of the bedrock outcrop at the mouth of the stream on one small area (1 m²). The oil reported by the NOAA representative (6. Shigenaka) was not observed in the OG, but it was in a region where previous oiling was documented.
A. CT
1m³ < 1% in cracks of bedrock at U772

B. TB
1 by 5m, < 1%
on long bar
All seen were removed

P.U. A both oiling sites
All oil sediments in
accessible was removed
by VECO workers.
1/2 bag

Anao Stream
(242-42-10460)

Flow

Braided channels
and longitudinal bars

Longitudinal
bars

Low rock cliff/
High angle slope

Bedrock outcrop

Grassy area

Photo sites

N

0 100
Meters

Reviewed 5.17.91
This is the most productive spawning stream in the locale (with high bioavailability). The oil was observed in a
small, isolated spawning area. The oil was
spread in the intersital spawning areas. The
plankton in the intertidal areas adjacent to
the stream and the intertidal areas were<br>polluted. The oil was observed in the estuary,
inter-tidal areas, and estuarine areas.

WILDLIFE OBSERVATIONS

TO BE COMPLETED IN 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></td>
<td></td>
<td></td>
<td>2 pink salmon</td>
</tr>
<tr>
<td>Seabirds</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Waterfowl</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Gulls/Kittiwakes</td>
<td>1</td>
<td>4</td>
<td></td>
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</tr>
<tr>
<td>Shorebirds</td>
<td>3 ruddy turnstone</td>
<td></td>
<td>9</td>
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</tr>
<tr>
<td>Corvids</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Birds</td>
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LAND MAMMALS

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

Shoreline subdivision map showing important biological features attached.
* Both oiling sites all oil sediments/mss that was seen on accessible was removed by VECO workers.

\[ \frac{1}{2} \text{ Bag} \]

**A.**
- CT/mss
- 1 m^3 < 190
- En Cracks of Bedrock at Uetzi

**B.**
- TB
- 1 by 5 m, < 190
- On Long Bar. All seen were removed.
SHORELINE EVALUATION

SEGMENT ST_PD-004 SUBDIVISION B (2 OF 2) DATE 6/2/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
5T All Bald Eagle nests (3/1 to 6/1)
   Active Bald Eagle nests (3/1 to 9/1)
1A Salmon stream mouth - fry outmigration (3/1 to 5/15)
1B Salmon stream mouth - spawning (7/10 to 8/31)
1J Purse seine area (7/20 to 9/30)
4GA Alaska State Wilderness Park
6NN Recreation: Sportfishing
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 cultural resources are uncovered during shoreline treatment, stop work in the vicinity, mark the location of the find and contact Exxon's Cultural Resource Program immediately (564-3274 (Anchorage) or 229-1508 (24 hrs.)).

SHPO SIGNATURE: [Signature] DATE: June 19, 1990

OILING CATEGORIZATION:

Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 271 m: No Oil 0 m
Subsurface Oil Observed: Yes [X] No Maximum Depth

RECOMMENDATIONS:

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

COMMENTS: Recommended treatment is manual pick up of mousse as annotated on attached sketch map.

TAG COMMENTS:

TAG APPROVAL DATE: 6-16-90 Fosc [Signature] Date 6-22-90

ADEC [Signature]
NOAA [Signature]
OIL CHARACTER LENGTHS (m) AP - Φ, PO - Φ, CV - Φ, ST - Φ, MS - Φ, PT - Φ, TB - Φ, FL - Φ, NO - Φ
REGION: KENAI

SEGMENT: ST/PD-04

SUBDIVISIONS: A (1 OF 1)
SHORELINE EVALUATION
SEGMENT ST/ PD-04  SUBDIVISION_A (1 OF 1)  DATE  4/27/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
• ADF&G anadromous stream no. 242-42-10460 plus two possible uncatalogued
  anadromous streams (see map).
  1A  Salmon stream mouth – fry outmigration (3/1 to 5/15)
  1B  Salmon stream mouth – spawning (7/10 to 8/31)
  1J  Purse seine area (6/25 to 8/31)
  4GA  Alaska State Wilderness Park
  5T-1  All bald eagle nests (3/1 to 6/1) – Active eagle nests (3/1 to 9/1)
  6NN  Recreation: Sportfishing

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid any unnecessary disturbance or 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 53 m: Medium 398 m: Narrow 192 m: V. Light 562 m: No Oil 10100 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  _____ Absorbents (pads, rolls, etc)
  _____ Bioremediation  _____ Spot Washing: _____ Wands
  _____ X Tarmat Removal  _____ Beach Cleaner
  _____ Other (see comments)

COMMENTS:  Recommended treatment includes manual removal of tarmats and
mousse patties in areas indicated on sketch maps. Work should be con-
ducted between 6/1 and 7/10 with approval of USFWS regarding eagle nest
constraints.

TAG COMMENTS: 

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

TAG APPROVAL DATE: __________________
ADEC  EXXON  NOAA  USCG  FOSC: __________________ DATE: __________
Salmon stream mouth - fry outmigration (3/1 to 5/15)
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 treatment 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 Inpol 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 or mechanical 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

1C 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 Inpol 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

1D Esther Hatchery release (4/15 to 6/15)
1E Main Bay Hatchery release (4/20 to 6/15)
1F Sawmill Bay Hatchery release (4/15 to 6/1)
1G Cannery Creek Hatchery release (4/21 to 6/1)
1H Remote release site
No use of methods which might affect nearshore oil or toxicity levels, such as hot water wash or Inpol application, prior to at least July 1 unless authorized by ADF&G and/or PWS Aquaculture Association. 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 or PWS Aquaculture Association for confirmation and authorization.

AGENCY CONTACT PERSON: 1E ADF&G Larry Peltz 424-3214
1D 1F 1G PWS Aquaculture Association John McMillan or Bruce Suzamoto 424-7511

1J Gill net area (6/7 to 6/31)
1L Purse seine area (7/20 to 9/30)
1K Purse seine hook-off (7/20 to 9/30)
1L Set net sites (6/11 to 7/25)
Contact ADF&G for specific dates, locations and constraints. Restrict boat and air traffic to essential minimum. When set net sites are present (1L) restrict boat operations to essential minimum as authorized by ADF&G. If plans for treatment include methods such as hot water wash or Inpol 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

2M Herring spawning (4/1 to 6/15)
Contact ADF&G for confirmation - dates and locations may vary. Restrict boat traffic to essential minimum. Avoid damage to unseeded intertidal and subtidal algae and seagrass. If plans for treatment include methods such as hot water wash or Inpol 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 (5/15 to 7/1)
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. No application of Inpol 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
ADFG Don Calkins 267-2403

5R 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 786-3377

5S 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

5T All Bald Eagle nests (3/1 to 6/1)
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 800 horizontal, 300m vertical distance from nests. Contact USFWS prior to treatment for confirmation of dates.

AGENCY CONTACT PERSON: USFWS Jill Parker 786-3377

6U Migratory: Tent sites (6/1 to 9/15)
6W Anchorage (6/1 to 9/15)
6H Forest Service cabins (6/1 to 9/15)
6X Lodge (6/1 to 9/15)
6Y Special use destination
6U Sport Fishing
7Z Subsistence area: Salmon harvesting (6/1 to 9/30)
7H Fish harvesting
9 Deer harvesting (8/15 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 Inpol 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 Peltz 267-2359
FIELD SHORELINE COMMENT SHEET

SEGMENT ST/ P004 SUBDIVISION: A DATE 4/27/1990

NAME: Donald A. McDonald SIGNATURE: Donald A. McDonald

☐ NO TREATMENT RECOMMENDED ☑ TREATMENT SUGGESTED

COMMENTS:
The eastern end of the segment, Mars Cove, had large quantities of mousse and asphalt on both beaches. The rest of the segment only had scattered patches of oil. Just west of the segment is an anadromous fish stream for pink salmon and in the central portion of the segment is another stream which appears to be possibly anadromous. Several otters were observed along the segment. (See pump as fire.)

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

☐ NO TREATMENT RECOMMENDED ☑ TREATMENT SUGGESTED

COMMENTS:
The two pocket beaches in Mars Cove, in the eastern end of segment PO-04, are heavily oiled. Manual cleanup using shovels could remove some of the gross contamination. These are the worst beaches in all of Port Dick and should be cleaned. The western end of the segment also has some asphalt patches that could be removed manually. I agree with data on SSAT Forms.

LAND MANAGER NAME: Sharie Methven-Toney SIGNATURE: Sharie Methven-Toney

☐ NO TREATMENT RECOMMENDED ☑ TREATMENT SUGGESTED

COMMENTS:
PD 4-Port Dick-West Arm is located within Kachemak Bay State Wilderness Park; has high wilderness & recreation values. There are good tent sites and anchorages within the segment area. Popular area with commercial fishermen and pleasure boaters and has high wildlife values. There is an anadromous stream during pink salmon the west of the segment and an archaeological site. Mouse patties found on the western edge of the segment should be picked up manually with shovels. The oil found on the island and the beach located west of Shelter Cove I recommend manual cleanup. Mars Cove in the eastern end of the segment I recommend manual cleanup removal.
**SHORELINE OILING SUMMARY**

**SEGMENT:** 004  
**DATE:** 02/10/90  
**TIME:** 08:00  
**WEATHER:** Sun, Clouds, Fog, Rain, Snow  
**SURFACED DESCRIPTION:**  
- R: 60%  
- B: 20%  
- C: 10%  
- P: 10%  
- G: 0%  
- S: 0%  
- M: 0%  
- V: 0%  
**SURFACE OIL**

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<tr>
<th>CHARACTER</th>
<th>DISTRIBUTION</th>
<th>OIL / FILM COLOR</th>
<th>IMPACTED ZONES</th>
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<td>ASPHALT</td>
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</table>

**NEAR SHORE SHEEN?**  NO  
**BR RW S G**  
**BAGS** 0  
**PAVEMENT H** 516  
**S E/W** 4  
**AMOUNT** 1.84 sq. m  
**BAGS** 0  

**OILED DEBRIS**  
- Logs  
- Vegetation  
- Trash  
- Debris  

**DID YOU COLLECT DEBRIS?**  
- YES: X  
- NO:  

**TYPE of Debris:**  
- hard hat, mouse, canvas bag  

** Photographs:**  
- Roll No. ST-18-9  
- Frames 8-18  

**SUBSURFACE OIL**

<table>
<thead>
<tr>
<th>PIT NO.</th>
<th>PIT DEPTH (cm)</th>
<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED MATERIAL</th>
<th>OIL / FILM COLOR</th>
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<th>V</th>
<th>ANA</th>
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<th>烏</th>
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**COMMENTS**
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<th>OILED INTERVAL (CM-GM)</th>
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<th>OIL / FILM COLOR</th>
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<td>C-S, C</td>
</tr>
</tbody>
</table>

COMMENTS
SHORELINE ECOLOGICAL SUMMARY

Segment ST / PD-4 Subdivision A Date (mo/day/yr) 4-27-80

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

(B) Overall % cover of biota (% of segment): Dense 90 Moderate 5 Low 5

(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)

Photographs: Roll No. ST-18-9 Frames 5-18

BARNACLES

<table>
<thead>
<tr>
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<th>Moderate</th>
<th>Sparse</th>
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<tr>
<td>Cub 3</td>
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MYTILUS

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FUCUS

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<td>8000</td>
<td>5</td>
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</tbody>
</table>

Wildlife Observations/ General Comments:
- Bald eagle (5), murre (4), sea otter (3), loons (3), harlequin duck (33),
glaucous-winged gull (8), golden-eye (3), cormorant (1), N.W. crow (40),
pigeon guillemot (1), mallard duck (50), merganser (4)

Ecological Considerations:
- Head of Bay: very dense Mytilus beds in cobble/pebble size.
REGION: KENAI

SEGMENT: ST/PD-004

SUBDIVISIONS: B (2 OF 2)
SHORELINE EVALUATION

SEGMENT ST/ PD-004  SUBDIVISION B (2 OF 2)  DATE 6/2/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:

5T All Bald Eagle nests (3/1 to 6/1)
   Active Bald Eagle nests (3/1 to 9/1)
1A Salmon stream mouth – fry outmigration (3/1 to 5/15)
1B Salmon stream mouth – spawning (7/10 to 8/31)
1J Purse seine area (7/20 to 9/30)
4GA Alaska State Wilderness Park
6NN Recreation: Sportfishing
See attached Ecological Constraint sheet for specific constraints and contacts.

SUBDIVISION ECOLOGICAL CONSTRAINTS:

Avoid any unnecessary disturbance or 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 Exxon's Cultural Resource Program immediately (564-3274 (Anchorage) or 229-1508 (24 hrs.)).

SHPO SIGNATURE:_________________________ DATE:_________________________

OILING CATEGORIZATION:

Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 271 m: No Oil 0 m
Subsurface Oil Observed: Yes__ No X__ Maximum Depth________

RECOMMENDATIONS:

___ 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 Removal  ___ Beach Cleaner
___ Other (see comments)_________________________

COMMENTS: Recommended treatment is manual pick up of mousse as annotated on attached sketch map.

TAG COMMENTS:______________________________________________________

TAG APPROVAL DATE:___________

ADEC __________________________
FIELD SHORELINE COMMENT SHEET

SUBDIVISION: B
DATE: 2 June 90

USCG NAME: CWO J. McMAHON
SIGNATURE: [Signature]

NO TREATMENT RECOMMENDED

TREATMENT SUGGESTED

COMMENTS

1. Manual pick-up, only within subdivision B, along 400 m in length, of tar mats (asaggot).

STIPULATION! There was confusion in the field as to the precise 400 m stretch which the home DEQ rep. had identified to be scat'd. My recommendations only apply to the area I observed as confirmed by the below DEQ rep. Dianne Munson. This does not apply to any other areas of DEQ.

ADEC NAME: Dianne Munson
SIGNATURE: [Signature]

COMMENTS

This subdivision is the area of concern that Russell Kunibe CADEC Home expressed to TAI.

- Oiling consists of sporadic mousse accumulations for approximately 400 m.

- Oil penetration was observed at 1.5 cm.

- This subdivision lies within Kachemak Bay State Wilderness Park, contains an anadromous stream which supports a large commercial run for lower Cook Inlet.

- Recommend manual removal of mousse accumulations.

LAND MANAGER

NAME: [Signature]

COMMENTS

None was present during survey.

REVISION NO. 3/3/99
**SHORELINE OILING SUMMARY**

**OG:** Bryan  
**USCG:** John M. Mann  
**SEGMENT STI:**  
**BIO:** Land Rep.  
**EXXON:** Rick Eimerl  
**ADEC:** Diane Munson  
**TIME/1:** 10:17  
**2M NO.:**  
**TIDE LEVEL:** +3.0  
**DATE:** June 2  
**S. SUBDIVISION LENGTH:** 400 m  
**SURFACE LEVELS:**  
**CLIMATE:** Sun  
**UPLANDS DESCRIPTION:** Grass  
**SURVEYED FROM:** Helo  
**SURFACE SEDIMENTS:** R 15% B 25% C 30% P 15% G 10% S 5% M 5% V 0%  
**SLOPE:** Lang 90% Hang 10% Vert 0%  
**OIL CATEGORY:** High

### SURFACE OIL

<table>
<thead>
<tr>
<th>CHARACTER</th>
<th>DISTRIBUTION</th>
<th>OIL / FILM COLOR</th>
<th>IMPACTED ZONES</th>
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<tbody>
<tr>
<td>ASPHALT PAVEMENT</td>
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<td></td>
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<tr>
<td>POOLED</td>
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<tr>
<td>COVER</td>
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<tr>
<td>STAIN</td>
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<tr>
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<tr>
<td>PATTIES</td>
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<tr>
<td>TARBALLS</td>
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<td></td>
</tr>
<tr>
<td>OIL</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**PAVEMENT:** H  
**PATTIES/TARBALLS:**  
**NEAR SHORE SHEEN:** NO  
**OILED DEBRIS:** No  

### SUBSURFACE OIL

<table>
<thead>
<tr>
<th>PIT NO.</th>
<th>PIT DEPTH (cm)</th>
<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED DEBRIS INTERVAL</th>
<th>OIL / FILM COLOR</th>
<th>PIT ZONE</th>
<th>A/A SHEEN (Y/N)</th>
<th>SURFACE - SUBSURFACE SEDIMENTS</th>
</tr>
</thead>
</table>
| 1       | 10             |                            | 0.1 - 1.5             | SU U M I         | N        | C/P/S/G  

**COMMENTS:** (SEE ATTACHED OG COMMENTS)

**REVIEWED:** BAT  
**DATE:** June 2  

**Photograph:** Roll No. BT-55-φ  
**Frames:**
OG Comments - PD004-B

The shoreline surveyed extends from the landing zone by the ADF&G cabin (the mouth of Port Dick Creek) approximately 400 m east to a tombolo. This is the area of concern that Russell Kunibe (ADEC-Homer) outlined in the attached memo to TAG.

The boundary between PD004-A and PD004-B is the western-most tombolo described by Tom Sawyer (OG) during the original PD004-A survey of April 27, 1990. The shoreline (supra- to mid-intertidal zones) from the tombolo to the landing zone adjacent to the ADF&G cabin consists of angular cobble, pebble veneer with finer material (sand, granule, and mud) underneath. Tidal (mud) flats associated with Port Dick Creek are found in the lower-intertidal zone of subdivision PD004-B. A small creek outlet dissects the subdivision with angular pebble, granule deposits, and bedrock occasionally outcrops as rocky headlands throughout the subdivision.

Oiling is limited to splattered mousse (MS/S) deposits in the upper-intertidal zone for the length of the subdivision (400 m). Splatters occur with a frequency of 1 to 5 meters in a one meter band. The mousse has a dull black crust with the typical light brown 'moussy' consistency in the middle. The mousse is beginning to 'soak' into the finer sediments underneath the cobble, pebble veneer, thus forming incipient asphalt pavement. Oil penetration is 1.5 cm to date. The mousse is not mobile unless storm activity strips off the beach material, an unlikely event since the oil has been stranded for over one year.

One pit was excavated to 10 cm in the upper-intertidal zone. The cobble, pebble veneer overlays the finer sand, granule and mud substrate. Oil (MS/S) was observed between the veneer material, incorporated into the substrate to a depth of 1.5 cm. The mousse is approximately 0.5 cm thick above the sediment. The veneer shields the surface mousse from wind and wave exposure.
Memo

Date: 5/31/90

To: John Bauer, ADEC TAG
From: Russell Kunibe LK

Subject: A section of PD-4A which was overlooked during the SSAT.

Doug Hill, ADFG, has brought to my attention that there was a section of beach in segment PD-4A which was not looked at by the SSAT. In looking at the sketch maps for the SSAT report on PD-4A it seems that there is a segment of beach approximately 300 M. long from the west end of sketch map D to the end of the segment. This section of beach runs from the point to the north of the Port Dick Cabin and includes the beach in front of the Cabin and to the east of the cabin for about 250 M. There are scattered mousse patties along this beach which need to be picked up. Please address this matter in the TAG so there will not be any confusion when the clean up crews get to this segment.

cc. Doug Lockwood, Gulf of Alaska Operations.
C:\russell\memopd4.530
SHORELINE EVALUATION

SEGMENT ST/ PD-04 SUBDIVISION A (1 OF 1) DATE 4/27/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
- ADF&G anadromous stream no. 242-42-10460 plus two possible uncatalogued anadromous streams (see map).
- 1A Salmon stream mouth - fry outmigration (3/1 to 5/15)
- 1B Salmon stream mouth - spawning (7/10 to 8/31)
- 1J Purse seine area (6/25 to 8/31)
- 4GA Alaska State Wilderness Park
- 5T-1 All bald eagle nests (3/1 to 6/1) - Active eagle nests (3/1 to 9/1)
- 6NN Recreation: Sportfishing

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid any unnecessary disturbance or damage to unooled 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: \[\text{Signature}\] DATE: 5/9/90

OILING CATEGORIZATION:
- Wide 53 m: Medium 398 m: Narrow 192 m: V.Light 563 m: No Oil 10100 m
- Subsurface Oil Observed: Yes _X_ No _No_ Maximum Depth 20 cm

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

COMMENTS: Recommended treatment includes manual removal of tarmats and mousse patties in areas indicated on sketch maps. Work should be conducted between 6/1 and 7/10 with approval of USFWS regarding eagle nest constraints.

TAG COMMENTS: \[\text{Comment}\]

TAG APPROVAL DATE: 5/8/90
- ADEC: \[\text{Signature}\]
- EXXON: \[\text{Signature}\]
- FOSC: \[\text{Signature}\] DATE: 5-11-90
- NOAA: \[\text{Signature}\]
- USCG: \[\text{Signature}\]
West Arm Port Dick

Manually Remote Tar Mats & Mousse (See Sketch Map B & C)

CT/S ~ 1m band

Oil Character Length (m): AP 13, PO 0, CV 0, CT 530, ST 0, MS 50, PT 0, TB 0, FL 100, NO 11300

Sketch Maps B & C

-Mars Cove

See Map B

MS/P: 4x20m; 10x16m; 2x12m
MS/S: 1m² + 2m²
CT/C; CT/P; CT/S
FL/P/RW; FI/S/RW

See Map C

AP/F/B: 10x40m + 5x10m
CT/P

Oil, Water, and Other Locations:

1. Pit - No Subsurface Oil
2. Pit - Subsurface Oil

Legend:

- A Connects with Map D
- One mouse patch observed and collected
- NO
- Water supply
- 0° 900m
- Photo location, direction, and number

Checklist:

- Map
- Arrow
- Approx. Scale
- Segments
- Stream
- Oil Dist.
- Width
- Length
- % Cover
- Substrate Character
- Est. HYDRLVL
- SSL
- Profile Location(s)
- Profile(s)
- Pit Location(s)
- Photo Location(s)
1991 MAYSAP EVALUATION

SEGMENT: PD 004 SUB: B REGION: KEN SURVEY DATE: 5/21/91

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 Smith Date: 6/14/91

RECOMMENDATIONS:

INITIAL TAG FOSC

TREATMENT REQUIRED (Y OR N) N N 2

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

COMMENTS:

INITIAL:

TAG:

FOSC:

TAG APPROVAL DATE: June 7 1991
ADEC
EXXON
USCG
NOAA

FOSC APPROVAL DATE: 6/14/91
E. E. PAGE, CDR, USCG
CHIEF OF STAFF, FOSC
Mr. treatment recommended.

No significant oiling found.

Small amounts of oil, widely scattered. Additional activity disturbance not justified for so little oil.

Small, scattered patches of oil located and were swept up by VECO.
MAYSAP SHORELINE OILING SUMMARY

TEAM NO. 4

OG Lee Snodgrass

ADEC Kris Bentsen

EXXON George P. Stris

TIME 15:40 to 15:56

TIDE LEVEL +2 ft. to +2.9 ft.

ENERGY LEVEL: □ H □ M □ L

SURVEYED FROM: ☑ FOOT ☑ BOAT ☑ HELO

WEATHER: ☑ SUN ☑ CLOUDS ☑ FOG ☑ RAIN ☑ SNOW

TOTAL LENGTH SHORELINE SURVEYED: 271 m

NEAR SHORE SHEEN: ☑ BR ☑ RB ☑ SL ☑ NONE

EST. OIL CATEGORY LENGTH: W___ m M___ m H___ m VL___ m NO___ m US___ m

SURFACE OIL CHARACTER

LOC AP MS TB SOR CV CT ST FL DB NO

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

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

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

PHOTO ROLL # MAYSAP - 4 (1a) - FRAMES 1

OG COMMENTS:

...
Oil-Related Comments

A few small patches of oil were located on the cobble sediments of the beach and picked up. At this location there were moderately abundant Ulva, sparse barnacles, and little else.

General Comments

PD004-B is a short subdivision located at the innermost section of Port Dick, adjacent to a wide delta with clams and eel grass. Biota at this subdivision, other than the clam bed, are sparse. Fucus is present in the middle to low zone, with moderate densities of barnacles above, and moderately dense filamentous algae over the middle zone cobble.

(continued)

WILDLIFE OBSERVATIONS - Completed on all subdivisions

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MARINE MAMMALS

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</tr>
<tr>
<td>Whales (specify)</td>
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</table>

Shoreline subdivision map showing important biological features attached.
Common Species on P0004-B

A. Marine Plants
1. Diatoms - Blue Greens
   - Enteromorpha sp., Ulva sp., Uropora sp.
2. Green Algae - Chlorophyta
   - Ectocarpus spp., Fucus distichus, Hildenbrandia sp., Ralfsia sp., Syctosiphon lomentaria
3. Brown Algae - Phaeophyta
4. Red Algae - Rhodophyta
   - Endocladium maricata, Haloweaccion glandiforme, Mastocarpus sp., Membranoptera dimorpha, Odonthalia floccosa, Palmaria palmata, Petrocelis sp., Porphyra sp., Rhodomela larix
5. Higher Plants - Zostera marina (eel grass), Leymus mollis (beach ryegrass)

II. Marine Animals
1. Sponges - Porifera - Halichondria boernerki?,
2. Anemones - Anthopleura artemesia, Euplectis ritteri, Urticina crassicornis,
3. Hydroids - Sertularididae,
4. Flatworms - Platymelinhthes - Polyclads
5. Nemerteans - Ribbon Worms - Emplectonema gracile
6. Polychaete Worms
   - Nereidae - Nereis spp.
   - Serpulidae - Serpula sp.
   - Spiorbidae - Spirobis sp.
7. Peat Worms - Sipunculids - Phascolosoma agassizii
8. Crustaceans
   a. Amphipods - Traskorchestia traskiana
   b. Barnacles - Balanus glandula, Semibalanus cariosus
   c. Crabs - Paguridae (hermit crabs),
   d. Isopods - Cirdana harfordi, Idotea wosnesenski, Gnorimorsphaera oregonensis
9. Mollusca
   a. Chitons - Mopalia mucosa, Tonicella lineata,
   b. Snails - Gastropods
      - Amphissa columbiana, Littorina sp., Natica clausa, Nucella lamellosa, N. lina, Searsia dira, Tachylychnus sp.
   c. Limpets - Lottia persona, L. limatula, Tectura fenestrata, T. persona, T. scutum, Siphonariathersites
   d. Bivalves - Chlamys hastata, Clinocardium sp., C. nuttalli, Histellia arctica, Macoma balthica, Macoma nasuta, Modiolus modiolus, Mya arenaria (soft-shell clam), Mytilus edulis, Pododesmus cepio, Prototheca staminea, Saxidomus giganteus
10. Echinoderms
    a. Sea stars - Dermasterias imbricata, Evasterias truschelii, Leptasterias hexactis, Pycnopodia hellanthoides,
    b. Sea Cucumbers - Holothuriana - Eupentacta sp.
    c. Ophiura - Strongylocentrotus droebachiensis
12. Fishes
    - Cottidae
       - Xiphister atropurpureus, X. mucosus

III. Birds
1. Bald Eagle (1), Glaucous-winged Gull (20), Crow (7), Shorebird (3), Bonaparte's Gull (20), Herring Gull (1), Maples (1)
Location Map

Subdivision Field Map
Map Key: KEMP004Bx
Name: [Signature]
Date: May 21/91

PD004 B

AK State Plane Zone 4

Metres

100

500
1991 MAYSAP EVALUATION

SEGMENT: PD 004  SUB:  A  REGION: KEN  SURVEY DATE: 5/22/91

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:  Timothy Smith  Date: 6/7/91

RECOMMENDATIONS:

TREATMENT REQUIRED (Y or N)  N  N  N

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

COMMENTS:
INITIAL:

TAG:

FOSC:

TAG APPROVAL DATE:  June 7 1991  FOSC APPROVAL DATE:  6/11/91

ADEC  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. USFWS authorization required. Maintain 1000' vertical and 1/4 mile horizontal buffer.
Although this beach has quite a bit of oil remaining on it - the oil occurs in the form of FL & scattered patches of M/S/HSOR - the areas that do concern me are the WET FL which is associated with the anoxic mud - these areas could possibly degrade over time. (Ref 80) This beach has been worked heavily in the past - (Time to let it rest - ?)

No appreciable oil found.

This core has improved remarkably. HSOR found and picked up. Oil is widely scattered, commonly in rock cavities. Oil is not concentrated enough heavy enough to alter this segment again.

Beach has lost nearly half. Clean compared to last year. Normally, no mention that due to the geomorphology, this beach is difficult to treat. It appears any treatment present degradations would be a major effort.
**MAYSAP SHORELINE OILING SUMMARY**

**TEAM NO.** 4  
**OG** J M Semple  
**ADEC** Betsy  
**BIO** J. Roary  
**LANDMANAGER** John  
**USCG/NOAA** M. Melo/McDonald  
**TIME** 13:55 to 15:00  
**TIDE LEVEL** +9.1 ft to +1.8 ft  
**ENERGY LEVEL** □ H □ M □ L  
**SURVEYED FROM** □ FOOT □ BOAT □ HELO  
**WEATHER** □ SUN □ CLOUDS □ FOG □ RAIN □ SNOW  
**TOTAL LENGTH SHORELINE SURVEYED** 800 m  
**NEAR SHORE SHEEN** □ BR □ RB □ SL □ NONE  
**EST. OIL CATEGORY LENGTH** W □ m M □ m N □ m VI □ m NO □ 731 m US □ 254 m

<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>
<th>NOTES</th>
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<tr>
<td>A1</td>
<td></td>
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**DISTRIBUTION:** C = 01-100%; B = 01-50%; P = 01-50%; S = 01-100%; T = <1%

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

**PIT NO.**  
**PIT DEPTH** (cm)  
**SUBSURFACE OIL CHARACTER**  
**OILED ZONE** cm-cm  
**CLEAN BELOW** cm-cm  
**H2O LEVEL** (cm)  
**SHEEN COLOR** S R N  
**PIT ZONE** S U M L  
**SURFACE-SUBSURFACE SEDIMENTS**  

<table>
<thead>
<tr>
<th>Pit No.</th>
<th>Pit Depth</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>
<th>Notes</th>
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<tr>
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</tbody>
</table>

**OG COMMENTS:** Long shoreline, mostly beaches, cliffs, bluffs with pockets to large areas of mixed sediments, often with a fringe of erosion between sand and the blower. Areas for which oil was observed were surveyed with the following notes.

**REVISION:** MC 612191  
**REvised:** 5/21/91  
**REvised:** 5/31/91 KG
<table>
<thead>
<tr>
<th>PIT NO.</th>
<th>DEPTH (cm)</th>
<th>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>
<th>NOTES</th>
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<td>9/</td>
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<td></td>
<td>X</td>
<td>Sd/Ab</td>
<td></td>
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</tbody>
</table>

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

OG COMMENTS:
Legend:

- Bedrock Bluffs
- Boulder/Cobble
- Cobble/Pebble

Area: PD 004-A

Notes:

- Ten pebbles, 10 cm dia. in unit P. L.

MSOR/Ar. 1 patch
20 cm dia., 1 cm thick

Units:

0

20
Oil-Related Comments

AREA I

MSOR/AP patch in upper zone of cobble beach. This beach has fairly high cover of green and brown filamentous algae (and diatoms) over cobble through much of the intertidal zone. This filamentous algae is present at the location of the patties. Some drift algae was also present. No other biota observed.

AREA II (Shelter Cove)

No oil was found at this location (Shelter Cove). A few streams enter the beach at this cove, and have formed a wide delta of pebbles and cobble. Barnacles are abundant on cobble over this delta and clams appear to be moderately abundant throughout. Littorine snails, limpets, and hermit crabs also are sparse to moderately abundant. Isopods are common under cobble where organic detritus collect. The middle zone along the boulder talus and bedrock shore have moderate barnacle and Fucus cover.

AREA III (Mars Cove)

1, A2, A7 Coat of oil on bedrock cliffs. This oil overlaps the upper part of the barnacle zone. Juvenile barnacles are common on the weathered oil. Littorine snails and limpets are present in moderate densities.

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>
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<tr>
<td>Eagles</td>
<td>1</td>
<td>1</td>
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<td>Salmon Fry</td>
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<tr>
<td>Seabirds</td>
<td>5</td>
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<tr>
<td>Waterfowl</td>
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<tr>
<td>Shorebirds</td>
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</tr>
<tr>
<td>Corvids</td>
<td>1</td>
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</tr>
<tr>
<td>Other Birds</td>
<td>1</td>
<td>1</td>
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</table>

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

Shoreline subdivision map showing important biological features attached.
A3 A CT/CV of oil is present on the upper zone boulders at this site. Few biota are present on the oiled boulders or on the adjacent clean boulders at this tidal height.

A4 Oil (CT/SOR) is found on the coarse sediments at the upper part of the beach. Barnacles and littorine snails are sparse in these cobbles and pebbles. Few other biota were present.

A5 This extensive area of oiling (LSOR/FL/MSOR) in this small sediments has apparently been incorporated into some of the granular sediments on the surface, resulting in an impermeable cap of sediment over the finer sediments below. Thus, the underlying sediments are anaerobic, with black hydrogen sulfide-laden muds. This process naturally occurs in fine sediments and may not be related to the presence of the oil. Biota are nevertheless very abundant, with high densities of barnacles, green algae, rockweed, and mussels, depending upon the tidal height. Polychaete worms are abundant in the aerobic sediments, as are isopods, amphipods, limpets, and littorine snails.

A6 This biota in this area are similar to those found in A6. The anaerobic area does not seem quite so extensive here. In addition, this oiled area extends to the high zone, where few biota are found.

Cleanup Considerations

For most of this subdivision, cleanup operations, if recommended, will have little effect on the biota in question. At locations A5 and A6, however, the consequences of attempting removal of the oil from sediments in the middle to high zone may be detrimental to the resident species assemblage. Oil removal would require destruction of most of the surface biota as well as removal of much of the fine sediments from the beach. The present high densities of infaunal species (worms, some crustaceans), act to turn over the sediments and will likely facilitate aeration of the black muds. As the oil degrades and the sediments become aerated, via percolation from the overlying water, the black mud concentration of this area may decrease.

General Comments

PD004-A is a very long subdivision with cobble shores, bedrock cliffs, and a few protected coves. The entire subdivision is well protected from waves. The only areas surveyed were three coves (see OG map). The shores are not particularly diverse, and have a sparse upper intertidal with barnacles and littorine snails, a middle zone with moderate to dense Fucus cover, mussels, and associated species, and a low zone with Fucus and red algae.

Mars Cove (see map) is the only location with significant oil. This location has oil in the middle to upper zone on a cobble beach, with mousse, HSOR, a film in fine sediments.
## General Zonation on PD004-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>
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<tr>
<td>Green Algae (Ulva/other)</td>
<td></td>
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<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>Mussels (Mytilus)</td>
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<td>Rockweed (Fucus)</td>
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<tr>
<td>Other Red Algae</td>
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<tr>
<td>Littorine Snails</td>
<td></td>
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<td></td>
<td>+--------</td>
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<tr>
<td>Clams</td>
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</tbody>
</table>

Legend: (-) Sparse to rare, (+) Moderate, (*) Abundant

## Common Species on PD004-A

### A. Marine Plants
1. Diatoms, Blue Greens
2. Green Algae - Chlorophyta
   - Enteromorpha sp., Ulva sp., Urospora sp.
3. Brown Algae - Phaeophyta
   - Ectocarpus spp., Fucus distichus, Hildenbrandia sp., Ralfsia sp., Systosiphon lomentaria
4. Red Algae - Rhodophyta
   - Endocladia maricaria, Halosaccion globiforme, Mastocarpus sp., Nemraniophyta dinophora, Odonthalia floccosa, Palmaria palmata, Petrocelsis sp., Porphyra sp., Rhodoma laric
5. Higher Plants - Zostera marina (eel grass), Leymus mollis (beach rye grass)

### B. Marine Animals
1. Sponges - Porifera - Halichondria bowerbankii
2. Anemones - Anthopleura artemisia, Epiactis ritteri, Urticina crassicornis
3. Hydroids - Sertulariidae
4. Flatworms - Platycladidae - Polyclads
5. Nematode Worms - Ribbon Worms - Emplectonema gracile
6. Polychaete Worms
   - Nereidae - Nereis spp.
   - Serpulidae - Serpula sp.
   - Spiorbidae - Spiorbis sp.
7. Peanut Worms - Sipunculids - Phascolosoma agassizii
8. Crustaceans
   a. Amphipods - Traskorchestia traskiana
   b. Barnacles - Balanus glandula, Semibalanus cariosus
   c. Crabs - Paguridae (hermit crabs)
   d. Isopods - Cirolana harfordii, Idotea wosnesenskii, Gnorimosphaera oregonensis
9. Mollusca
   a. Chitons - Mopalia mucosa, Tonicella lineata
   b. Snails - Gastropods
      - Amphisa columbiana, Littorina sp., Natica clausa, Nucella lamellosa, N. lima, Searsia dira, Tachyrynchus sp.
   c. Limpets - Lottia perousea, L. limatula, Tectura fenestrata, T. perousea, T. scutum, Siphonaria thersites
   d. Bivalves - Chamae hastata, Clioocardium sp., C. muttilli, Hiatella arctica, Macoma balthica, Macoma nasuta, Modiolus modiolus, Mya arenaria (soft-shell clam), Mytilus edulis, Pododesmus cepio, Podotrochus stamineus, Saxidomus giganteus
10. Echinoderms
    a. Sea stars - Dermasterias imbricata, Eustrachis truschei, Leptasterias hexactis, Pycnopodia helianthoides
    b. See Cucumbers - Holothurians - Eupentacta sp.
    c. Urchins - Strongylocentrotus droebachiensis
12. Fishes
    - Cottidae
    - Stichaeidae - Xiphister atropurpureus, X. mucosus

### III. Birds
- Bald Eagle (1), Glacous-winged Gull (20), Crow (7), Shorebird (3), Boneparte's Gull (20), Herring Gull (1), Magpie (1), Lesser Scaup (80), Mallard (10), Barrow's Goldeneye (5), Surf Scoter (5), Common Merganser (5),
Legend:
- Bedrock chills / bldgs / outcrops
- Boulders / pebbles

Bio Sketch Map
PD 004-A
Area III - Mars Cove
J P Bare
22 May 1981
123-150B

CT/CU on boulder
Few biota at
that tidal level
Occasional littorine snail / limpet

CT/CU on bedrock wall
occurs at the upper part
of the boulder zone
Many juvenile barnacles
are present on the wall.
Moderate littorine snail
densities

SEE
Area III-B
(next page)
BICO SKETCH MAP
PDO04 - A
AREA III-B
22 May 91
J F Bailey

AY CT/CSR ON COARSE
SEDIMENT
SPARSE BARNACLES,
LIMPETS, LITTORINES

A5
TURF, MSOR over anaerobic
sediments under coarse sediments.
Oil in surf ace sediments appears
to have contributed to the
low oxygen conditions of the
underlying muds. Abundant
biota on surface. Littorines,
green algae on upper zone.

Focus, Bristles, mud in lower zone
Barnacles dense in patches
Dense polychaete worms,
Isozooids

A6 - SOME AS A5, BUT
LESS ANAEROBIC MUDS
IN PORTION. THIS ALSO
EXTENDS HIGHER IN THE
SINTER ZONE

CT ON BEDROCK
SPARSE BARNACLES, LIMPETS,
LITTORINE SNAILS
1991 MAYSAP EVALUATION

SEGMENT: PD 004  SUB:  A  REGION: KEN  SURVEY DATE: 5/22/91

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:

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

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

COMMENTS:

INITIAL:

__________________________________________________________

__________________________________________________________

__________________________________________________________

__________________________________________________________

TAG:

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__________________________________________________________

FOSC:

__________________________________________________________

__________________________________________________________

__________________________________________________________

__________________________________________________________

TAG APPROVAL DATE:  FOSC APPROVAL DATE:

ADEC  
EXXON  
USCG  
NOAA
Eagle Nest: Access restricted from 3/1 to 9/1. USF&WS authorization required. Maintain 1000' vertical and 1/4 mile horizontal buffer.
ADEC
NAME: Michael S. Crosby
SIGNATURE: Michael S. Crosby

Although this beach has quite a bit of oil remaining on it — the oil occurs in the form of FL & scattered patches of MS/HSOR — the areas that do concern me are the M2 FL which is associated with the anaerobic mud — these areas could possibly degrade slower than normal. (Ref Bio) This beach has been worked heavily in the past. (Time to let it reflood for next...?)

EXXON
NAME: George P. Stiles
SIGNATURE:

NTR No appreciable oil found.

E.O.
NAME: Jeff Johnson
SIGNATURE:

NTR

This area has improved remarkably. HSOR found and was picked up. Oil is widely scattered currently in rock crevices. Oil is not concentrated enough to have enough foothold in segment again.

USCG/NOAA
NAME: [Signature]
SIGNATURE:

NTR

Beach has fairly Clear Compared to last few. Hopefully no mention that due to the contamination. This beach is difficult to treat. It appears any treatment threat degeneration would be a major effort.

Donald P. Weddle
**MAYAN SHORELINE OILING SUMMARY**

**TEAM NO.:** H  
**OG:** M. SEMPELS  
**BIO:** J. ARAY  
**ADEC:** GEORGE P. STILES  
**USCG/NOAA:** M. P. MALOY/M. WARD

**SEGMENT:** PD 004  
**SUBDIVISION:** A  
**DATE:** MAY 1, 1991

**TIME:** 13:55 to 15:58  
**TIDE LEVEL:** <4 ft. to 3.5 ft.  
**ENERGY LEVEL:** □ M □ L  
**SURVEYED FROM:** □ FOOT □ BOAT □ HELO  
**WEATHER:** □ SUN □ CLOUDS □ FOG □ RAIN □ SNOW

**TOTAL LENGTH SHORELINE SURVEYED:** 380 m  
**NEAR SHORE SHEEN:** □ BR □ RB □ SL □ NONE

**EST. OIL CATEGORY LENGTH:**  

<table>
<thead>
<tr>
<th>L</th>
<th>C</th>
<th>OIL CHARACTER</th>
<th>SEDIMENT TYPE</th>
<th>SLOPE</th>
<th>WIDTH</th>
<th>LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>A2</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>5</td>
<td>A4</td>
<td></td>
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</tr>
</tbody>
</table>

**Notes:**

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

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

**PHOTO ROLL # MAYBE:** FRAMES

<table>
<thead>
<tr>
<th>PIT NO.</th>
<th>OIL CHARACTER</th>
<th>OILED ZONE</th>
<th>CLEAN</th>
<th>H2O</th>
<th>SHEEN COLOR</th>
<th>PIT ZONE</th>
<th>SUBSURFACE SEDIMENTS</th>
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<tr>
<td>1</td>
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<td>2</td>
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</tbody>
</table>

**OG COMMENTS:**

Long shoreline, mostly brown / black mud, with pockets of gray debris. Mixed sediments, with 1 foot of brown mud and 1 foot of black mud. Areas for which oil had been observed before were not surveyed. The oil was reported to be

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Revised 5/23/91

---
<table>
<thead>
<tr>
<th>Pit No.</th>
<th>Pit Depth (cm)</th>
<th>Subsurface Oil Character</th>
<th>Oiled Zone cm-cm</th>
<th>Clean Below Y/N</th>
<th>H2O Level cm</th>
<th>Sheen Color</th>
<th>Pit Zone</th>
<th>Subsurface Sediments</th>
<th>Notes</th>
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<tr>
<td>10</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>X</td>
<td>5d/ab</td>
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<td>11</td>
<td>25</td>
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<td>X</td>
<td>5d/f</td>
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<tr>
<td>12</td>
<td>25</td>
<td>X</td>
<td>-</td>
<td>-</td>
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<td>X</td>
<td>5d/f</td>
<td></td>
<td></td>
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<tr>
<td>14</td>
<td>25</td>
<td>X</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>X</td>
<td>5d/f</td>
<td></td>
<td></td>
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<tr>
<td>15</td>
<td>25</td>
<td>X</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>X</td>
<td>5d/f</td>
<td></td>
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<tr>
<td>16</td>
<td>35</td>
<td>X</td>
<td>-</td>
<td>-</td>
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<td>X</td>
<td>5d/f</td>
<td></td>
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<tr>
<td>17</td>
<td>30</td>
<td>X</td>
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<td>5d/f</td>
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<td>18</td>
<td>30</td>
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<td>5d/f</td>
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<tr>
<td>20</td>
<td>30</td>
<td>X</td>
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<td>-</td>
<td>-</td>
<td>X</td>
<td>5d/f</td>
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<tr>
<td>21</td>
<td>15</td>
<td>X</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>X</td>
<td>5d/f</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Sheen Color: B = Brown; R = Rainbow; S = Silver; N = None

OG Comments:
Ogy Sketch Map

PD 204 A

AREA II

Dr.Sempe's S

May 31, 1991

1673 - 1703

Legend

① Steep limestone
② 3.5m clay / cobbles
③ 1.7m cobbles / cobble

Stream

1/500

R.M.Robinson MC 6/14/91
OIL-RELATED OBSERVATIONS – OILED SUBDIVISIONS

AREA I

MSOR/AP patch in upper zone of cobble beach. This beach has fairly high cover of green and brown filamentous algae (and diatoms) over cobble through much of the intertidal zone. This filamentous algae is present at the location of the patties. Some drift algae was also present. No other biota observed.

AREA II (Shelter Cove)

No oil was found at this location (Shelter Cove). A few streams enter the beach at this cove, and have formed a wide delta of pebbles and cobble. Barnacles are abundant on cobble over this delta and clams appear to be moderately abundant throughout. Littorine snails, limpets, and hermit crabs also are sparse to moderately abundant. Isopods are common under cobble where organic detritus collect. The middle zone along the boulder talus and bedrock shore have moderate barnacle and Fucus cover.

AREA III (Mars Cove)

A1, A2, A7 Coat of oil on bedrock cliffs. This oil overlaps the upper part of the barnacle zone. Juvenile barnacles are common on the weathered oil. Littorine snails and limpets are present in moderate densities.

(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>
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<tbody>
<tr>
<td>Eagles</td>
<td>1</td>
<td>1</td>
<td>Salmon Fry</td>
</tr>
<tr>
<td>Seabirds</td>
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<td></td>
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</tr>
<tr>
<td>Waterfowl</td>
<td>5</td>
<td>125</td>
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<tr>
<td>Gulls/Kittiwakes</td>
<td>4</td>
<td>26</td>
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<tr>
<td>Shorebirds</td>
<td>1</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Corvids</td>
<td>1</td>
<td>7</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>
</tr>
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<tbody>
<tr>
<td>Sea Otters</td>
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<td></td>
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<tr>
<td>Pinnipeds (specify)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whales (specify)</td>
<td></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.
A3 A CT/CV of oil is present on the upper zone boulders at this site. Few biota are present on the oiled boulders or on the adjacent clean boulders at this tidal height.

A4 Oil (CT/SOR) is found on the coarse sediments at the upper part of the beach. Barnacles and littorine snails are sparse in these cobbles and pebbles. Few other biota were present.

A5 This extensive area of oiling (LSOR/FL/MSOR) in this small cove has apparently been incorporated into some of the granular sediments on the surface, resulting in an impermeable cap of sediment over the finer sediments below. Thus, the underlying sediments are anaerobic, with black hydrogen sulfide-laden muds. This process naturally occurs in fine sediments and may not be related to the presence of the oil. Biota are nevertheless very abundant, with high densities of barnacles, green algae, rockweed, and mussels, depending upon the tidal height. Polychaete worms are abundant in the aerobic sediments, as are isopods, amphipods, limpets, and littorine snails.

A6 This biota in this area are similar to those found in A6. The anaerobic area does not seem quite so extensive here. In addition, this oiled area extends to the high zone, where few biota are found.

Cleanup Considerations

For most of this subdivision, cleanup operations, if recommended, will have little effect on the biota in question. At locations A5 and A6, however, the consequences of attempting removal of the oil from sediments in the middle to high zone may be detrimental to the resident species assemblage. Oil removal would require destruction of most of the surface biota as well as removal of much of the fine sediments from the beach. The present high densities of infaunal species (worms, some crustaceans), act to turn over the sediments and will likely facilitate aeration of the black muds. As the oil degrades and the sediments become aerated, via percolation from the overlying water, the black mud concentration of this area may decrease.

General Comments

PD004-A is a very long subdivision with cobble shores, bedrock cliffs, and a few protected coves. The entire subdivision is well protected from waves. The only areas surveyed were three coves (see OG map). The shores are not particularly diverse, and have a sparse upper intertidal with barnacles and littorine snails, a middle zone with moderate to dense Fucus cover, mussels, and associated species, and a low zone with Fucus and red algae.

Mars Cove (see map) is the only location with significant oil. This location has oil in the middle to upper zone on a cobble beach, with mousse, HSOR, a film in fine sediments.
### General Zonation on PD004-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>
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</thead>
<tbody>
<tr>
<td>Oil</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Green Algae (Ulva/other)</td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Barnacles (Balanus)</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Mussels (Mytilus)</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
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<tr>
<td>Rockweed (Fucus)</td>
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</tr>
<tr>
<td>Other Red Algae</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Littorine Snails</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clams</td>
<td></td>
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</tr>
</tbody>
</table>

Legend: (-) Sparse to rare, (+) Moderate, (*) Abundant

### Common Species on PD004-A

#### A. Marine Plants

1. Diatoms, Blue Greens
2. Green Algae - Chlorophyta
   - Enteromorpha sp., Ulva sp., Uroseora sp.
3. Brown Algae - Phaeophyta
   - Ectocarpus spp., Fucus distichus, Hildenbrandia sp., Ralfsia sp., Sycosiphon lomentaria
4. Red Algae - Rhodophyta
   - Endocladia muricata, Haloascocion glandiforme, Mastocarpus sp., Membrapeptera dimorpha, Odonthalia flaccida, Palmaria palmata, Petrocena sp., Porphyra sp., Rhodanema larix
5. Higher Plants - Zostera marina (eel grass), Leymus mollis (beech rye grass)

#### II. Marine Animals

1. Sponges - Porifera - Halichondriidae bowerbankii,
2. Anemones - Anthopleura artemesia, Euplotes ritteri, Urchicina crassicornis,
3. Hydroids - Sertulariidae,
4. Flatworms - Platyhelminthes - Polyclads
5. Nemerteans - Worms - Chitonidae - Euplectonema gracile
7. Peanut worms - Sipunculidae - Phascolosoma agassizii
8. Crustaceans
   a. Amphipods - Trachorcithesis treki
   b. Barnacles - Semibalanus cariosus
   c. Crabs - Paguridae (hermit crabs),
   d. Isopods - Cirridae harfordi, Idotea wosnesenskii, Gnorimorsphaeroma oregonensis
9. Molluscs
   a. Chitons - Mopalia muscosa, Tonicella lineata,
   b. Snails - Gastropoda
      - Amphinia columbiana, Littorina sp., Natica clausa, Nucella lamellosa, N. lima, Searlesia dira, Tachyrhythynchus sp.
   c. Limpets - Lottia persona, L. limatula, Tectura fenestrata, T. persona, T. scutum, Siphonaria sthersites
   d. Bivalves - Chlamys hastata, Clinocardiium sp., C. nutelli, Histella arctica, Macoma balthica, Macoma nasuta, Modiolus modiolus, Mya arenaria (soft-shell clam), Mytilus edulis, Pododesmus cepola, Proteus cuminiae, Saxidomus giganteus
10. Echinoderm
    a. Sea stars - Demasterias fabrica, Evasterias truschell, Leptasterias hexactis, Pycnopodia holobiontides,
    b. Sea Cucumbers - Holothurians - Eupentacta sp.
    c. Urchins - Strongylocentrotus droebachiensis
12. Fishes
    - Cottidae
    - Stichaeidae - Xiphaster atropurpureus, X. muscosus

#### III. Birds

- Bald Eagle (1), Glaucous-winged Gull (20), Crow (7), Shorebird (3), Bonaparte's Gull (20), Herring Gull (1), Magpie (1), Lesser Scaup (80), Mallard (10), Barrow's Goldeneye (5), Surf Scoter (5), Common Merganser (5),
BIO SKETCH MAP
PDD004-A
AREA I
JP BARRY
21 MAY 91
1610-1620

Green Filamentous Algae
Fucus Drift Area, Little East
<table>
<thead>
<tr>
<th>Bio Sketch Map</th>
<th>Legend</th>
</tr>
</thead>
<tbody>
<tr>
<td>PD004-A</td>
<td>Steep Bedrock Cliff</td>
</tr>
<tr>
<td>AREA II</td>
<td>Boulder/Cobble</td>
</tr>
<tr>
<td>JT Barry</td>
<td>Pebble/Cobble</td>
</tr>
<tr>
<td>21 Mar 91</td>
<td></td>
</tr>
<tr>
<td>1643-1703</td>
<td></td>
</tr>
</tbody>
</table>

**SHELTER COVE**

NO OIL

Meters

| 0 | 50 |
Bio Sketch Map
PD 004-A
Area III - Mara Cove
J P Bark
22 May 1991
1255-1308

CT/CU on bedrock wall occurs at the upper part of the boulder zone. Many juvenile barnacles are present on the wall at moderate to high densities.

CT/CU on boulder fen, biota at subtidal level occasional tine, snail, limpet.

See Area III-B (next page)
BIO SKETCH MAP
PDO04 - A
AREA III-B
22 MAY 91
JF BARRY

A4 CT/CSR ON COARSE SEDIMENT - SPARSE BARNACLES, LIMPETS, LITTORINES

A5 LSOR, FL, MSOR over anaerobic muds under coarse sediments. Surface sediments appears to have contributed to the low oxygen conditions of the underlying mud. Abundant biota on surface. Littorines, green algae on upper zone. Forus, Nucella, mixed in lower zone. Barnacles dense in patches. Dense Polychaete worms, Isopods.

A6 - SOME AS A5, but less anaerobic muds in portion. This also extends higher in the intertidal.

A7 CT ON BIODOCK - SPARSE BARNACLES, LIMPETS, LITTORINE SNAILS.
1991 MAYSAP EVALUATION

SEGMENT: PD 004  SUB: B  REGION: KEN  SURVEY DATE: 5/21/91

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>
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</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 ________________________
No treatment recommended.

No significant oiling found.

Small amounts of oil, widely scattered. Additional activity/disturbance not justified for so little oil.

Small scattered patches of oil located and were swept-up by USCG.
**SURFACE OIL CHARACTER**

<table>
<thead>
<tr>
<th>LOC</th>
<th>AP</th>
<th>MS</th>
<th>TB</th>
<th>SBH</th>
<th>CV</th>
<th>CT</th>
<th>ST</th>
<th>FL</th>
<th>DB</th>
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</tr>
</tbody>
</table>

- **SEDIMENT TYPE**: 
- **SLOPE**: VHML
- **WIDTH**: m
- **LENGTH**: m

**ZONE**

<table>
<thead>
<tr>
<th></th>
<th>S</th>
<th>UI</th>
<th>MI</th>
<th>LI</th>
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<tbody>
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</tbody>
</table>

**NOTES**

- "No oil picked up"

**SURFACE-OIL CHARACTER**

- **OILED ZONE**: 
- **CLEAN BELOW**: Y/N
- **H2O LEVEL**: (cm)
- **SHEEN COLOR**: B/R/S/N
- **ZONE**: S/L/M/I

**SUBSURFACE OIL CHARACTER**

<table>
<thead>
<tr>
<th>PIT</th>
<th>PITT</th>
<th>DEPTH</th>
<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED ZONE</th>
<th>CLEAN BELOW</th>
<th>H2O LEVEL</th>
<th>SHEEN COLOR</th>
<th>ZONE</th>
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<td></td>
</tr>
</tbody>
</table>

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

**OG COMMENTS**: Short subdivision of angular rocks in plan. Few steep, vegetated backshore. Backshore consists of low bedrock cliffs formed by angular boulders. Small area of forest area found and picked up during survey.
Location Map
Oil-Related Comments

A few small patches of oil were located on the cobble sediments of the beach and picked up. At this location there were moderately abundant Ulva, sparse barnacles, and little else.

General Comments

PO004-B is a short subdivision located at the innermost section of Port Dick, adjacent to a wide delta with clams and eel grass. Biota at this subdivision, other than the clam bed, are sparse. Fucus is present in the middle to low zone, with moderate densities of barnacles above, and moderately dense filamentous algae over the middle zone cobble.

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>1</td>
<td>Salmon Fry</td>
<td></td>
</tr>
<tr>
<td>Seabirds</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Waterfowl</td>
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</tr>
<tr>
<td>Gulls/Kittiwakes</td>
<td>3</td>
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<tr>
<td>Shorebirds</td>
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<td></td>
</tr>
<tr>
<td>Corvids</td>
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<td>7</td>
<td></td>
<td></td>
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<tr>
<td>Other Birds</td>
<td>1</td>
<td>1</td>
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</tbody>
</table>

Note: Shoreline subdivision map showing important biological features attached.
Common Species on PD004-B

A. Marine Plants
1. Diatomae, Blue Greens
2. Green Algae - Chlorophyta - Enteromorpha sp., Ulva sp., Urospora sp.
3. Brown Algae - Phaeophyta
   Enterocarpus spp., Fucus distichus, Hildenbrandia sp., Raftsia sp., Sycosiphon lomentaria
4. Red Algae - Rhodophyta
   Endocladia muricata, Halocarcine glandiforme, Mastocarpus sp., Membranoptera dimorpha, Odonthalia floccosa, Palmaria palmata, Petrocelis sp., Porphyra sp., Rhodomela larix
5. Higher Plants - Zostera marina (eel grass), Leymus mollis (beach rye grass)

II. Marine Animals
1. Sponges - Porifera - Halichondria bowerbanki
2. Anemones - Anthopleura artemesia, Epiactis ritteri, Urticina crassicornis,
3. Hydroidea - Sertulariidae,
4. Flatworms - Platyclema - Polyclada
5. Nemerteans - Worms - Entomonea gracile
8. Polychaete Worms
   Nereidae - Nereis spp.
   Serpulidae - Serpula sp.
   Spirorbidae - Spirorbis sp.
9. Peanut worms - Sipunculids - Phascolosoma agassizii
10. Crustaceans
   a. Amphipods - Traskorchestia traskiana
   b. Barnacles - Balanus glandula, Semibalansus cariosus
   c. Crabs - paguridae (hermit crabs)
   d. Isopods - Cidaroida harfordi, Idotea wosnesenskii, Gnorimorsphaeroma oregonensis
11. Mollusca
   a. Chitons - Mopella mucosa, Tonicella lineata,
   b. Snails - Gastropods
      Amphissae columbiana, Litteolina sp., Natica clausa, Nucella lamellosa, N. lima, Searlesia dira, Techyrrhynchus sp.
   c. Limpets - Lottia personula, L. limatula, Tectura fenestrata, T. persoma, T. cutum, Siphonaria cherasites
   d. Bivalves - Chlamys hastata, Clinocardium sp., C. nuttallii, Hiatella arctica, Macoma balthica, M. nasuta, Modiolus modiolus, Mya arenaria (soft-shell clam), Mytilus edulis, Pododesmus cepio, Protophaca staminata, Saxidomus giganteus
12. Echinoderm
   b. Sea stars - Dermoasterias inbricate, Eavasterias truscheli, Leptasterias hexactis, Pycnopodia helianthoides,
   c. Sea Cucumbers - Holothurians - Eupentacta sp.
   d. Urchins - Strongylocentrotus droebachiensis
14. Fishes
   Cottidae - Xiphister atropurpureus, X. mucosus

III. Birds - Bald Eagle (1), Glaucous-winged Gull (20), Crow (7), Shorebird (3), Bonaparte's Gull (20), Herring Gull (1), Magpie (1)
BLOG SKETCH MAP
PD 004-B
JP BARRY
21 MAY 91
1540-1556

NO OIL
REMAINING

Pu

Pu
ASAP TAG REVIEW SHEET

Segment: PD04   Subd: A   Site: 1   Date
PRE-Review 11 Aug 90

Priority For Addressing In 1990

HIGH    MEDIUM    LOW    NTR    X   N/A

Treatment Recommended:  β50,  β50,  MP of Farnay-Morse

Priority Site For Reassessment In 1991

YES/ NO    YES/ NO    YES/ NO    YES/ NO    YES/ NO
V  CG      V  ADEC    V  EXXON    V  LAND MGR

TAG 13 Aug 90

Manual Pickup Mouse Patty

BIO (INAPOL)
WORK PLAN MODIFICATION RECOMMENDATION

SEGMENT PD-04 SUBDIVISION A DATED 8/3/90

MODIFICATION CLASS IX CLASS X CLASS XI

1. REASON FOR MODIFICATION

Surface oil, mousse, asphalt pavement, cover, coat on boulders and cobbles still remain at this site. With the degree of oiling present more work should be done at this site.

2. SUGGESTED ADJUSTMENT TO WORK PLAN

Header flood along with warm-water wash. Along with manual removal and bio-remediation (customizing).

3. TIMING ISSUES

Work should be completed by September 15, 1990.

ADEC

EXXON

USCG

LAND MANAGER

ACNR (If field rep is on scene)
SEGMENT AS1 PDQ SUBDIVISION: A SITE: 1 DATE 5 Aug 1990

SCG
NAME SCHULTZ GREGORY J SIGNATURE Gregory J. Schult

☑ YES ☐ NO PRIORITY SITE FOR REASSESSMENT IN 1991
REASON: SOR, Patchy SCATTERED TARMAT (FRAGILE)

ADEC
NAME JOHN R. REED SIGNATURE John R. Reed

☑ YES ☐ NO PRIORITY SITE FOR REASSESSMENT IN 1991
REASON: SOR, scattered mousse, patchy tarmat, and cover on boulders and cobbles still remain at this site. This site could use some manual removal 1990. Needs reassessment spring 1991.

LAND MANAGER
NAME DAVEY K. KENAY ADNR SIGNATURE

☑ YES ☐ NO PRIORITY SITE FOR REASSESSMENT IN 1991
REASON: Observed scattered mousse, tarmats and cover on boulders and cobbles in this subdivision. Some mousse appears to be coalescing and pooling in depressions after treatment and granular applied this summer. Subdivision needs additional treatment to remove mousse and CP sediment in 1990 and needs reassessment in 1991.

EXXON
NAME KEITH MILES SIGNATURE Keith Miles

☑ YES ☐ NO PRIORITY SITE FOR REASSESSMENT IN 1991
REASON: Area still oiled and is producing light silver sheen.
### ASAP SHORELINE OILING SUMMARY

**Team No.** 04  |  **Exxon Keith Miles**  |  **Segment AS:** PD-4  
**OG** Rich Marty  |  **USGS** G Schultz  |  **Subdivision:** A  
**ADEC** Randy Reed  |  **Land Rep:** Dave Kenagy DNR  |  **Total No. Sites:** 1  
**Date** 03/1 Aug 1990  |  **Time:** 09:15 to 13:50  |  **Tide Level:** 2.5' to 3.5'  
**Total Est. Length of Shoreline Surveyed:** 40 m  
**Surveyed From:**  ✗ Foot  ☐ Boat  ☐ Halo  **Weather:**  ☐ Sun  □ Clouds  □ Fog  ☐ Rain  ☐ Snow  
**Oil Category Length:**  W ---- m  M 1/4 m  N ---- m  Vl ---- m  NQ ---- m  US ---- m  

#### SURFACE OIL

<table>
<thead>
<tr>
<th>Site 1</th>
<th>Site 2</th>
<th>Site 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Character</strong></td>
<td><strong>Distribution</strong></td>
<td><strong>Oiled Zones</strong></td>
</tr>
<tr>
<td>ASPHALT</td>
<td>/C /B /P /S</td>
<td>SU UI MI LI</td>
</tr>
<tr>
<td>S.O.R.</td>
<td>✗</td>
<td>✗</td>
</tr>
<tr>
<td>POOLED</td>
<td>✗</td>
<td>✗</td>
</tr>
<tr>
<td>COVER</td>
<td>✗</td>
<td>✗</td>
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<tr>
<td>STAIN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MOUSSE</td>
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<td></td>
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<tr>
<td>PATTIES/T.B.</td>
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<td></td>
</tr>
<tr>
<td>FILM</td>
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<td></td>
</tr>
<tr>
<td>NO OIL</td>
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<td>X</td>
</tr>
<tr>
<td><strong>Est. Site Length</strong></td>
<td>40 m</td>
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</tbody>
</table>

#### SUBSURFACE OIL

<table>
<thead>
<tr>
<th>Site No.</th>
<th>Pit No.</th>
<th>Pit Depth (cm)</th>
<th>Subsurface Oil Character</th>
<th>Oiled Interval</th>
<th>Clean Below (Y/N)</th>
<th>Pit Zone</th>
<th>Surface-Subsurface Sediments</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO Pits</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Photographs:**
- **Roll No.** ______
- **Frames** ______

**Comments:** Some sheen coming off. Agency people say that the remainder of segment is less oiled.

**Revision No. 7/27/90**
Sketch Map B
Not Surveyed
(ENLARGEMENT)

Sketch Map C
(ENLARGEMENT)

Sample collection site
Sample: ST-18-PD-4-Mars Cove-A

Sample: ST-18-PD-4-Mars Cove-C

Sample: ST-18-PD-4-Mars Cove-E

Legend:
- CT/S in protected sites
- MS/P - 4x20m
- MS/S - 1m²
- CT/P - 10x16m
- CT/P - 2x12m
- MS/P - 2x12m
- FL/S/RW
- Small amount of oiled debris

- CT/S in protected sites
- MS/P - 4x20m
- MS/S - 1m²
- CT/P - 10x16m
- CT/P - 2x12m
- MS/P - 2x12m
- FL/S/RW
- Small amount of oiled debris

Coral reef distribution
- CT/S
- CT/P
- CT/F
- CT/0

Rich interstitial for mats
- Corals
- Echinoderms
- Some soft corals
- Mosaic floor

Oil Character Length (m) AP PO CV CT YOM ST MS PT TB FL NR

See Sketch Map A

MANUALLY REMOVE TURTLES & MOSS PATTIES
## ADDENDUM: SUBDIVISION CONSTRAINTS

### SEGMENT PD-4 SUBDIVISION A (1 of 1)

<table>
<thead>
<tr>
<th>WORK WINDOW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manual Pickup</td>
</tr>
<tr>
<td>Tamat Removal</td>
</tr>
<tr>
<td>Bioremediation and Spot Washing Less Than 100m From Stream</td>
</tr>
<tr>
<td>Bioremediation and Spot Washing More Than 100m From Stream</td>
</tr>
</tbody>
</table>

### ARCHAEOLOGICAL STANDARD CONSTRAINT

If cultural resources are uncovered, PHONE 564-3274.

### APPLICABLE ECOLOGICAL TIME CONSTRAINTS

<table>
<thead>
<tr>
<th>1A,1B Salmon Stream</th>
<th>ADF&amp;G catalogued anadromous stream (242-42-10460) is in Subdivision A. This subdivision is closed to bioremediation and spot washing less than 100m from stream 7/10 to 8/31. Before 7/10, bioremediation and spot washing are permitted less than 100m from stream with on-site ADF&amp;G monitor or ADEC alternate present. No constraint to bioremediation and spot washing more than 100m from stream. No constraint to manual pickup and tamat removal.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1J  Purse Seine Area</td>
<td>Closed to bioremediation after 6/25.</td>
</tr>
<tr>
<td>5T  Bald Eagle Nest</td>
<td>NO CONSTRAINT. USFWS 6/1/90 map indicates no active nest within 400m of Subdivision A work site.</td>
</tr>
</tbody>
</table>

### OTHER ECOLOGICAL CONSIDERATIONS

No disturbance to stream bed or banks. Restrict boat and air traffic to essential minimum after 6/25. No flushing of pollutants or sediments into stream drainage; do not allow Inpol to enter stream flow. On-site examination and consultation by ADF&G monitor is required prior to bioremediation and spot washing in order to authorize a setback distance from the stream during chemical application; if ADF&G monitor's presence is impossible, authorization may be given by the ADEC monitor. Avoid any unnecessary disturbance or damage to unolied biota and substrate.

**FOSC**

[Signature]

**Date**

6-19-90

**Prepared by**

[Signature]

**Date**

6/16/90
SHORELINE EVALUATION

SEGMENT ST/ PD-94 SUBDIVISION A (1 OF 1) DATE 4/27/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:

- ADF&G anadromous stream no. 242-42-10460 plus two possible uncatalogued anadromous streams (see map).
  - 1A: Salmon stream mouth - fry outmigration (3/1 to 5/15)
  - 1B: Salmon stream mouth - spawning (7/10 to 8/31)
  - 1J: Purse seine area (6/25 to 8/31)
  - 4GA: Alaska State Wilderness Park
  - 5T-1: All bald eagle nests (3/1 to 6/1) - Active eagle nests (3/1 to 9/1)
  - 6NN: Recreation: Sportfishing

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid any unnecessary disturbance or 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 53 m: Medium 398 m: Narrow 192 m: V.Light 563 m: No Oil 10100 m
- Subsurface Oil Observed: Yes X No ______ Maximum Depth 20 cm

RECOMMENDATIONS:

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

COMMENTS: Recommended treatment includes manual removal of tarmats and mouse patties in areas indicated on sketch maps. Work should be conducted between 6/1 and 7/10 with approval of USFWS regarding eagle nest constraints.

SEE CONSTRAINTS ADDENDUM DATED 6/16/90.

TAG COMMENTS: Manual Pickup - Followed by Spot Wash and Bioremediation

TAG APPROVAL DATE: 5/8/90

ADEC ________ EXXON ________ NOAA ________ USCG ________

FOSC: ________ DATE: 5-12-90
ADDENDUM: SUBDIVISION CONSTRAINTS
SEGMENT PD-04 SUBDIVISION B (2 of 2)

WORK WINDOW

| Manual Pickup | OPEN |

ARCHAEOLOGICAL STANDARD CONSTRAINT

If cultural resources are uncovered, PHONE 564-3274.

APPLICABLE ECOLOGICAL TIME CONSTRAINTS

1A,1B Salmon Stream

ADF&G catalogued anadromous stream is more than 100m from work site. No constraint to manual pickup.

1J Purse Seine Area

No constraint to manual pickup.

5T Bald Eagle Nest

NO CONSTRAINT. USFWS 6/1/90 map indicates no active nest within 400m of Subdivision B work site.

OTHER ECOLOGICAL CONSIDERATIONS

Restrict boat and air traffic to essential minimum after 7/20. Avoid any unnecessary disturbance or damage to unaltered biota and substrate.

FOSC

Date 6-25-90

Prepared by

Date 6/25/90
SHORELINE EVALUATION

SEGMENT ST/20-004  SUBDIVISION B (2 OF 2)  DATE 6/7/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:

ST  All Bald Eagle nests (1/1 to 6/1)
   Active Bald Eagle nests (3/1 to 9/1)
1A  Salmon stream mouth - fry outmigration (1/1 to 5/15)
1B  Salmon stream mouth - spawning (7/10 to 8/31)
1J  Purse seine area (7/20 to 9/30)
4GA Alaska State Wilderness Park
   Recreation: Sportfishing
See attached Ecological Constraint sheet for specific constraints and
contacts.

SUBDIVISION ECOLOGICAL CONSTRAINTS:

Avoid any unnecessary disturbance or 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 Exxon's
Cultural Resource Program immediately (564-3274 (Anchorage) or 229-1508
(24 hrs.).

SHPO SIGNATURE:  DATE: June 19, 1990

OILING CATEGORIZATION:

Wide 0_m; Medium 0_m; Narrow 0_m; V.Light 271_m; No Oil 0_m
Subsurface Oil Observed:  Yes  No X  Maximum Depth  

RECOMMENDATIONS:

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

COMMENTS:  Recommended treatment is manual pick up of mousse as annotated
on attached sketch map.

SEE CONSTRAINTS ADDENDUM DATED 6/25/90

TAG COMMENTS:

TAG APPROVAL DATE: 6-16-90  Date 6-23-90

ADEC Ray Mear 6-16-90

[Signature]
REGION: KENAI

SEGMENT: ST/PD-05

SUBDIVISIONS: A (1 OF 1)
SHORELINE EVALUATION

SEGMENT ST/_PD-05___ SUBDIVISION A (1 OF 1) DATE 4/26/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:

1J Purse seine area (6/25 to 8/31)
4GA Alaska State Wilderness Park
6NN Recreation: Sportfishing

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 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 90_m: V.Light 300_m: No Oil 2828_m
Subsurface Oil Observed: Yes___ No__X__ Maximum Depth_____

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 Removal  ___Beach Cleaner
______Other (see comments)

COMMENTS: Recommended treatment includes 1) manual pickup of tarmat and mousse followed by bioremediation in areas indicated on sketch map. Work should be conducted before 6/25 based on fishing constraints.

TAG COMMENTS:


TAG APPROVAL DATE:______________

ADEC _______________
EXXON _______________
NOAA _______________
USCG _______________

FOSC:_______________ DATE:________
Salmon stream mouth - fry outmigration (3/1 to 5/15)
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 Merlon 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 Peltz 424-3214

Estuary 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

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 and/or PWS Aquaculture Association. 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 or PWS Aquaculture Association for confirmation and authorization.

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

Gill net area (6/7 to 8/31)
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 specific dates, locations and constraints. 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 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. Restrict boat traffic to essential minimum. Avoid damage to unoined intertidal and subtidal algae and seagrass. 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

Habor seal and sea lion pupping (5/15 to 7/1)
Habor 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. 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
ADFG Don Celikia 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 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
ADFG Tom Roth 267-2206

All Bald Eagle nests (3/1 to 6/1)
Active Bald Eagle nests (5/1 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 786-3377

Liaison:
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
Sport Fishing
Subsistence area: Salmon harvesting (5/1 to 9/30)
Finish harvesting
Deer harvesting (8/15 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 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 Fall 267-2359
FIELD SHORELINE COMMENT SHEET

SEGMENT ST1_PDC05 SUBDIVISION: A DATE 4/26/1990

NAME Donald A. Macdonald SIGNATURE Donald A. Macdonald

☐ NO TREATMENT RECOMMENDED ☑ TREATMENT SUGGESTED

COMMENTS

This segment is mostly clean with splashes of oiling in the central portion of the segment. I have no guidelines about the size/size as filled out.

ADEC

NAME John R. Reed SIGNATURE John R. Reed

☐ NO TREATMENT RECOMMENDED ☑ TREATMENT SUGGESTED

COMMENTS

Manual removal of mousse patches in this area with shovels will be easy. Some were picked up as we surveyed. Most of the scattered mousse patches were in the MITZ. I agree with SSAT forms.

LAND MANAGER

NAME Sharie Mothner-Toney SIGNATURE Sharie Mothner-Toney

☐ NO TREATMENT RECOMMENDED ☑ TREATMENT SUGGESTED

COMMENTS This segment is within Kachemak Bay State Wilderness Park. I agree with SSAT team data. This area has high recreation and wildlife resource values, good anchorage areas. I recommend manual removal mousse patties. The area is a high use area with commercial and fishing and sport fisherman.
**SHORELINE OILING SUMMARY**

**SEGMENT**: ST/PDS

**BIOL**: Carr

**LAND REP**: Mathew-Toney

**ADEC**: Reed

**TIME**: 12:30 to 20:00

**DATE**: Apr 126 1990

**SUBDIVISION LENGTH**: 3247 m

**TIDE LEVEL**: +6.0 to +2.5

**UPLANDS DESCRIPTION**: Grass

**SURVEYED FROM**: Foot, Boat, Helo

**WORKING DIRECTION**: W to E

**SURFACE SEDIMENTS**: R 35 % B 35 % C 15 % P 15 % G 0 % S 0 % M 0 % V 0 %

**SLOPE**: Lang 65 % Hang 0 % Vent 35 %

**OIL CATEGORY LENGTH**: W 0 m M 0 m N 100 m V 350 m NO 2817 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 Paving</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Pooled</td>
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</tr>
<tr>
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</tr>
<tr>
<td>Mousse</td>
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<tr>
<td>Patties</td>
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</tr>
<tr>
<td>Tarballs</td>
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<tr>
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</table>

**OILED DEBRIS**: No

**OILED DEBRIS AMOUNT**: Small/Medium/Large

**DID YOU COLLECT DEBRIS?**: Yes

**PAVEMENT**: 7 sq. m by 3 cm

**PATTIES/TARBALLS**: 0

**NEAR SHORE SHEEN?**: No

**BR RW SL TL**: B

**OILED DEBRIS TYPE**: Asphalt/Pitch

**BAGS**: 2

**Photographs**

Roll No. ST-18-9

Frames 6-7

---

**SUBSURFACE OIL**

<table>
<thead>
<tr>
<th>PIT NO.</th>
<th>PIT DEPTH (cm)</th>
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**OILED MATERIAL BELOW**: Oil

**OIL/FILM COLOR**: Black

**PIT ZONE**: S-G

**ANA SHEEN**: N 10

**SURFACE-SUBSURFACE SEDIMENTS**

P-S, G

P-S, G

P-S, G

P-P

P-P

**COMMENTS**: PO-5 comprises a rather long (~1.5 km) low angle boulder and cobble beach and bedrock cliffs along the eastern part of this section. Little oil was observed in the surf zone and much (most) of the relatively heavy oil accumulation were collected.
SEGMENT ST/PD5
SUBDIVISION A
DATE Apr 1 27 90

CHECKLIST
- N Arrow
- Approx. Scale
- Seg/Sub Dist
- Oil Dist
- Width
- Length
- % Cover
- Substrate Character
- Est. HWL/LWL
- SSL
- Profile Location(s)
- Profile(s)
- Pit Location(s)
- Photo Location(s)

LEGEND
1 Δ
- Pit - No Subsurface Oil
2 Δ
- Pit - Subsurface Oil

CT/C
Continuous Distribution
CT/B
Broken Distribution
CT/T
Patchy Distribution
CT/S
Splashed Distribution

Oiled Vegetation

Photo location, direction, and number

SKETCH MAP

Low angle boulder and cobble beach

2m wide band ~100m long of AP/F/S - only infrequent patches, some collected

BIOREMEDIATE

CS/1 in ~1m wide band

1-2m wide band of CTIS

MANUAL PICKUP
MOWS S & TARMAK

MS/S - one patch <1m² x 8cm thick

PT/S

5

87-18-9-6

AP/S/S - 2x3m + 1x1m ~3cm thick

FI/S/RW - in pooled water

Regulatory marker

Bedrock Cliffs

Oil Character Length (mm) AP 103 PD5
SHORELINE ECOLOGICAL SUMMARY

Time (24 hr) 1810  Biologist  MARK CARR

(A) Substrate type and % of segments:
   (1) Bedrock 35  (2) Boulder 25  (3) Cobble 15  (4) Pebble 15  (5) Sand 0  (6) Silt 0

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

(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)

Photographs:
   Roll No. ST-13-9
   Frames 6 & 7

BARNACLES

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Wildlife Observations/ General Comments:
Black bear (1), broad hawk (1), harlequin duck (2), river otter (3), merganser (1).

Ecological Considerations:

15 (Purse seine area), 1GA (Alaska State Park/Wilderness), 6MV (Sport Fishing)

Dense beds of laminarian algae in shallow subtidal.
REGION: KENAI

SEGMENT: ST/PD-06

SUBDIVISIONS: A (1 OF 1)
SHORELINE EVALUATION

SEGMENT ST/ PD-06 SUBDIVISION A (1 OF 1) DATE 4/26/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
- 1A Salmon stream mouth - fry outmigration (3/1 to 5/15)
- 1B Salmon stream mouth - spawning (7/10 to 8/31)
- 1J Purse seine area (6/25 to 8/31)
- 4GG Alaska State Parks
- 6NN Recreation: Sportfishing
- 8AA Sensitive Estuary

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 0 m: Narrow 0 m: V.Light 0 m: No Oil 1754 m
- Subsurface Oil Observed: Yes 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 __________________________ FOSC: ________________ DATE: __________
EXXON __________________________
NOAA __________________________
USCG __________________________
Salmon stream mouth - fry outmigration (3/1 to 5/15)
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 bio remediation 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 inhop 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 inhop 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)
Cannery Creek Hatchery release (4/21 to 6/1)
Remote release site

No use of methods which might affect nearshore oil or toxicity levels, such as hot water wash or inhop application, prior to at least July 1 unless authorized by ADF&G and/or PWS Aquaculture Association. 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 or PWS Aquaculture Association for confirmation and authorization.

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

1D 1F 1G PWS Aquaculture Association John McMillan or Bruce Suzimoto 424-7511

Gill net area (6/7 to 8/31)
Purse seine area (7/20 to 9/30)
Purse seine hook-off (7/20 to 9/30)
Set net sites (6/11 to 7/26)
Contact ADF&G for specific dates, locations and constraints. Restrict boat and air traffic to essential minimum. When set net sites are present (11), restrict beach operations to essential minimum as authorized by ADF&G. If plans for treatment include methods such as hot water wash or inhop 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

Herring spawning (4/1 to 6/15)
Contact ADF&G for confirmation - dates and locations may vary. Restrict boat traffic to essential minimum. Avoid damage to unclassified intertidal and subtidal algae and seagrass. If plans for treatment include methods such as hot water wash or inhop 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 (5/15 to 7/1)
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. No application of inhop within two weeks of arrival dates (work window at these sites if 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

ADFG Don Calkins 267-2403

Seabird colony (6/1 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 786-3377

ADFG Tom Rothy 267-2306

Shorebird/waterfowl concentration (4/1 to 6/15)
Restrict all activity to essential minimum, especially air traffic. Contact USFWS and ADF&G for confirmation.

AGENCY CONTACT PERSON: USFWS Jill Parker 786-3377

ADFG Tom Rothy 267-2306

All Bald Eagle nests (3/1 to 6/1)
Active Bald Eagle nests (3/1 to 9/1)
Restrict air traffic and all disturbance to essential minimum. No personnel within 400m. Aircraft to maintain 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 6/15)
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)
Finfish harvesting
Deer harvesting (8/15 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 inhop 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
SEGMENT 1: PDQG

NOAA
NAME: Donald H. MacDowall
SUBDIVISION: A
SIGNATURE: Donald H. MacDowall
DATE: 4/26/1990

☐ NO TREATMENT RECOMMENDED   ☐ TREATMENT SUGGESTED

COMMENTS:

Only surveyed a portion of the western area which the DEC survey had indicated as very lightly oiled; the rest of the segment which encompasses a rich tidal flat area was indicated by the ADEC survey as having no oil. The segment also includes an anadromous fish stream. No oil was observed.

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

☐ NO TREATMENT RECOMMENDED   ☐ TREATMENT SUGGESTED

COMMENTS:

No oil was observed in this segment. I agree with SSAT data.

LAND MANAGER
NAME: Shari Mathven-Toney
SIGNATURE: Shari Mathven-Toney

☐ NO TREATMENT RECOMMENDED   ☐ TREATMENT SUGGESTED

COMMENTS:

Agree with SSAT team data. PD-G is within Kachemak Bay State Wilderness Park. The area is a high wilderness use area, recreation use, wildlife resource values, sportfishing. The area encompasses a rich tidal flat-clam, mussels and oysters. The area offers good anchorages and tent sites.
SHORELINE OILING SUMMARY

OG Sawyer
NOAA

MacDonald
USCG

SEGMENT ST/PO6

BIO: Carr
LAND REP: Mathven-Toney

SUBDIVISION: A

TIME: 20:00 10/20/16

EXXON BOYER
ADEC: Reed

DATE: 12-6-90

SUBDIVISION LENGTH: 1841 m

TIDE LEVEL: +4.6 to +4.0

UPLANDS DESCRIPTION: ☑ Grass ☑ Forest ☑ Rock

SURVEYED FROM: ☑ Foot ☑ Boat ☑ Helo

WORKING DIRECTION: W to E

SURFACE SEDIMENTS: R 20% B 10% C 30% P 0% G 0% S 40% M 0% V 0%

SLOPE: Lang 60% Hang 0% Ven 40%

WAVE EXPOSURE: ☑ Low ☑ Med ☑ High

OIL CATEGORY LENGTH: W 0 m M 0 m N 0 m V 0 m L 0 m N 0 m L 1841 m

SURFACE OIL

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PAVEMENT H F S O sq. m by O cm

PATTIES / TARBALLS O BAGS

NEAR SHORE SHEEN? NO BR RW SL TL

OILED DEBRIS NO AMOUNT DID YOU COLLECT DEBRIS?

LOGS ☑ NO ☑

VEGETATION ☑ NO ☑

TRASH ☑ NO ☑

DEBRIS ☑ NO ☑

# BAGS 0

Photographs:

Roll No. ST-18-9
Frames NO/A

SUBSURFACE OIL

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COMMENTS: ST/PO6 comprises a rather extensive tidal flat, bordered by bedrock cliffs and boulder-cobble beaches. No oil was observed.
SHORELINE ECOLOGICAL SUMMARY

Segment ST: PD-6  Subdivision: A  Date (mo/day/yr): 4/24/90

Biologist: MARK CARR

(A) Substrate type and % of segments:
   (1) Bedrock 20  (2) Boulder 0  (3) Cobble 30  (4) Pebble 0  (5) Sand 40  (6) Silt 0

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

(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))

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Wildlife Observations/General Comments:

Harlequin ducks (17), merganser (1), glaucous-winged gull (20), bald eagle (1)
Clams abundant in L2 and shallow subtidal.

Ecological Considerations:

1AA (Salmon stream), 1J (Purse seine area), 4GA (Alaska State Park/Wilderness
6NN (Sport fishing), 8AA (Sensitive estuary).
XXXX Wide
/// Medium
--- Narrow

PD-6

ADEC Segment Length: 1754m

Map Key: KCH-76
Name: Sawyer
REGION: KENAI

SEGMENT: ST/PD-07

SUBDIVISIONS: A (1 OF 1)
SHORELINE EVALUATION

SEGMENT ST_/ PD-07 SUBDIVISION_A (1 OF 1) DATE 4/26/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:

1J  Purse seine area (6/25 to 8/31)
4GA Alaska State Wilderness Parks
6NN  Recreation: Sportfishing
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 0 m: Narrow 28 m: V.Light 209 m: No Oil 4608 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 Removal  _____Beach Cleaner
___ Other (see comments)

COMMENTS: __________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

TAG COMMENTS: ______________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

TAG APPROVAL DATE:__________

ADEC

EXXON ______________________ FOSC:__________ DATE:__________

NOAA ______________________

USCG ______________________
Salmon stream mouth - fry outmigration (3/1 to 5/15)
1B Salmon stream mouth - spawning (7/10 to 6/31)
No disturbance of stream bed or banks unless authorized by ADF&G. No beech flushing into stream drainage. No bio remediation 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 inipol 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

1C 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 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

1D Esther Hatchery release (4/15 to 6/15)
1E Main Bay Hatchery release (4/20 to 6/15)
1F Sawmill Bay Hatchery release (4/15 to 6/1)
1G Cannery Creek Hatchery release (4/21 to 6/1)
1H Remote release site
No use of methods which might affect nearshore oil or toxicity levels, such as hot water wash or inipol application, prior to at least July 1 unless authorized by ADF&G and/or PWS Aquaculture Association. 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 or PWS Aquaculture Association for confirmation and authorization.
AGENCY CONTACT PERSON: 1E ADF&G Larry Peltz 424-3214

1J Gill net area (6/7 to 8/31)
1K Purse seine area (7/20 to 9/30)
1L Set net sites (6/11 to 7/25)
Contact ADF&G for specific dates, locations and constraints. 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 James Brady 424-3212

2M Herring spawning (4/1 to 6/15)
Contact ADF&G for confirmation - dates and locations may vary. Restrict boat traffic to essential minimum. Avoid damage to uncultured intertidal and subtidal algae and seagrass. 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 Biggs 424-3235

3P 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 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 566-7235
ADF&G Don Calkins 257-2403

5R 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 786-3377

5S Bird/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
ADF&G Tom Rothb 267-2206

5T All Bald Eagle nests (3/1 to 6/1)
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 786-3377

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

7Z Subsistence area: Salmon harvesting (5/1 to 9/30)
7HH Deer harvesting (9/15 to 2/28)
Invetebrate 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/PDO07  NOAA
SUBDIVISION: A  DATE 4-26-1990
NAME Donald A. MacDowell  SIGNATURE Donald A. MacDowell

☐ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS

Only a few scattered patches of mouse were present. The segment has cobble and boulder beaches, along with seaweed fans; the intertidal zone was sparsely settled. The segment starts just east of the tidal flats of PDO06. The bay and Spit did a good job.

☐ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS

Very scattered mouse patches in this segment, most were picked up as we surveyed. No treatment is recommended. I agree with SSAT data.

☐ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS

The area is within Kachemak Bay State Wilderness Park. I agree with SSAT data on PFD. This area has high recreation values, wildlife values, good anchorages, tent sites and popular with pleasure boaters and commercial fisherman. This area receives heavy human use.
# Shoreline Oilings Summary

**OG Sawyer**

**NOAA MacDonald**

**Bio Carr**

**LEND REP Mathven-Toney**

**Segment ST/PO7**

**ADEC Reed**

**Tide Level +4 to +2.5**

**Date Apr 20, 2010 22:00**

**Est. Subdivision Length: 5120 m**

- **Sun**
- **Clouds**
- **Fog**
- **Rain**
- **Snow**

**UPlands Description:**

- **Grass**
- **Forest**
- **Rock**

**Surveyed From:**

- **Foot**
- **Boat**
- **Helo**

**Working Direction:**

- **W to E**

**Surface Sediments:**

- **R:** 70% B:** 15% C:** 5% **P:** 5% **G:** 5% **S:** 0% **O:** 5% **M:** 0% **V:** 0%

**Slope:**

- **Lang:** 30% **Hang:** 0% **Vert:** 70%

**Wave Exposure:**

- **Low**
- **Med**
- **High**

**Oil Category Length:**

- **W:** 0 m
- **M:** 0 m
- **N:** 40 m
- **L:** 500 m
- **T:** 4000 m

## Surface Oil

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**Photographs:**

- Roll No. 5T-18-9
- Frames **NONE**

## Subsurface Oil

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**Comments:**

- Oiled intervals < 5 cm in pit #5 do not constitute subsurface oil.

---

**Reviewer:**

**Date:** 29-A-09
SHORELINE ECOLOGICAL SUMMARY

Segment ST/   P4-7 Subdivision A  

Date (mo/day/yr) 4-26-90

Time (24 hr) 2020  

Biologist MARK CARR

(A) Substrate type and % of segments:
   1) Bedrock 70  (2) Boulder 15  (3) Cobble 5  (4) Pebble 5  (5) Sand 5  (6) Silt 0

(B) Overall % cover of benthos (% 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 (X)

BARNACLES

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Wildlife Observations/ General Comments:
   Bald eagle (1), harlequin ducks (14), river otter (3), grebe (1), black bear (1)

Ecological Considerations:
   (F) Purse seine area, 4GA (Alaska State Park/Wilderness), GNN (Sportfishing)
   Dense laminarians in sheltered areas
REGION: KENAI

SEGMENT: ST/PD-08

SUBDIVISIONS: A (1 OF 1)
SHORELINE EVALUATION

SEGMENT ST/ PD-08 SUBDIVISION A (1 OF 1) DATE 4/23/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
ADF&G anadromous stream no. 242-42-10430
1A Salmon stream mouth - fry outmigration (3/1 to 5/15)
1B Salmon stream mouth - spawning (7/10 to 8/31)
1J Purse seine area (6/25 to 8/31)
4GG Alaska State Parks
GNN Recreation: Sportfishing
8AA Sensitive Estuary
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 0 m; Narrow 0 m; V.Light 3240 m; No Oil 2267 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 Removal ___Beach Cleaner
_____Other (see comments)

COMMENTS: ________________________________________________________________
________________________________________________________________________
________________________________________________________________________

TAG COMMENTS: ____________________________________________________________
________________________________________________________________________
________________________________________________________________________

TAG APPROVAL DATE: ___________________ ADEC _______________ FOSC: ____________ DATE: ___________
EXXON _______________________ NOAA _____________________
NOAA _______________________ USCG ___________________
Salmon stream mouth - fry outmigration (5/1 to 5/15)
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 Inpilog 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 Inpilog 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 Pelz  424-2314

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)

Canyon Creek Hatchery release (4/21 to 6/1)

Remote release sites
No use of methods which might affect nearshore oil or toxicity levels, such as hot water wash or Inpilog application, prior to July 1 unless authorized by ADF&G and/or PWS Aquaculture Association. 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 or PWS Aquaculture Association for confirmation and authorization.

AGENCY CONTACT PERSON: 1E  ADF&G  Larry Pelz  424-2314

1F  PWS Aquaculture Association  John McMillan or Bruce Suzumoto  424-7511

Gill net area (6/7 to 8/31)
Purse seine area (7/20 to 9/30)
Purse seine hook-off (7/20 to 9/30)
Set nets (6/11 to 7/31)
Contact ADF&G for specific dates, locations and constraints. Restrict boat and air traffic to essential minimum. When set net sites are present (1L) restrict beach access to essential minimum as authorized by ADF&G. If plans for treatment include methods such as hot water wash or Inpilog application which might affect nearshore oil or toxicity levels, contact ADF&G for consultation and authorization.

AGENCY CONTACT PERSON: ADF&G  James Brady  424-3324

Herring spawning (4/1 to 6/15)
Contact ADF&G for confirmation - dates and locations may vary. Restrict boat traffic to essential minimum. Avoid damage to unedible intertidal and subtidal algae and seagrass. If for plans for treatment include methods such as hot water wash or Inpilog application which might affect nearshore oil or toxicity levels, contact ADF&G for consultation and authorization.

AGENCY CONTACT PERSON: ADF&G  Evelyn Biggs  424-3325

Harbor seal and sea lion pupping (5/15 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 haulouts. No application of Inpilog 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 Calkins  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  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
ADF&G  Tom Authy  267-2206

All Bald Eagle nests (3/1 to 6/1)
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  786-3377

Floreston:
Tent site 6/1 to 9/15
Anchorage 6/1 to 9/15
Forest Service cabin 6/1 to 9/15
Lodge 6/1 to 9/15
Special use destination

Subsistence area: Salmon harvesting (5/1 to 9/30)
Finfish harvesting
Door harvesting (8/15 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 Inpilog 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

STI / PD-08  SUBDIVISION: A (lot 1)  DATE 4/23/90

NAME Donald A. MacDonald  SIGNATURE Donald A. MacDonald

☐ NO TREATMENT RECOMMENDED  ☑ TREATMENT SUGGESTED

COMMENTS
Mousse patty and fish found along the western shore of the segment. The eastern side of the breakwater arm of segment had no anadromous fish and pink (possibly salmonid) fry were observed within this arm.

☐ NO TREATMENT RECOMMENDED  ☑ TREATMENT SUGGESTED

COMMENTS
Mousse patties in PD-08 could be manually removed by shovel. The banks of the anadromous stream were clean. This is an area of high recreational value. I agree with data on SSAT Forms.

☐ NO TREATMENT RECOMMENDED  ☑ TREATMENT SUGGESTED

COMMENTS
Port Dick-West Arm Segment PD8 is located within Kachemak Bay State Wilderness Park. The area offers unique recreation activities, fishing, sportfishing and commercial clam digging. The area has two large tidal flats and one anadromous fish stream, extremely high wilderness values. The area has high wildlife values in the tidal flats and uplands. I recommend manual cleanup of mousse patties (accessible using skiffs) and the removal of boom chain and cable which were found in the segment. I agree with data on the SSAT Forms.

ADEC
NAME John R. Reed  SIGNATURE John R. Reed

LAND MANAGER
NAME Shanie Methuen-Jones  SIGNATURE Shanie Methuen-Jones
# SHORELINE OILING SUMMARY

**NOAA | U.S.C.G. Macdonald**

**BIO CORR | LAN REP: Methven-Toney**

**ON BEYER | ADEC Reed**

**SEGMENT ST/ PO-008**

**SUBDIVISION A**

**DATE: 1/23/90**

**TIME: 16:30 to 20:00**

**EST. SUBDIVISION LENGTH: 6559 m**

**TIDE LEVEL: 4.5 to 7.0**

**UPLANDS DESCRIPTION: Grass, Forest, Rock**

**SURVEYED FROM: Foot, Boat, Helo**

**WORKING DIRECTION: W to E**

**SURFACE SEDIMENTS: R 90% B 5% C 10% P 3% Q 0% S 0% M 0% V 0%**

**SLOPE: Long 30% Hang 10% Vert 60%**

**WAVE EXPOSURE: Low, Med, High**

**OIL CATEGORY LENGTH: 0 m M 0 m N 0 m V 3959 m NO 2600 m**

## SURFACE OIL

<table>
<thead>
<tr>
<th>CHARACTER</th>
<th>DISTRIBUTION</th>
<th>OIL / FILM COLOR</th>
<th>IMPACTED ZONES</th>
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<td>TARBalls</td>
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<tr>
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**PAVEMENT H F S 0 sq. m by 0 cm**

**PATTIES / TARBALLS 0 BAGS**

**NEAR SHORE SHEEN? NO**

**BAGS 1**

**Photographs:** Roll No. ST-18-8

Frames 19-23

## SUBSURFACE OIL

<table>
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<tr>
<th>PIT NO.</th>
<th>PIT DEPTH (cm)</th>
<th>SUBSURFACE OIL CHARACTER</th>
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**COMMENTS: ST/PO-008 has two large tidal flats, a few small lagoons, and one or two anadromous fish streams. On either side of the eastern embayment are debris (cable and chain) that was possibly related to booming operations.**
<table>
<thead>
<tr>
<th>PIT NO.</th>
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<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED INTERVAL (cm)</th>
<th>BELOW</th>
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COMMENTS

REVIEWED BAT DATE 25 Apr 90
SKETCH MAP

- 1 mouse collected from large sandy beach
- ¾" cable - possibly boom related
- Low angle pebble beach
- Low angle cobble beach
- Low angle cobble and boulder beach
- Sandy tidal flat with black bear
- Large chain possibly related to booms
- Low angle boulder beach with a ~1m wide band of MSIS about 40m long
- Rainbow films (FLS)
- MSIS
- ST-18-8-22
- ST-18-8-21
- ST-18-8-19 30'
- No oil observed
- No oil observed

LEGEND

- Pi - No Subsurface Oil
- 2 Pi - Subsurface Oil
- CT/CS Continuous Distribution
- CT/BD Broken Distribution
- CT/P Patches Distribution
- CT/S Splashed Distribution
- LLC Lithified Vegetation

Photo location, direction, and number

DATE Apr 23 90

SEGMENT ST/PO-008

SUBDIVISION A

CHECKLIST

- N Arrow
- Apparatus Scale
- Ship/Sub Body
- Oil Dist.
- Width
- Length
- % Cover
- Substrate Character
- Est. HKNAL/H
- SSL
- Pits Location(s)
- Profiles
- Pit Location(s)
- Photo Location(s)
SHORELINE ECOLOGICAL SUMMARY

Segment ST PD-8 Subdivision A Date (mo/day/yr) 4-23-90

B (24 hr) 1630 Biologist MARK CARR

(A) Substrate type and % of segments:
   (1) Bedrock (60) (2) Boulder (15) (3) Cobble (10) (4) Pebble (5) Sand (10) (6) Silt (10)

(B) Overall % cover of biota (% of segment): Dense 90 Moderate 5 Low 5

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

Photographs: Roll No. ST-18-8
Frames 19-23

BARNACLES

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Wildlife Observations/ General Comments:

Harlequin ducks (20), black bear (1), salmonid fry (4-5cm) (200)
Bufflehead (4), NW crow (9), surf scoters (8), mallard duck (8)

Ecological Considerations:

1AB (Salmonid stream) - 2, 1ST (Purse seine area), 4GA (Alaska State Park/Wilderness),
6NN (Sportfishing), 8AA (Sensitive estuary).
ADDENDUM: SUBDIVISION CONSTRAINTS

SEGMENT PD-8 SUBDIVISION A (1 of 1)

WORK WINDOW

Manual Pickup OPEN

ARCHAEOLOGICAL INSPECTION/CONSULTATION REQUIRED.

>>> PHONE 564-3274 (Anchorage) OR 229-1508 (24 hrs.) <<<

APPLICABLE ECOLOGICAL TIME CONSTRAINTS

1A,1B Salmon Stream

ADF&G catalogued anadromous stream (242-42-10430) is present in Subdivision A. No constraint to manual pickup.

1J Purse Seine Hook-off

No constraint to manual pickup.

8AA Sensitive Estuary

No constraint to manual pickup.

OTHER ECOLOGICAL CONSIDERATIONS

No disturbance of stream bed or banks. Restrict boat and air traffic to essential minimum after 6/25. Avoid any unnecessary disturbance or damage to unooled biota and substrate. Sensitive estuary, restrict beach disturbance to essential minimum.

TAG APPROVAL DATE 6/1/90
ADEC Ray Meyer's RN2  EXON
FOSC 00 Rome, consulta DATE 6/2/90
NOAA
USCG

Prepared By: [Signature] Date 5/31/90
SHORELINE EVALUATION

SEGMENT ST/ PD-08 SUBDIVISION A (1 OF 1) DATE 4/23/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
- DFG & G anadromous stream no. 242-42-10430
- 1A Salmon stream mouth – fry outmigration (3/1 to 5/15)
- 1B Salmon stream mouth – spawning (7/10 to 8/31)
- 1J Purse seine area (6/25 to 8/31)
- 4GG Alaska State Parks
- 6NN Recreation: Sportfishing
- 8AA Sensitive Estuary

See attached Ecological Constraint sheet for specific constraints and contacts.

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

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

>>> PHONE 564-3274 (Anchorage) OR 229-1508 (24 hrs.) <<<

SHPO SIGNATURE: [Signature] DATE: 5/10/90

OILING CATEGORIZATION:
- Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 3240 m: No Oil 2267 m
- Subsurface Oil Observed: Yes No X Maximum Depth

RECOMMENDATIONS:
- 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: Collect debris and morose as indicated on sketch map.

TAG APPROVAL DATE: May 5, 1990
- ADEC:
- EXXON:
- NOAA:
- USCG:

DATE: 5/12/90
SHORELINE EVALUATION

SEGMENT ST/ PD-08 SUBDIVISION A (1 OF 1) DATE 4/23/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
ADFG&G anadromous stream no. 242-42-10430
1A Salmon stream mouth - fry outmigration (3/1 to 5/15)
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8AA Sensitive Estuary
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 CONSTRAINT: Consultation and inspection with an Exxon archaeologist is required prior to treatment. Specific on-site monitoring requirements will be determined at that time.

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SHPO SIGNATURE: [Signature] DATE: 5/10/90

OILING CATEGORIZATION:
Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 3240 m: No Oil 2267 m
Subsurface Oil Observed: Yes ___ No X ___ Maximum Depth ______

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

COMMENTS: ________________________________

________________________________________

TAG COMMENTS: Collect debris and mousse as indicated on Sketch Map.

TAG APPROVAL DATE: May 5, 1990
ADEC [Signature] DATE: 5/12/90
EXXON [Signature]
NOAA [Signature]
USCG [Signature]
1991 MAYSAP EVALUATION


ENVIRONMENTAL SENSITIVITIES:
Work Window(s)    OPEN 5/1 - 7/10; RESTRICTED 7/10 - 9/15

Ecological/Constraints (see page two for details) Fish harvest area, Anadromous stream

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

SHPO Signature: [Signature] Date: 6/27/91

RECOMMENDATIONS:

TREATMENT REQUIRED (Y or N)    INITIAL    TAG    FOSC
N
Manual Pickup (Check as Req.)

Spot Washing
Bio-Customblen Only
Bio-Inchipol/Customblen
Other
Other

COMMENTS:

INITIAL:

TAG:

FOSC:

TAG APPROVAL DATE: June 7 1991    FOSC APPROVAL DATE: 6/11/91

ADEC    FOSC
John Bann   [Signature]

EXXON
Neal

USCG    [Signature]

NOAA

E. E. PAGE, CDR, USCG
CHIEF OF STAFF, FOSC
ECOLOGICAL CONSTRAINTS
1991 FIELD ACTIVITIES

Fish Harvest Area: Unlimited treatment unless otherwise directed by ADF&G. Sheen containment/recovery procedures required for mechanical treatment.

Anadromous Stream: Unlimited treatment up to stream bank between May 15 and July 10. ADF&G approval required for work after July 10. Fish Habitat Permit required for instream work. ADF&G approval required for bioremediation within 100 meters of anadromous stream after July 10.
ADEC
NAME: Clara S. Crosby
SIGNATURE: Clara S. Crosby

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

HANDMANAGER
NAME: Jeff Johnson of ADEN
SIGNATURE: Jeff Johnson

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

THE very light to trace amount of oil observed within this subsegment.

No appreciable oil found.

Concur w/other comments... very little oil.

Only minor oil found and picked up.
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### DISTRIBUTION: C = 01-100%; B = 61-90%; P = 11-50%; S = 1-10%; T = <1%

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

PHOTO ROLL & MAYSAP:

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</tbody>
</table>

### NOTES

- Additional notes and observations relevant to the assessment.

---

OG COMMENTS:

"Large area with oil on the surface. Some scattered areas of heavy oil."

Reviewed: RC 6/14
Revised 5/13/91 KG
Oil-Related Comments

A1 A coat of oil was found on some boulders in the upper intertidal zone. Biota are sparse at this level of the intertidal, with scattered barnacles, limpets and littorine snails. Green filamentous algae form a film in patches in this area. The middle to lower zones at this site have a dense cover of Fucus, with moderate mussel densities.

Cleanup Considerations

Some manual pickup was completed during the survey. Additional manual removal, if recommended will not impact the biota of the beach, provided access is restricted to rocky shores away from the clam bed/ eel grass habitats.

General Comments

PD008-A is located inside the entrance to Port Dick, but parts of it may be exposed to moderate waves, especially during storms. The most prominent feature of the subdivision, however, is the protected inner section where an extensive mud/sand/cobble flat occurs. This area forms an extensive clam and mussel bed in the lower zone. The middle zone of nearly the entire subdivision has dense Fucus on cobble, boulder, and bedrock substrata.

WILDLIFE OBSERVATIONS - Completed on all subdivisions

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<th>BIRDS</th>
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</tr>
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<tbody>
<tr>
<td>Eagles</td>
<td>1</td>
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<td>Gulls/Kittiwakes</td>
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<td>Corvids</td>
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<td>Other Birds</td>
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<td>Corvids</td>
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<th>MARINE MAMMALS</th>
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<td>1</td>
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<td>Pinnipeds</td>
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<tr>
<td>Whales</td>
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Shoreline subdivision map showing important biological features attached.
Mussels vary in density, but have their highest abundance along the most exposed bedrock shores of the subdivision, where they form dense patches. Barnacles, limpets, and littorine snails also vary in abundance, and are most common on rocky substrata in the middle to upper zone. Brown algae are dense in the subtidal of exposed areas. Protected waters have dense cover of filamentous and fleshy green algae, brown algae, and some species of red algae in the low zone. Eel grass is abundant throughout the clam bed below the low tide zone.

General Zonation Pattern on PD008-A

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<th>Biota</th>
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<td>Oil</td>
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<td>Bare Rock</td>
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<tr>
<td>Rockweed (Fucus)</td>
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<tr>
<td>Barnacles (Balanus)</td>
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<td>Limpets/Littorine Snails</td>
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<td>Red Algae</td>
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<tr>
<td>Filamentous Green Algae</td>
<td></td>
<td></td>
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<td>++</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>Green Algae (Ulva/other)</td>
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<td></td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>Upright Brown Algae (not Fucus)</td>
<td></td>
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<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>
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Legend: (-) Sparse to rare, (+) Moderate, (*) Abundant

List of Common Species from PD008-A

A. Marine Plants
1. Diatoms, Blue Greens
2. Green Algae - Chlorophyta
   a. Enteromorpha sp., Ulva sp., Urospera sp.
3. Brown Algae - Phaeophyta
   a. Alaria marginata, Agarum fimbriatum, Ectocarpus spp., Fucus distichus, Hildenbrandia sp., Ralfsia sp., Systosiphon lomentaria
4. Red Algae - Rhodophyta
   a. Endocladiad nucifera, Halosefion glandiforme, Millepora carpo, Membranoptera dimorpha, Odonthalia floscosa, Palmaria palmata, Petrocellis sp., Porphyra sp., Rhodomela larix
5. Higher Plants - Zostera marina (eel grass), Leymus mollis (beach rye grass)

II. Marine Animals
1. Sponges - Porifera - Helichondria bowerbanki
2. Anemones - Anthopleura artemisia, Epiactis ritteri, Urticina crassicornis
3. Hydroids - Sertuliridae
4. Flatworms - Platyhelminthes - Polyclads
5. Nemerteans - Ribbon Worms - Euniceonema gracile
6. Polychaete Worms
   a. Neridae - Nereis spp.
   b. Serpulidae - Serpula sp.
   c. Spirorbidae - Spirorbis sp.
7. Peaun worms - Sipunculida - Phascolosoma agassizii
8. Crustaceans
   a. Amphipods - Traskorchestia trasakana
   b. Barnacles - Balanus glandula, Semibalanus cariosus
   c. Crabs - Paguridae (hermit crabs)
   d. Isopods - Cidaria harfordi, Idotea wosnesenski, Gnorimosphaeroma oregonensis
11. **Mollusca**
   a. **Chitons** - *Mopalia mucosa, Tonicella linearata*
   b. **Snails - Gastropods**
      - *Amphissa columbiensis, Littorina sp., Natica clausa, Nucella lamellosa, N. lima, Scarcia dira, Teatrynchus sp.*
   c. **Limpets** - *Lottia personata, L. limatula, Tectura fenestrata, T. persona, T. scutum, Siphonaria thersites*
   e. **Bivalves** - *Chlamys hastata, Clinocardium sp., C. nuttallii, Hiatella arctica, Macoma balthica, Macoma nasuta, Modiolus modiolus, Mya arenaria (soft-shell clam), Mytilus edulis, Pododesmus cepio, Prototheca staminea, Saxidomus giganteus*

12. **Echinoderms**
   b. **Sea stars** - *Dermasterias imbricata, Evasterias truscheli, Leptasterias hexactis, Pycnopodia helianthoides,*
   c. **Sea Cucumbers - Holothurians - Eupentacta sp.*
   d. **Urchins - Strongylocentrotus droebachiensis**


15. **Fishes**
    - *Cottidae*
    - *Stichaeidae - Xiphister atropurpureus, X. mucosus*

III. **Birds** - *Crow (3), Bald Eagle (1), Sandpipers (4), Common merganser (4), Glaucous-winged Gull (3)*
BIO SKETCH MAP
PD008 - A
J.P. BARR
23 MAY 1991
0630 - 0700

[Map with various symbols and text]

Dense Focus
In most of middle to low zone on cobbles, boulders, bedrock

CT on cobbles
- Sparse barnacles, limpets, cleft barnacles, patchy green pelmatozoo aceae
- Dense focus, moderate mussel occur below in middle to low zone
1991 MAYSAP EVALUATION


ENVIRONMENTAL SENSITIVITIES:
Work Window(s) OPEN 5/1 - 7/10; RESTRICTED 7/10 - 9/15

Ecological/Constraints (see page two for details) Fish harvest area, Anadromous stream

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________________________  FOSC____________________________

EXXON_____________________

USCG_______________________

NOAA________________________
ECOLOGICAL CONSTRAINTS
1991 FIELD ACTIVITIES

Fish Harvest Area: Unlimited treatment unless otherwise directed by ADF&G. Sheen containment/recovery procedures required for mechanical treatment.

Anadromous Stream: Unlimited treatment up to stream bank between May 15 and July 10. ADF&G approval required for work after July 10. Fish Habitat Permit required for instream work. ADF&G approval required for bioremediation within 100 meters of anadromous stream after July 10.
THE VARY LIGHT TO TRACE AMT OF OIL
OBSERVED IN THIS SUBSEGMENT.

NO APPRECIABLE OIL FOUND.

CONCUR W/OTHER COMMENTS..... VERY LITTLE OIL.

ONLY traces of oil found and picked up.
<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>
<th>NOTES</th>
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<tbody>
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</tbody>
</table>

DISTRIBUTION: C = 91-100%; B = 81-90%; P = 11-80%; S = 1-10%; T = <1%

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

PHOTO ROLL # MAYBE:

FRAMES:

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

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

OG COMMENTS:

Reviewed: MC 012
Revised: 5/3/91 KE
MAYSAP BIOLOGICAL SUMMARY FORM

TEAM # 4
SEGMENT # PD008
SUBDIVISION A
SEA STATE Calm

DATE/TIME May 23, 1991 0530 - 0705
TIDAL HEIGHT (Range) +1.9 => +3.8

BIOLOGIST JIM BARRY
WIND SPEED/DIRECTION Calm

COMMENTS / OBSERVATIONS - OILED SUBDIVISIONS

Oil-Related Comments

A1 A coat of oil was found on some boulders in the upper intertidal zone. Biota are sparse at this level of the intertidal, with scattered barnacles, limpets and littorine snails. Green filamentous algae form a film in patches in this area. The middle to lower zones at this site have a dense cover of Fucus, with moderate mussels densities.

Cleanup Considerations

Some manual pickup was completed during the survey. Additional manual removal, if recommended will not impact the biota of the beach, provided access is restricted to rocky shores away from the clam bed/eel grass habitats.

General Comments

PD008-A is located inside the entrance to Port Dick, but parts of it may be exposed to moderate waves, especially during storms. The most prominent feature of the subdivision, however, is the protected inner section where an extensive mud/sand/cobble flat occurs. This area forms an extensive clam and mussel bed in the lower zone. The middle zone of nearly the entire subdivision has dense Fucus on cobble, boulder, and bedrock substrata.

(continued)

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</tr>
<tr>
<td>Corvids</td>
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<td>Pinnipeds (specify)</td>
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Shoreline subdivision map showing important biological features attached.
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<tr>
<td>Bare Rock</td>
<td>-</td>
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<tr>
<td>Rockweed (Fucus)</td>
<td>-</td>
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<tr>
<td>Barnacles (Balanus)</td>
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<td>Mussels (Mytilus)</td>
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<tr>
<td>Red Algae</td>
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<td>Eel Grass</td>
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<td>Clams</td>
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Legend: (-) Sparse to rare, (+) Moderate, (*) Abundant

**List of Common Species from PD008-A**

**A. Marine Plants**
1. Diatoms - Blue Greens
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   - Enteromorpha sp., Ulva sp., Urospora sp.
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   - Aralia marginata, Agardha filiformis, Ectocarpus spp., Fucus distichus, Hildenbrandia sp., Ralfsia sp., Sycosiphon lomentaria
4. Red Algae - Rhodophyta
   - Endocladia muscicola, Halomiacon gladiiforme, Mastocarpus sp., Membranoptera dimorpha, Odonthalia floccosa, Palmaria palmata, Petrocelis sp., Porphyra sp., Rhodomela larix
5. Higher Plants - Zostera marina (eel grass), Leymus mollis (beach rye grass)

**II. Marine Animals**
1. Sponges - Porifera - Halichondria bowerbankii
2. Anemones - Anthopleura artemesia, Epialtis ritteri, Urticina crassicornis
3. Hydrozoa - Sartulariidae
4. Flatworms - Platyhelminthes - Polyclada
5. Hemertean Worms - Ribbon Worms - Amphipecten gracile
7. Serpulidae - Serpula sp.
8. Spirorbididae - Spirorbis sp.
9. Pea nut worm - Sipunculida - Heteroscolopina agassizii
    - Barnacles - Balanus glandula, Semibalanus cariosus
    - Crabs - Paguridae (hermit crabs),
    - Isopods - Cereis horfordi, Idotea wosnesenskii, Gnirinomorphora oregonensis
11. **Molluscs**
   a. Chitons - Hopalia mucosa, Tonicella lineata
   b. Snails - Gastropods
      Amphidiscus columbianus, Littorina sp., Natica clausa, Nucella lamellosa, *N. lima*, *Searlesia dire*, *Tachyrhynchus sp.*

12. **Echinoderms**
   b. Sea stars - Derasterias imbricata, Evesasterias truschelli, Leptasterias hexactis, Pycnopodia helianthoides
   c. See Cucumbers - Holothurians - *Eupentacta sp.*
   d. Urchins - *Strongylocentrotus droebachiensis*


15. **Fishes**
   Cottidae
   Stichaeidae - *Xiphister atropurpureus*, *X. mucosus*

III. **Birds** - Crow (3), Bald Eagle (1), Sandpipers (4), Common merganser (4), Glaucaus-winged Gull (3)
REGION: KENAI

SEGMENT: ST/PD-10

SUBDIVISIONS: A (1 OF 1)
SHORELINE EVALUATION

SEGMENT ST/ PD-010 SUBDIVISION A (1 OF 1) DATE 4/26/90

SEGMNENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:

ST-3 All Bald Eagle nests (3/1 to 6/1)
    Active Bald Eagle nests (3/1 to 9/1)
1A Salmon stream mouth - fry outmigration (3/1 to 5/15)
1B Salmon stream mouth - spawning (7/10 to 8/1)
1J Purse seine area (7/20 to 9/30)
4GA State Marine Park Alaska State Parks
6NN Recreation: Sportfishing
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 cultural resources are uncovered during shoreline treatment, stop work in the vicinity, mark the location of the find and contact Exxon's Cultural Resource Program immediately (564-3274 (Anchorage) or 229-1508 (24 hrs.)).

SHPO SIGNATURE: ______________________ DATE: ______________________

OILING CATEGORIZATION:

Wide 28 m: Medium 3 m: Narrow 0 m: V. Light 0 m: No Oil 8766 m
Subsurface Oil Observed: Yes X No ___ Maximum Depth 12 cm

RECOMMENDATIONS:

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

COMMENTS: Recommended treatment includes: 1) manual pick up of mousse patties and 2) manual removal of tarmats in areas indicated on sketch map. Work between 6/1 to 7/10 with approval of USFWS regarding eagle nest.

TAG COMMENTS:

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

TAG APPROVAL DATE: __________

ADEC EXXON FOSC: __________ DATE: __________
NOAA USCG
PWS, SEWARD AND HOMER ECOLOGICAL CONSTRAINTS

1A Salmon stream mouth - stream migration (01/1 to 6/15)
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 without authorization from ADF&G. No use of methods which might affect nearshore oil or toxicity levels, such as hot water wash or inipol application, prior to July 1 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. In any case, contact ADF&G Habitat Division for treatment for consultation and/or permit application.

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

1C Salmon fry nursery area (04/1 to 7/21)

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 Feltz 424-3214

1D Esther Hatchery release (04/15 to 6/15)
1E Main Bay Hatchery release (04/20 to 6/15)
1F Sawmill Bay Hatchery release (04/15 to 6/1)
1G Cannery Creek Hatchery release (04/21 to 6/1)
1H Remote release site

No use of methods which might affect nearshore oil or toxicity levels, such as hot water wash or inipol application, prior to at least July 1 unless authorized by ADF&G and/or PWS Aquaculture Association. 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 or PWS Aquaculture Association for confirmation and authorization.

AGENCY CONTACT PERSON: 1E 1F 1G PWS Aquaculture Association John McMillan or Bruce Suzomoto 424-7511

1J Gill net area (06/7 to 8/31)
1J Purse seine area (7/20 to 9/30)
1K Purse seine hook-oft (7/20 to 9/30)
1L Set net sites (06/11 to 7/25)

Contact ADF&G for specific dates, locations and constraints. 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 James Brady 424-3212

2M Herring spawning (04/1 to 6/15)

Contact ADF&G for confirmation - dates and locations may vary. Restrict boat traffic to essential minimum. Avoid damage to unseeded intertidal and subtidal algae and seagrass. 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 Biggs 424-2335

3R 3P 3Q, 3Q

Harbor seal and sea lion pupping (05/15 to 7/1)
Harbor seal and sea lion molting (08/15 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 566-7235

ADF&G Don Calkins 267-2403

5R Seabird colony (05/1 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 766-3377

5S Shorebird/waterfowl concentration (04/1 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 766-3377

ADF&G Tom Potho 267-2206

5T All Bald Eagle nests (03/1 to 6/1)
Active Bald Eagle nests (03/1 to 6/1)

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 766-3377

6U Recreation: Tent sites (06/1 to 9/15)
Anchorage (06/1 to 9/15)
Forest Service cabins (06/1 to 9/15)
Lodge (06/1 to 9/15)
Special use destination
Sport Fishing

7Z Subsistence area: Salmon harvesting (05/1 to 9/30)

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 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

SUBDIVISION: A  DATE 4-26-90

NAME  Donald A. MacDonald  SIGNATURE  Donald A. MacDonald

[Box marked] NO TREATMENT RECOMMENDED  [Box marked] TREATMENT SUGGESTED

COMMENTS

The only oiling that was observed on the small peninsula in the southeast section of the segment. The intertidal zone was very healthy with a wide diversity of plant and animal life, as usual all members of the team were in basic agreement as reported on the other form.

NAME  John R. Reed  SIGNATURE  John R. Reed

[Box marked] NO TREATMENT RECOMMENDED  [Box marked] TREATMENT SUGGESTED

COMMENTS

I am recommending manual cleanup of broken asphalt pavement on the eastern beach of the peninsula in the S/E end of the segment. This is a 30 x 25 m patch of asphalt in a boulder and cobble beach. Some of the boulders will need to be turned over for better access to the pavement. I agree with data on SSAT form.

NAME  Shariie Methven-Jones  SIGNATURE  Shariie Methven-Jones

[Box marked] NO TREATMENT RECOMMENDED  [Box marked] TREATMENT SUGGESTED

COMMENTS

Port Dick-West Arm Segment PD10 is within Kachemak Bay State Wilderness Park, and has high recreation & wildlife resource values. Two study sites should be removed after project, several tent sites and good camping sites within segment. One cultural site is east of segment. The one boulder and cobble beach with oil we found is located on the east of the segment which we recommend manual removal of oil and moving the rocks over. I agree with except forms. The area is used with sport fishing and commercial fishing.
SHORELINE OILING SUMMARY

NOAA Mac Donald
USGS Mac Donald
SEGMENT ST/ PD 10

Big Carol LAND REP. Methuen-Toney
SUBDIVISION A (LER 1)

N. Boyer ADEC Reid
TIME 7:15 to 11:10
DATE Apr/26/90

TIDE LEVEL -1.5 to +0.5

EST. SUBDIVISION LENGTH: 6.19 m

UPLANDS DESCRIPTION: 
- Gras
- Forest
- Rock
- Other

SURVEYED FROM: 
- Foot
- Boat
- Helo

SURFACE SEDIMENTS: 
- 40% B
- 20% C
- 10% P
- 30% S

SLOPE: Lang 60% Hang 0% Vert 40%

WAVE EXPOSURE: 
- Low
- Med
- High

OIL CATEGORY LENGTH: W 25 m M 5 m N 0 m V 0 m NO 6079 m

SURFACE OIL

<table>
<thead>
<tr>
<th>CHARACTER</th>
<th>DISTRIBUTION</th>
<th>OIL / FILM COLOR</th>
<th>IMPACTED ZONES</th>
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<tbody>
<tr>
<td>ASPHALT PAVEMENT</td>
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</tr>
<tr>
<td>NO OIL</td>
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</table>

PAVEMENT H ∅ 750 sq. m by 8 cm

PATTIES/TAR BALLS 0 BAGS

NEAR SHORE SHEEN? NO BR RW SL TL

OILED DEBRIS NO AMOUNT SM MD LG

DID YOU COLLECT DEBRIS? YES NO

Logs:

Vegetation

Trash Debris

TYPE TAR BALL

# BAGS 1

Photographs:

Roll No. 57-18-9
Frames 1-5

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>SHEEN (Y/N)</th>
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COMMENTS

ST/P010A comprises several low angle pebble beaches of varying size. The headland extending eastward of pit #8 has the only oil observed in this segment. The shoreline south of this segment was examined because oil was observed and there is a cultural site.
<table>
<thead>
<tr>
<th>PIT NO.</th>
<th>PIT DEPTH (cm)</th>
<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED INTERVAL (cm)</th>
<th>BELOW</th>
<th>OIL / FILM COLOR</th>
<th>PIT ZONE</th>
<th>ANALYSIS SHEEN (IN)</th>
<th>SURFACE SUBSURFACE SEDIMENTS</th>
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<td>7</td>
<td>2.5</td>
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<td>1.5</td>
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COMMENTS
### Shoreline Ecological Summary

**Comment:** ST / PD-10  Subdivision A  Date (mo/day/yr) 4-20-90

**Time (24 hr):** 07:15  **Biologist:** Mark Carr

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

<table>
<thead>
<tr>
<th></th>
<th>Bedrock</th>
<th>Boulder</th>
<th>Cobble</th>
<th>Pebble</th>
<th>Sand</th>
<th>Silt</th>
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<tbody>
<tr>
<td>1</td>
<td>30%</td>
<td>20%</td>
<td>10%</td>
<td>30%</td>
<td>0%</td>
<td>0%</td>
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</table>

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

- Dense: 80%
- Moderate: 15%
- Low: 5%

#### 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>
<th>Phototgraphs:</th>
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</thead>
<tbody>
<tr>
<td>Bed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Roll No. 5T-18-9</td>
</tr>
<tr>
<td></td>
<td>1U</td>
<td>1M</td>
<td>1L</td>
<td></td>
<td>Frames 1-5</td>
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### Mytilus

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<th>Sparse</th>
<th>Rare</th>
<th>Phototgraphs:</th>
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<td>1M</td>
<td>1L</td>
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<td>Frames 1-5</td>
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### Gastropods

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<th>Rare</th>
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<tr>
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<td>1U</td>
<td>1M</td>
<td>1L</td>
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<td>Frames 1-5</td>
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### Fucus

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<th>Rare</th>
<th>Phototgraphs:</th>
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<td>Roll No. 5T-18-9</td>
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<td>1U</td>
<td>1M</td>
<td>1L</td>
<td></td>
<td>Frames 1-5</td>
</tr>
</tbody>
</table>

### Wildlife Observations/ General Comments:

- Bald eagle (5) including 1 immature, ruby-crowned kinglet (song), mink tracks (1), varied thrush (song), golden-eye (50), herring gull (1), harlequin ducks (23)

### Biological Considerations:

- Mallard duck (3), glaucous-winged gull (5)

- First observation of "recruited" (<2 mm) Mytilus and littorines (<2 mm) inhabiting oil stained substratum. Recruits occupied mussel bed imbedded in asphalt:

  ST (bald eagle nest) - 21 T (D)
No eagle nests observed, no other ecologically sensitive information to map.
Reprint this part at 1"=500'. I will re-plot.

Map Key: KEN-PD-10a
Name: Sawyer
Date: 4-26-90
1991 MAYSAP EVALUATION


ENVIRONMENTAL SENSITIVITIES:
Work Window(s)  RESTRICTED 3/1 - 9/1

Ecological/Constraints (see page two for details)  Eagle nest,
Fish harvest area

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

SHPO Signature:  [Signature]  Date: 6/07/91

RECOMMENDATIONS:

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

COMMENTS:
INITIAL:

TAG:

FOSC:

TAG APPROVAL DATE: June 7, 1991  FOSC APPROVAL DATE: 6/11/91

ADEC  [Signature]  FOSC  [Signature]  E. E. PAGE, CDR, USCG
EXXON  [Signature]  CHIEF OF STAFF, FOSC
USCG  [Signature]
NOAA  [Signature]
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.

Fish Harvest Area: Unlimited treatment unless otherwise directed by ADF&G. Sheen containment/recovery procedures required for mechanical treatment.
The oil within this segment is under interstitial small patches — AP, HSOR, MSOR — A2 + lg mussel bed in lower intertidal was tiled - CSSK-This was not observed on this survey due to the height of the tide (Please reference ADEC Data-Transsect Site)

No appreciable oil found. I tried to locate the A2 area wading in the water and grabbing with a shovel and was unable to locate. This area is land totally on the ADEC Reps memory.

Concur with DEC comments. AP, HSOR, MSOR that was found was picked up. Mussel beds would be unreasonably disturbed looking for more.

Only mussel bed found and picked up most of it.
**MAYSAP SHORELINE OILING SUMMARY**

**TIME:** 07:10 to 08:30  
**TIDE LEVEL:** 4.1 ft. to 5.8 ft.  
**ENERGY LEVEL:** H  M  L  
**SURVEYED FROM:** FOOT  BOAT  HELO  
**WEATHER:** SUN  CLOUDS  FOG  RAIN  SNOW  
**TOTAL LENGTH SHORELINE SURVEYED:** 1,600 m  
**NEAR SHORE SHEEN:**  
**EST. OIL CATEGORY LENGTH:** W  m  M  m  N  m  V  m  45 m  565 m  819 m  

<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>
<th>NOTES</th>
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<tr>
<td>A1</td>
<td></td>
<td>cm/3d</td>
<td>m</td>
<td>m</td>
<td>m</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>A2</td>
<td></td>
<td>Bedwax</td>
<td>m</td>
<td>m</td>
<td>m</td>
<td>x</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

**PHOTO ROLL #: MAYSAP-4(t/u) 7 FRAMES 23-24**

**OG COMMENTS:**  
Two bedrock inlets connected by ph/ib/ib' tombscree  
Southern tombscree oils oil on bottom side, which was washed. All  
lab tests were clean.  no.  ADEC person reported on arrival mud bed  
in the bottom tombscree (water side) but this was no longer in .

**REVISED 5/21/91 GC**
MAYSAP BIOLOGICAL SUMMARY FORM

TEAM # 4  DATE/TIME May 23, 1991 0715 - 0800
SEGMENT # PD010  TIDAL HEIGHT (Range) +4.1 => +5.7
SUBDIVISION A  BIOLOGIST JIM BARRY
SEA STATE Calm  WIND SPEED/DIRECTION Calm

COMMENTS / OBSERVATIONS - OILED SUBDIVISIONS

Oil-Related Comments

A1 This area has a CT to MSOR in patches in the upper zone of the beach. The most abundant biota at this location are barnacles, limpets, and littorine snails, which are all moderate in abundance. The oil location is about 5 to 10 ft from the upper edge of the mussel bed.

A2 Sparse Barnacles, Limpets, Littorinids

Cleanup Considerations

Some manual cleanup was done on this beach during the survey. Additional manual cleanup will not harm the biota at the site, unless trampling or other disruption of the mussel bed occurs. Cleanup workers, if recommended, should simply walk around the mussel bed for beach access.

General Comments

The survey visited to very small coves along this subdivision where previous significant oiling was reported. Although some oil remains, there is ample evidence of recovery. The mussel bed in the middle to low zone has dense cover of young mussels, indicating a large recent recruitment event. This is the most significant biological feature of the cove. Below this zone Fucus is abundant, with moderate to dense cover over the intertidal boulders and bedrock walls. Barnacles are abundant above the mussel zone.

WILDLIFE OBSERVATIONS - Completed on all subdivisions

<table>
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<th>BIRDS</th>
<th># OF SPECIES</th>
<th>TOTAL BIRD</th>
<th>FISH OBSERVED SPECIES PRESENT</th>
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<td>Waterfowl</td>
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<td>Gulls/Kittiwakes</td>
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<td>Otters</td>
<td></td>
<td>River Otter - 4 (1A, 3 juveniles?)</td>
<td></td>
</tr>
<tr>
<td>Pinnipeds (specify)</td>
<td></td>
<td>Whales (specify)</td>
<td></td>
</tr>
</tbody>
</table>

Shoreline subdivision map showing important biological features attached.
PD010-A Biological Summary, continued

Common Species on PD010-A

A. Marine Plants
1. Diatoms, Blue Greens
2. Green Algae - Chlorophyta - Enteromorpha sp., Ulva sp., Urospora sp.
5. Higher Plants - Leymus mollis (beach rye grass)

II. Marine Animals
1. Sponges - Porifera - Helichondria bowerbanki?,
2. Anemones - Anthopleura artemesia, Euplectis ritteri, Urticina crassicornis,
3. Hydroids - Sertulariidae,
4. Flatworms - Platynematidae - Polyclads
5. Nemerteans Worms - Ribbon Worms - Enplectonema gracile
   Serpulidae - Serpula sp.
   Spiorbididae - Spirobis sp.
9. Peanut Worms - Sipunculids - Phascolosoma agassizii
10. Crustaceans -
    a. Amphipods - Traskorchestia traskiana
    b. Barnacles - Balanus glandula, Semibalanus cariosus
    c. Crabs - Paguridae (hermit crabs),
    d. Isopods - Cithara barfordi, Idotea wosnesenskii, Gnorimosphaeroma oregonensis
11. Molluscs -
    a. Chitons - Mopalia mucosa, Tonicella lineata,
    b. Snails - Gastropods
       Amphissa columbiana, Littorina sp., Natica clausa, Nucella lamellosa, N. lima, Searsia dira, Teothyrella sp.
    c. Limpets - Lottia persone, L. limatula, Tecta fenestrata, T. persona, T. scutum, Siphonaria thesrites
    d. Bivalves - Mytilus edulis, Pododesmus cepio, Prototheca stamnea
12. Echinoderms -
    a. Sea stars - Dermoasterias imbricata, Evasterias truschelii, Leptasterias hexactis, Pisaster ochraceus
    b. Sea Cucumbers - Holothurians - Eupentacta sp.
    d. Urchins - Strongylocentrotus droebachiensis
15. Fishes -
    Cottidae - Xiphister atroruodeneus, X. mucosus

III. Birds - Bald Eagle (1), Black Oystercatcher (2)
PD010 A

Subdivision Field Map
Map Key: KENPD010Ab
Name: John Sample
Date: May 23/91
Date Entered:

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

ADEC Subsegment Length: 8700m
METERS

AK State Plane Zone 4
April 1991

Drawn 5/31/91 RC
Revised: No 6/1/91
1991 MAYSAP EVALUATION


ENVIRONMENTAL SENSITIVITIES:
Work Window(s)  RESTRICTED 3/1 - 9/1

Ecological/Constraints (see page two for details)  Eagle nest, Fish harvest area

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  ___________________________
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.

**Fish Harvest Area**: Unlimited treatment unless otherwise directed by ADF&G. Sheen containment/recovery procedures required for mechanical treatment.
The oil within this segment is under "interstitial small patches — AP, H50R, M60R — A2 + CL mud bed in lower intertidal was silted — 150R. This was not observed on this survey due to the height of the tide. (Please reference ADEC data, transect site)

No appreciable oil found. I tried to locate the A2 area wading in the water and grabbing with a shovel and was unable to locate. This area is level totally on the ADEC map, memory.

Connected with DEC comments. AP, H50R, M50R that was found was picked up. Muscle beds would be unreasonably disturbed looking for more.

Only minor oil found and picked up most of it.
TEAM NO. 7
OG: Joe Spence
ADEC: Crook
EXON: George St. John
BIO: Barry
LANDMANAGER: Johnson
USCG/NOAA: Madeo/Brandal
DATE: FRI 1-22-91
SEGMENT: BD 10
SUBDIVISION: A
TIME: 07:10 to 08:05
TIDE LEVEL: 6.1 ft. to 5.8 ft.
ENERGY LEVEL: H M L
SURVEYED FROM: FOOT
WEATHER: SUN
TOTAL LENGTH SHORELINE SURVEYED: 600 m
NEAR SHORE SHEEN: BR
EST. OIL CATEGORY LENGTH: W _ m M _ m N _ m VL _ m NO _ m US _ m

<table>
<thead>
<tr>
<th>L C</th>
<th>SURFACE OIL CHARACTER</th>
<th>SURFACE SEDIMENT TYPE</th>
<th>SHORE SLOPE</th>
<th>WIDTH</th>
<th>LENGTH</th>
<th>ZONE</th>
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<tr>
<td>A</td>
<td>S S</td>
<td>S</td>
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<td>6</td>
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<tr>
<td>B</td>
<td>S</td>
<td>Beavac</td>
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<td>30</td>
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DISTRIBUTION: C = 61-100%; B = 51-60%; P = 41-50%; S = 21-30%; T = <10%
SLOPE: V = VERTICAL; H = HIGH ANGLE; M = MEDIUM ANGLE; L = LOW ANGLE
PHOTO ROLL # MAYBAP- 4 (II) - 7 FRAMES 23-24
PIT NO. DEPTH (cm) | SUBSURFACE OIL CHARACTER | OILED ZONE | CLEAN BELOW | H2O LEVEL | SHEEN COLOR | PIT-ZONE | SURFACE-SUBSURFACE SEDIMENTS |
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</table>

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

OG COMMENTS:
Two bedrock interspersed by P/1cl/bo formations. Small streaks of oil on eastern side, which was seaward. All tr 5 areas are clean 5 oil. ADEC person reported on oiled munb bed. No. 2 bedrock formation (waterfall oil) but was not sure. The bedrock should be removed.
Common Species on PD010-A

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

II. Marine Animals
1. Sponges - Porifera - Helichodria bowenbanki?
2. Anemones - Anthopleura artemesia, Epiactis ritteri, Urticina crassicornis,
3. Hydroids - Sertulariidae,
4. Flatworms - Platynematidae - Polyclads
5. Nematode Worms - Ribbons Worms - Enoplexema gracile
6. Polychaete Worms
   Nereidae - Nereis spp.
   Serpulidae - Serpula sp.
   Spionidae - Spionidae
9. Peanut worms - Sipunculida - Phascolosoma agassizii
10. Molluscs
    a. Chitons - Hopalia muco, Tonicella lineata,
    b. Snails - Gastropods
       Amphissa columbiana, Littorina sp., Natica clausa, Nucella lamellosa, N. lima, Seasles,
       Turridae, Tachyrynchus sp.
    c. Limpets - Lottia persona, L. limatula, Tectura fenestrata, T. persona, T. acuta, Siphonaria thersites
    d. Bivalves - Mytilus edulis, Pododesmus cepio, Prototheca staminea
12. Echinodermes
    b. Sea stars - Deasterias labrata, Evasterias truculita, Leptasterias hexactis, Pisaster ochraceus
    c. Sea Cucumbers - Holothurians - Eupentacta sp.
    d. Urchins - Strongylocentrotus droebachiensis
15. Fishes
    Cottidae - Xiphister atropurpureus, X. mucosus

III. Birds - Bald Eagle (1), Black Oystercatcher (2)
Oil-Related Comments

A1 This area has a CT to MSOR in patches in the upper zone of the beach. The most abundant biota at this location are barnacles, limpets, and littorine snails, which are all moderate in abundance. The oil location is about 5 to 10 ft from the upper edge of the mussel bed.

A2 Sparse barnacles, limpets, littorines

Cleanup considerations

Some manual cleanup was done on this beach during the survey. Additional manual cleanup will not harm the biota at the site, unless trampling or other disruption of the mussel bed occurs. Cleanup workers, if recommended, should simply walk around the mussel bed for beach access.

General Comments

The survey visited to very small coves along this subdivision where previous significant oiling was reported. Although some oil remains, there is ample evidence of recovery. The mussel bed in the middle to low zone has dense cover of young mussels, indicating a large recent recruitment event. This is the most significant biological feature of the cove. Below this zone Fucus is abundant, with moderate to dense cover over the intertidal boulders and bedrock walls. Barnacles are abundant above the mussel zone.

WILDLIFE OBSERVATIONS - Completed on all subdivisions

<table>
<thead>
<tr>
<th>BIRDS</th>
<th># OF SPECIES</th>
<th>TOTAL BIRD</th>
<th>FISH OBSERVED SPECIES PRESENT</th>
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<tr>
<td>Seabirds</td>
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<td>Waterfowl</td>
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<tr>
<td>Gulls/Kittiwakes</td>
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<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>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>MARINE MAMMALS OBSERVED</th>
<th># OBSERVED</th>
<th>LAND MAMMALS SPECIES</th>
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</thead>
<tbody>
<tr>
<td>Sea Otters</td>
<td></td>
<td>River Otter - 4 (1A, 3 juveniles?)</td>
</tr>
<tr>
<td>Pinnipeds (specify)</td>
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<tr>
<td>Whales (specify)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Shoreline subdivision map showing important biological features attached.
CT - BARNACLES SPARSE
LITTORINES, LIMPETS SPARSE

A2

A1

MUSSELS DENSE
BARNACLES, LIMPETS
LITTORINES SPARSE
MUSSELS DENSE
BARE AREA
GREEN ALGAL FILM

BIO 10

PEO-0-A
J.P. Barley
23.04.91
071-0602
BIO SKETCH MAP
PDOCIO - A
JP BARRY

BERN
MUSHROOM
BED

BARNACLES, LITOCRANID LIMPETS
ADDENDUM: SUBDIVISION CONSTRAINTS

SEGMENT PD-10 SUBDIVISION A

WORK WINDOW

<table>
<thead>
<tr>
<th>Manual Pickup</th>
<th>Open</th>
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<tbody>
<tr>
<td>Tarmat Removal</td>
<td></td>
</tr>
<tr>
<td>Bioremediation</td>
<td>WORK PRIOR TO 7/20</td>
</tr>
</tbody>
</table>

ARCHAEOLOGICAL STANDARD CONSTRAINT

If cultural resources are uncovered, PHONE 564-3274.

APPLICABLE ECOLOGICAL TIME CONSTRAINTS

1A,1B Salmon Stream  An ADF&G uncatalogued anadromous stream is in Subdivision A and more than 100m from work site. No constraint to manual pickup, tarmat removal and bioremediation.

1J Purse Seine Area  Closed to bioremediation after 7/20. No constraint to manual pickup and tarmat removal.

OTHER ECOLOGICAL CONSIDERATIONS

No disturbance to stream bed or banks. No flushing of pollutants or sediments into stream drainage; do not allow nihp to enter stream flow. On-site examination and consultation by ADF&G monitor is required prior to bioremediation in order to authorize a setback distance from the stream during chemical application; if ADF&G monitor's presence is impossible, authorization may be given by the ADEC monitor. Avoid any unnecessary disturbance or damage to uncowed biota and substrate.

FOSC  Date 6-19-90
Prepared by  Date 6/16/90
SHORELINE EVALUATION

SEGMENT ST/ PD-010 SUBDIVISION A (1 OF 1) DATE 4/26/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:

5T-3 All Bald Eagle nests (3/1 to 6/1)
Active Bald Eagle nests (3/1 to 9/1)
1A Salmon stream mouth - fry outmigration (3/1 to 5/15)
1B Salmon stream mouth - spawning (7/10 to 8/31)
1J Purse seine area (7/20 to 9/30)
4GA State Marine Park Alaska State Parks
6NN Recreation: Sportfishing
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 cultural resources are uncovered during shoreline treatment, stop work in the vicinity, mark the location of the find and contact Exxon's Cultural Resource Program immediately (564-3274 (Anchorage) or 229-1508 (24 hrs.)).

SHPO SIGNATURE: Date: 5/25/90

OILING CATEGORIZATION:

Wide 28 m; Medium 3 m; Narrow 0 m; V.Light 0 m; No Oil 8766 m
Subsurface Oil Observed: Yes X No Maximum Depth 12 cm

RECOMMENDATIONS:

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

COMMENTS: Recommended treatment includes: 1) manual pick up of mousse patties and 2) manual removal of tarmats in areas indicated on sketch map. Work between 6/1 to 7/10 with approval of USFWS regarding eagle nest.

SEE CONSTRAINTS ADDENDUM DATED 6/16/90

TAG COMMENTS:

Avoid dense mussel beds during application of customel.

TAG APPROVAL DATE: 5/24/90
ADEC Exxon NOAA USCG
Date: May 25 '90
REGION: KENAI

SEGMENT: ST/PD-11

SUBDIVISIONS: A (1 OF 1)
SHORELINE EVALUATION

SEGMENT ST/ PD-11 SUBDIVISION A (1 OF 1) DATE 4/8/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
1A Salmon stream mouth - fry outmigration (3/1 to 5/15)
1B Salmon stream mouth - spawning (7/10 to 8/31)
1J Purse seine area (7/20 to 9/30)
8AA Sensitive Estuary
4GG Alaska State Wilderness Park
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 0 m: Narrow 0 m: V.Light 0 m: No Oil 11443 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 ___________________________ DATE: ____________

EXXON ___________________________ FOSC: ____________ DATE: ____________

NOAA ____________________________
USCG ____________________________
PWS, SEWARD AND HOMER ECOLOGICAL CONSTRAINTS

1A
Salmon stream mouth - fry outmigration (3/1 to 5/15)
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. Contact ADF&G Habitat Division prior to treatment for permits.

1B

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 (4/15 to 6/1)

1G
Cannery Creek Hatchery release (4/21 to 6/1)

1H
Remote release sites

1I
Gill net area (8/7 to 8/31)

1J
Purse seine area (7/20 to 9/30)

1K
Purse seine hook-off (7/20 to 9/30)

1L
Set net sites (8/11 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 (5/15 to 7/11)

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.

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

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.
NO TREATMENT RECOMMENDED  □ TREATMENT SUGGESTED

COMMENTS

We looked at all the likely areas for deposition of oil and failed to find any. The delta platform showed evidence of reworking on the seaward edge, but the landward section is very low energy. The subtidal had abundant fauna and a rich, diverse algal growth and seagrass.

NO TREATMENT RECOMMENDED  □ TREATMENT SUGGESTED

COMMENTS

This is a large segment with a lot of vertical cliffs with small pocket beaches mixed in, and also a large intertidal delta at the head of the bay. No oil was observed in this segment. I have read and agree with all data on S.S. Arp.

NO TREATMENT RECOMMENDED  □ TREATMENT SUGGESTED

COMMENTS

I concur with assessment. We skidded the segment by skiff, south to North, made landings on 2 small beaches, walked the intertidal delta in Taylor Bay, and checked the beaches on the east side of Taylor Bay, without finding oil. I recommend checking past records to determine when cleanup/treatment has occurred exactly and impact that location specifically. If tar mats are found, I recommend manual removal by shovel. No oiled debris.

REVISION NO. 02/21/90
SHORELINE OILING SUMMARY

OG  Manor  USCG  NOAA  Michel  SEGMENT STI  PD-11
BIO  Carr  LAND REP  Johnson - NR  SUBDIVISION  A
EXXON  Bayer  ADEC  Reed  TIME  4:35  to  6:50
TEAM NO.:  18  TIDE LEVEL:  +6  10  +1  DATE  7/14/90
DIST. SUBDIVISION LENGTH:  14,029  m  ☑  Sun  ☐  Clouds  ☐  Fog  ☐  Rain  ☐  Snow
PLAINS DESCRIPTION:  ☑  Grass  ☐  Forest  ☐  Rock
SURVEYED FROM:  ☑  Foot  ☐  Boat  ☐  Helo  WORKING DIRECTION:  S  to  N
SURFACE SEDIMENTS:  R  20%  B  15%  C  25%  P  25%  G  5%  S  5%  M  5%  V  0%  O  0%
SLOPE:  Lang  40%  Hang  20%  Ven  20%  WAVE EXPOSURE:  ☑  Low  ☐  Med  ☑  High
OIL CATEGORY LENGTH:  W  0  m  M  0  m  N  0  m  V  0  m  O  0  m  NO  14,029  m

SURFACE OIL

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<th>DISTRIBUTION</th>
<th>OIL / FILM COLOR</th>
<th>IMPACTED ZONES</th>
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<td>NO OIL</td>
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</table>

PAVEMENT:  H  F  S  O  sq. m by O cm
PATTIES / TARBALLS: O BAGS
NEAR SHORE SHEEN?:  NO  BR  RW  SL  TL

SUBSURFACE OIL

<table>
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<th>PIT NO.</th>
<th>PIT DEPTH (cm)</th>
<th>SUBSURFACE OIL CHARACTER</th>
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COMMENTS: Segment PD-11 is a diverse shoreline that includes vertical sea cliffs, cobble/pebble pocket beaches, as well as several large, bay-head deltas. We made 2 landings on pocket beaches along the southwest section of PD-11 and failed to find any trace of oil. Six of us searched the large delta surface at the NW end of the segment and failed to spot any oil. We washed all the pebble-cobble-mud beaches and delta on the NE end of the segment and failed to find oil. This is a biologically diverse and geologically spectacular area.

REVIEWED 7A  DATE  12/15/90
No sketch
SHORELINE ECOLOGICAL SUMMARY

Segment ST / PD-11 Subdivision A (1 of 2 SHEETS) Date (mo / day / yr) 4/8/90

Time (24 hr) 1635 Biologist M. CAIR

Substrate type and % of segments:

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

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 DONE

BARNACLES

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* Wildlife Observations/General Comments:
Cobble, pebble and sand substrates comprise back bay tidal flats; bedrock and boulder line the western length of bay.

Ecological Considerations:
Note that small cobble beaches along western length of bay are comprised of well-rounded rocks indicative of hardly wave action. Consequently, no organisms were observed there other than mussels (3) and barnacles (5) restricted to a few very large boulders. (5= sparse).

* see page 2.
### SHORELINE ECOLOGICAL SUMMARY

**Segment ST:** PD-11  
**Subdivision:** A  
**Sheet 2 of 2**  
**Date (mo/day/yr):** 4/8/80

**Biologist:** M. Carr

**Biologist:** (24 hr) 1435

(A) Substrate type and % of segment:
- 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);
- Juveniles / adults (X)
- New settlement (3)

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#### Wildlife Observations/ General Comments:
- **Comments:** (8) Red-faced (1) Polycystic
- **Glaciers:** (100) Glaciers (100)
- **Ecological Considerations:** (80) Scaup (common goldeneye) (80)

#### Sensitivity Code Information
- **Unavaiable!**
OIL MAP

XXX Wide

/// Medium

--- Narrow

TTTT Very Light

0000 No Oil

PD-11

EXXON Segment Length: 14029m

Map Key: PWS-PD-11d

Name: Mann

Date: 9/8/90

Data Entered:
REGION: KENAI

SEGMENT: ST/PE-01

SUBDIVISIONS: A (1 OF 1)
SHORELINE EVALUATION

SEGMENT ST/ PE-01 SUBDIVISION A (1 OF 1) DATE 4/29/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
3N,3P Harbor seal and sea lion pupping (5/15 to 7/1)
30,3Q Harbor seal and sea lion molting (8/15 to 9/15)
4GA Alaska State Wilderness Park
6X Recreation: Lodge (6/1 to 9/15)
9BB Privately Developed Lands
See attached Ecological Constraint sheet for specific constraints and contacts.

SUBDIVISION ECOLOGICAL CONSTRAINTS:
Avoid any unnecessary disturbance or 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_79_m: Medium_53_m: Narrow_94_m: V.Light_361_m: No Oil_0_m
Subsurface Oil Observed: Yes_ X_ No_ No Maximum Depth_27 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
___X_ Tarmat Removal ___ Beach Cleaner
___ Other (see comments)

COMMENTS: Recommended treatment includes 1) manual removal of asphalt pavement 2) bioremediation of areas of surface and subsurface oil in areas shown on attached sketch map. Work should be conducted before 5/15 or between 7/1 and 8/15 based on pinniped constraints. NOTE: ADF&G to survey site prior to any work.

TAG COMMENTS: ____________________________
___________________________
___________________________
___________________________

TAG APPROVAL DATE: ____________
ADEC ________________________
EXXON ________________________
NOAA ________________________
USCG ________________________
FOSC: ________________________ DATE: ____________
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 inpool application, prior to at least July 1 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

Gill net area (6/7 to 8/31)
Purse seine area (7/20 to 9/30)
Purse seine hook (7/20 to 9/30)
Set net sites (6/11 to 7/25)

Contact ADF&G for specific dates, locations and constraints. Restrict boat and air traffic to essential minimum. When set net sites are present (1L) restrict boat operations to essential minimum as authorized by ADF&G. If plans for treatment include methods such as hot water wash or inpool 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

Herring spawning (4/1 to 6/15)
Contact ADF&G for confirmation - dates and locations may vary. Restrict boat traffic to essential minimum. Avoid damage to uncleared intertidal and subtidal algae and seagrass. If plans for treatment include methods such as hot water wash or inpool 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

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 USFS prior to treatment.

AGENCY CONTACT PERSON: USFS Jill Parker 786-3377

Shorebird/waterfowl concentration (4/1 to 5/15)
Restrict all activity to essential minimum, especially air traffic. Contact USFS and ADF&G for confirmation.

AGENCY CONTACT PERSON: USFS Jill Parker 786-3377

All Bald Eagle nests (3/1 to 6/1)
Active Bald Eagle nests (3/1 to 9/1)
Restrict air traffic and all disturbance to essential minimum. No personnel within 400m of any nest. Air approach and takeoff from and to seaward only; maintain 800m horizontal, 300m vertical distance from nests. Contact USFS prior to treatment for confirmation of dates.

AGENCY CONTACT PERSON: USFS 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

NPS Subsistence areas:
Salmon harvesting (5/1 to 9/30)
Finfish harvesting
Deer harvesting (8/15 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 inpool which might affect intertidal and 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 Fail 267-2359
See comments attached.
ATTACHMENT - FEDX SHORELINE COMMENT SHEET
PI-01  4-25-90
Lee Glenn - Alaska Dept. of Fish and Game

The seabird haulout on the south tip of Pel Island remains heavily oiled. No cleanup was attempted last year and there were no significant natural cleaning on this high energy block over winter. The oil remains hot and fluid even on moderately warm days. Pooled surface oil therefore, remains an environmental threat to birds and wildlife (especially birds). There is a concern that this oil may re-float and threaten same commercial salmon fishing areas as Cook Inlet or Kodiak Islands.

There are obstacles to a successful cleanup operation on Pel Island. Congress recently added the entire Pel Island, to the list of species that are threatened. The result of that action and because seabirds remain in a state of population decline, the National Marine Fisheries Service and the Alaska Department of Fish and Game will not allow cleanup of this haulout. In such activity will cause disturbance to these birds.

The following criteria for cleaning the seabird haulout on Pel Island will be followed:

1. A.S.F.G. will survey the haulout and keep Exxon informed as to the possibility of mobilizing a successful cleanup effort which will result in little or no impact on seabirds.

2. Cleaning should start as soon as possible since the number of animals utilizing the area are low (less than 12) and will build over the next 6 months (over 100 last summer).

3. All treatment shall be Type A.

4. Initial cleaning shall concentrate on pooled, mobile, surface oil.

5. In treating asphalt pavement and for roots, concentrate only on that which con...
be quickly and readily picked up and moved.
6. No bioremediation is recommended unless pooled surface oil is removed and asphalt and tar mats are picked up or broken up.

[Signature]

[Name]
Subsurface mousse saturated sediment - oil up to 7 cm thick

Perl Island, Sea Lion Haulout, SE Coast

high grass covered PI-001
rocky cliffs

Pooled broken distribution / patchy

Fluid when exposed to sun

Oil coat / stain
Some pooled oil
in shelter of large boulders

Oil saturated rock face well - oil up to
7.5 cm thick / wet and light brown color

Pooled Oil - continuous to broken distribution - dull black surface
mixed with sand and pebbles
Below surface film, the oil is light to dark brown in color
and up to 10 cm thick. On warm days the oil breaks through
the surface film and runs.

See video of oil taken in this area on April 12, 1990. Video shows
how thick the oil is. How thick is this? This is the oil A.O.E.G. would like
removed first. See Dick Hensel (A.O.E.G.
267-2341) on STAG for copy or video.
### Shoreline Oil Summary

**PHASE:** PE-01

**DATE:** 04/29/90

**TIDE LEVEL:** -1 to -2

**SURFACING SEDIMENTS:**
- **Grass:** 10%
- **Forest:** 10%
- **Rock:** 20%

**SLOPE:**
- **WAVE EXPOSURE:**
  - Low
  - Mid
  - High

**OIL CATEGORY LENGTH:**
- **W:** 100 m
- **M:** 80 m
- **N:** 120 m
- **V:** 94 m

**Pavement:**
- **H:** 8.5 cm
- **F:** 5 cm

**Patties/Tarballs:**
- 0

**Near shore sheen:**
- No

**Surface Oil**

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### Comments

**Geomorphology:** Exposed Point with House-Size Rocks Sheltering a Boulder/Cobble Veneer over wave-cut bedrock platform.

**Oilings:** Asphalt Pavement 5-8 cm thick between and around boulders.

**Reviewed:** BAT 1 May 90
### Subsurface Oil (Continued)

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

Subsurface oiling: extends to 7.5 cm depth in pits with surface asphalt and is a buried oil lend to 20-30 cm depths in unit 7 (pits 8,10)

Typical cross-section of asphalt pavement (80% cover)

- CT/S
- Wethered skin
- 5-10 cm thick
- Light brown mollusks
- Shiny black oil

Reviewed by [Signature] Date: [May 90]
**SHORELINE ECOLOGICAL SUMMARY**

Segment ST: **PEOC** Subdivision: **A** Date (mo/day/yr): 4-29-90

Time (24 hr): 9:45 = Biologist: **David Lohse**

(A) Substrate type and % of segments:
   1. Bedrock: 45
   2. Boulder: 10
   3. Cobble: 10
   4. Pebble: 10
   5. Sand: 10
   6. Silt: 10

(B) Overall % cover of biota (% of segment):
   Dense: 15
   Moderate: 15
   Low: 30

(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:

   Photographs:
   Roll No.: **ST-13-6**
   Frames: **1-10**

### BARNACLES

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Wildlife Observations/ General Comments:

See page 2

Ecological Considerations:

- **W.O.P.Q. - Pinepoint Harbor**
  - Seabird colony nearby - unknown how close it is to segment boundary.
  - Other ecological considerations for this specific segment are unknown.
Shoreline Biological Summary 4-29-90
Segment ST-PE 001 Subdivision A
Biolosist: David LaHa

1. Present in low intertidal: Rhodomelica, Enteromorpha, Halosaccion, Alaria, Porphyra, coralline algae, yellow sponge, Kathrine tunics, unknown red algal “blite” (Iridea?), Laminaria, Cleithropora, Pagurus

2. mid intertidal: Ralfsia, coralline algae, Endocladia, Amelium, Nuelle, Astomus, Ulva, Enteromorpha, Halosaccion, Scytosiphon

3. high intertidal: Porphyra, Ulva, Endocladia

4. Many gulls and oystercatchers seen in the area

5. Algal cover in low intertidal was ~95% on boulders (2 sites estimated), 75-95% on bedrock (3 sites), and ~95% on cobble (1 site).

6. Algal cover in mid intertidal was ~60% of mid intertidal bedrock (1 site estimated), and from 10-75% of mid intertidal boulders (2 sites estimated).

7. Barnacle mats in one high intertidal bedrock was ~15% (based on estimate of one site), 50% on high intertidal boulders (1 site), and ~5% on mid intertidal bedrock (1 site).
XXX Wide
/// Medium
--- Narrow
TTTT Very Light

PE-1

Approx. Segment Length: 891m

Map Key: KEN-PE-1
Name: Rick Gallie
Date: 04/29/90

Date Entered:
ADDENDUM: SUBDIVISION CONSTRAINTS
SEGMENT PE-1 SUBDIVISION A (1 of 1)

WORK WINDOW

<table>
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<tr>
<th>Tarmat Removal</th>
<th>WORK FROM 7/1 TO 8/15</th>
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<tbody>
<tr>
<td>Bioremediation</td>
<td>WORK FROM 7/1 TO 7/31</td>
</tr>
</tbody>
</table>

ARCHAEOLOGICAL STANDARD CONSTRAINT

If cultural resources are uncovered, PHONE 564-3274.

APPLICABLE ECOLOGICAL TIME CONSTRAINTS

3N,O,P,Q Harbor Seal And Sea Lion Pupping and Molting

Closed to bioremediation before 7/1 and after 7/31.
Closed to tarmat removal before 7/1 and after 8/15.

OTHER ECOLOGICAL CONSIDERATIONS

Do not apply bioremediation to specific areas where seals or sea lions are observed to haulout. Do not chase or harass seals or sea lions, and do not approach pups under any circumstances. When working on or near haulouts, complete the job as quickly as possible with minimum personnel, equipment, noise and disturbance. Keep boats and personnel as far from actual haulouts as is practical to do the work specified. Minimize air traffic near haulouts, maintain elevation as is practical, and avoid repeated overflights of the same haulout areas. Avoid any unnecessary disturbance or damage to unoiled blota and substrate.

FOSC: [Signature] Date 6-10-90
Prepared by: [Signature] 6-10-90 Date 6/10/90
SHORELINE EVALUATION

SEGMENT ST/ PE-01 SUBDIVISION A (1 OF 1) DATE 4/29/90

ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
3N,3P Harbor seal and sea lion pupping (5/15 to 7/1)
30,3Q Harbor seal and sea lion molting (8/15 to 9/15)
4GA Alaska State Wilderness Park
6X Recreation: Lodge (6/1 to 9/15)
9BB Privately Developed Lands
See attached Ecological Constraint sheet for specific constraints and contacts.

ECOLOGICAL CONSTRAINTS:
Avoid any unnecessary disturbance or damage to unsealed 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: 5/2/90

OILING CATEGORIZATION:
Wide 79 m: Medium 53 m: Narrow 94 m: V.Light 361 m: No Oil 0 m
Subsurface Oil Observed: Yes X No _____ Maximum Depth 27 cm

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

COMMENTS: Recommended treatment includes 1) manual removal of asphalt pavement 2) bioremediation of areas of surface and subsurface oil in areas shown on attached sketch map. Work should be conducted before 5/15 or between 7/1 and 8/15 based on pinniped constraints. NOTE: ADF&G to survey site prior to any work. Aux Res. 830 (X2-72-1) Prior _____

TAG COMMENTS: [Comment]

TAG APPROVAL DATE: 5/12/90
ADEC Art Weller, [Signature]
EXXON [Signature]
NOAA [Signature]
USCG D. D. Rome [Signature]

FOSC: [Signature] DATE: 5/19/90
[Comment] Manual pickup of mowed, pooled oil. Coordinates with ADF&G, NR. 08.0.3.02.02.04.07.08.09.

[Additional comments]
SHORELINE EVALUATION

SEGMENT ST/ PE-01 SUBDIVISION A (1 OF 1) DATE 4/29/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
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)
4GA Alaska State Wilderness Park
6X Recreation: Lodge (6/1 to 9/15)
9BB Privately Developed Lands
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 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 79 m: Medium 53 m: Narrow 94 m: V.Light 361 m: No Oil 0 m
Subsurface Oil Observed: Yes X No Maximum Depth 27 cm

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

COMMENTS: Recommended treatment includes 1) manual removal of asphalt pavement 2) bioremediation of areas of surface and subsurface oil in areas shown on attached sketch map. Work should be conducted before 5/15 or between 7/1 and 8/15 based on pinniped constraints. NOTE: ADF&G to survey site prior to any work. CONTACT LEE GLEN (236-5312) PRIOR TO WORK START.

TAG COMMENTS:

TAG APPROVAL DATE: 5/12/90
ADEC [Signature] DATE: 5/14/90
EXxon [Signature] FOsc: Manual pickup of mosquito-pooled oil
NOAA [Signature] conducts with ADF&G to
USCG [Signature] ensure proper land management on site. Only
oi allowed!
PERL ISLAND, SEA LION HAULOUT, SE COAST

Subsurface nodule saturated sediment - oil up to 7 cm thick

Oil saturated rock - oil 7.5 cm thick - wet and light brown color

Oil coated soin - some pooled oil in shelter of large boulders

Pooled oil - continuous to broken distribution - dull black surface
mixed with sand and pebbles - Beneath surface film, the oil
is light to dark brown in color and 10 to 15 cm thick. On
warm days the oil breaks through the surface film and runs.

See video of oil taken in this area on April 12, 1990. Video shows
how fixed the oil is - show thick - THIS IS THE OIL A.D.S.G. WOULD LIKE
REMOVE FIRST. See Dick Heusel (A.D.S.G.
251-2341) on STAG for copy or video.
1991 MAYSAP EVALUATION

SEGMENT: PE 001  SUB: A  REGION: KEN  SURVEY DATE: 5/7/91

ENVIRONMENTAL SENSITIVITIES:
Work Window(s)  RESTRICTED 5/15 - 6/30; OPEN 6/30 - 8/15;
RESTRICTED 8/15 - 9/15

Ecological/Constraints (see page two for details)  Pinniped haulout

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

SHPO Signature: __________________________ Date: __________________________

RECOMMENDATIONS:

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

Pinniped Haulout: Access restricted from 5/15 to 6/30 and 8/15 to 9/15 unless approved by NMFS. Maintain 1000' vertical and 1/2 mile (3 mile for sea lions at all times) horizontal buffer.
TREATMENT RECOMMENDED

AGREE WITH LAND MANAGERS COMMENTS AND RECOMMEND FOLLOWING SUGGESTIONS FOR CLEAN UP

The boulder beach has very light asphalt/soil with pockets of higher concentrations. It cleanup is recommended. It would require a helo squad to fly the crews, equipment and waste in and out. The work would have to be performed with sea lions present which should not be a problem if done slowly at start up based on our survey helo flight on and off the beach.

See Comments - Attached
This beach has never been worked and no significant natural cleaning has occurred since the oil came ashore in the spring of 1989. This is a high value resource area that is utilized by marine mammals, birds and intertidal marine life. Sea lions have been observed hauled out on the oiled beach. Also the oiled segment is centrally located to commercial fishing areas and if left without treatment could affect these harvests and markets.

Suggest manual removal of AP and MS that is indicated on the sketch map. Roll cobble to access pooled mousse. On warm days during June, July and August this oil is fluid and therefore remains a threat to biota. Recommend the cleanup team access this site by helicopter and coordinate with ADF&G (Lee Glenn) regarding constraints associated with marine mammals. Cleanup of this site should be given priority with cleanup restricted to oil that can be easily removed. A cleanup team working during two low tide periods would significantly improve the quality of this beach.
**OG COMMENTS:**

This segment consists of a bouldery-cobble beach that is protected by housesized bedrock outcrops along the seaward edge. The beach materials overlie a irregular bedrock platform. The major oiling consists of an asphalt pavement that occurs between boulders and bedrock outcrops behind the major bedrock island, covering an area of approximately 20 by 90 m. The asphalt is presently cohesive but could begin to release oil of the weather warms considerably. In the same approximate region a subsurface mor - hor layer is found buried by 5 to 30 cm of sediment. In warm weather this oil may become less viscous and flow. The areas on either side of the asphalt region have trace oil in the form of tar and asphalt patches between cracks of rocks and between boulders.
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<th>PIT NO.</th>
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<th>OIL CHARACTER</th>
<th>OILED ZONE cm-cm</th>
<th>CLEAN BELOW YN</th>
<th>H2O LEVEL</th>
<th>SHEEN COLOR</th>
<th>PIT ZONE</th>
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**Sheen Color:**
- B = Brown
- R = Rainbow
- S = Silver
- N = None

**OG Comments:**

- Reviewed 5/15/91
- Reviewed for 19 May
TEAM # 6 Holo  
DATE May 7 1991
SEGMENT # PE-01  
TIDAL HEIGHT (Range) 4 ft - 6 ft  
(1.5 m - 1.8 m)
SUBDIVISION 5  
BIOLIGIST N. Davis
SEA STATE Choppy & Rough  
WIND SPEED/DIRECTION 10 mph (Cato eo 15 ) E
PHOTOGRAPHS: ROLL # 6-08  
FRAME # 19-24
COMMENTS/OBSERVATIONS (to be completed in oiled subdivisions only):
A. D. Very little biota in these areas some filamentous greens, littorine snails but few scattered barnacles. This area is used by the seals as a haul out area.
B. Very sparse barnacles, littorine and 1-3 patches of Fucus.
C. Some endemics, Fucus, barnacles, barnacles, barnacles, barnacles, littorine.
D. The shore at the east and west sides of the point had moderate dense patchy populations that were low in diversity. Fucus endemics, littorine snails were almost the only organisms in the MITZ. MITZ had Fucus endemics, littorine snails, barnacles, Littorina, and mussels. MITZ not visible due to windy conditions and tidal height.
E. This area was observed from a distance so that the sea lions weren't disturbed. It was a very rich diverse rocky community. MITZ Pinophyceae were endemics, Fucus, barnacles, barnacles, barnacles, barnacles, barnacles, barnacles, barnacles, barnacles. MITZ Fucus, barnacles, barnacles, barnacles, barnacles, barnacles. Barnacles, barnacles, barnacles were visible.
F. This area is a Sea lion haul out area. They will be increasing in numbers as the summer progresses and any clean up should take this into account. There were 25-25 sea lions present on the rock to during this survey. They didn't begin using A + D yet. Approaching from the west would probably cause the least amount of disturbance.

WILDLIFE OBSERVATIONS
TO BE COMPLETED IN ALL SUBDIVISIONS

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Shoreline subdivision map showing important biological features attached.
This area has a very rich, diverse inter-tidal community. Algal cover is particularly dense on the tops of boulders and on bedrock fences in surge channels. Visible algae were Turritis, Porphyra, Catalina, and Valonia. Patches of Macrocystis and Barnacles were visible but the tide and sea lions restricted access to this area.

Nereocystis around the point
Gulf of Alaska
1991 MAYSAP EVALUATION

SEGMENT: PE 001  SUB: A  REGION: KEN  SURVEY DATE: 5/7/91

ENVIRONMENTAL SENSITIVITIES:
Work Window(s)  RESTRICTED 5/15 - 6/30; OPEN 6/30 - 8/15;
RESTRICTED 8/15 - 9/15

Ecological/Constraints (see page two for details)  Pinniped haulout

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

SHPO Signature:  [Signature]  Date: 5/22/91

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>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Spot Washing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bio-Customblelen Only</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bio-Inpol/Customblelen</td>
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<td></td>
<td></td>
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<tr>
<td>Other</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
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</tbody>
</table>

COMMENTS:

INITIAL:

TAG: INFORMAL CONSULTATION RECOMMENDED 5/22/91 WITH NMFS (STEVE)
NOAA EXON VAPOR PROJECT OFFICE (PMENT/PHILLIP) 21 REQUIRED
by Section 7 of the Marine Mammal Protection Act

FOSC:

TAG APPROVAL DATE: 5/22/91  FOSC APPROVAL DATE: 5/26/91

ADEC  EXXON  USCG  NOAA

[Signatures]

E. E. PAGE, CDR, USCG  CHIEF OF STAFF, FOSC
ECOLOGICAL CONSTRAINTS
1991 FIELD ACTIVITIES

Pinniped Haulout: Access restricted from 5/15 to 6/30 and 8/15 to 9/15 unless approved by NMFS. Maintain 1000' vertical and 1/2 mile (3 mile for sea lions at all times) horizontal buffer.
This beach has never been worked and no significant natural cleaning has occurred since the oil came ashore in the spring of 1989. This is a high value resource area that is utilized by marine mammals, birds and intertidal marine life. Sea lions have been observed hauled out on the oiled beach. Also the oiled segment is centrally located to commercial fishing areas and if left without treatment could affect these harvests and markets.

Suggest manual removal of AP and MS that is indicated on the sketch map. Roll cobble to access pooled mousse. On warm days during June, July and August this oil is fluid and therefore remains a threat to biota. Recommend the cleanup team access this site by helicopter and coordinate with ADF&G (Lee Glenn) regarding constraints associated with marine mammals. Cleanup of this site should be given priority with cleanup restricted to oil that can be easily removed. A cleanup team working during two low tide periods would significantly improve the quality of this beach.
TREATMENT RECOMMENDED

AGREE WITH HAND MANAGERS COMMENTS AND RECOMMEND FOLLOWING SUGGESTIONS FOR CLEAN UP

The boulder beach has very light asphalt/sorb with pockets of higher concentrations. It cleanup is recommended it would require a helo squad to fly the crews, equipment and waste in/out. The work would have to be performed with sea lions present which should not be a problem if done slowly at start up based on our survey helo flight on and off the beach.

TREATMENT Recommended

See Comments - Attached

Patches of asphalt and sorb remain in the sheltered areas (area A). Any treatment is complicated by the fact that weather fronted out here. Manual treatment (pick up of asphalt patches & breaking up surface) could be undertaken soon (in early May) with careful restrictions or helicopter approach & activities of workers (see hand manager comments). Leaving the area untreated is also an acceptable option if treatment is deemed to be cause unacceptable disturbance to the seagulls. Winter storms will continue to weather remaining oil, as has already happened in the more exposed areas of the segment. The weathered oil probably represents little direct threat to the seagulls or other biological resources in the area.
**OG Comments:** This segment consists of a boulder-cobble beach that is protected by horizon-sized bedrock outcrops along the seaward edge. The beach materials overlie an irregular bedrock platform. The major oiling consists of an asphalt pavement that occurs between boulders and bedrock outcrops behind the major bedrock island, covering an area of approximately 20 by 80 m. The asphalt is presently cohesive but could begin to release oil if the weather warms considerably. In the same approximate region a subsurface mor - hor layer is found which is 5 to 30 cm of sediment. In warm weather this oil may become less viscous and flow. The near or either side of the asphalt region have trace oil in the form of soils and asphalt patches between cracks of rocks and between boulders.
**MAYSAP BIOLOGICAL SUMMARY FORM**

**TEAM #** 6 Delo  
**DATE** May 7, 1991  
**SEGMENT #** PE-01  
**TIDAL HEIGHT** (Range) 4 ft - 6 ft (1.22 - 1.83 m)  
**BIOLGIST** N. Davis  
**SUBDIVISION** A  
**SEA STATE** Choppy + Rough  
**WIND SPEED/DIRECTION** 0 mph (Calm to 15) E  
**PHOTOGRAPHS:** ROLL # G-06  
**FRAME #** 19-24  

**COMMENTS/OBSERVATIONS (to be completed in oiled subdivisions only):**

A. 1) Very little biota in these areas. Some filamentous green algae. Few scattered barnacles. This area was used by the sea lions and a haul out.

B. Very sparse barnacles, limpets, and 1-2 patches of Fucus.

C. Some endocladias, Fuca, sparse barnacles, some mudflats, and limpet on crevices.

D. The shore at the East and West sides of the point had moderate dense patchy populations that were low in diversity. Fucus, Endocladias limpets, and barnacles were the only organisms in the WITZ. MITZ had Fucus, Ochotella, and barnacles. MITZ not visible due to wind and tidal height.

F. This area was observed from a distance so that the sea lions were not disturbed. It was a very rich diverse rocky community. WITZ Porphyra, Peridini, and Ochotella were abundant. Fucus, limpets, barnacles, and mussels were visible. MITZ Fuca, Endocladias, Ochotella, and barnacles were visible.

This area is a sea lion haul out area. They will be increasing in numbers as the summer progresses and any clean up should take this into account. There were 20-25 sea lions present on this rock during this survey. They hadn't begun using A-D yet. Approaching from the west would probably cause the least amount of disturbance.

**BIRDS**

- Glaucous-winged Gulls (20)
- Kittiwakes (20)
- Common Murres (20)
- Razorbill (20)
- Loons (4)
- Murrelet (4)

**WILDLIFE OBSERVATIONS**

**TO BE COMPLETED IN ALL SUBDIVISIONS**

| BIRDS              | # OF SPECIES | TOTAL BIRDS | FISH OBSERVED
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<td>&gt; 30</td>
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<tr>
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<tr>
<td>Gulls/Kittiwakes</td>
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<td>&gt; 60</td>
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<td>Corvids</td>
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<td>&gt; 50</td>
<td>0</td>
</tr>
<tr>
<td>Other Birds</td>
<td>0</td>
<td>&gt; 10</td>
<td>0</td>
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**MARINE MAMMALS**

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<td>Sea Otters</td>
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<tr>
<td>Pinnipeds (specify)</td>
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<tr>
<td>Steller's Sea Lion</td>
<td>20 - 25</td>
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<tr>
<td>Whales (specify)</td>
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**LAND MAMMALS**

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<tbody>
<tr>
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</table>

Shoreline subdivision map showing important biological features attached.
REGION: KENAI

SEGMENT: ST/PE-002

SUBDIVISIONS: A (1 OF 1)
SHORELINE EVALUATION

SEGMENT ST/PE-002    SUBDIVISION A (1 OF 1)    DATE 5/29/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:

1A  Salmon stream mouth - fry outmigration (3/1 to 5/15)
1B  Salmon stream mouth - spawning (7/10 to 8/31)
9BB  Privately developed lands

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:

Cultural resource survey in progress. Shoreline treatment cannot proceed until field data have been assessed and a formal archaeological constraint entered on the shoreline evaluation form.

SHPO SIGNATURE:________________________ Date:________________________

OILING CATEGORIZATION:

Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 807 m: No Oil 626 m
Subsurface Oil Observed: Yes No X Maximum Depth

RECOMMENDATIONS:

X No Treatment Recommended ______ Snare/Absorbent Booms
____ Oil Snakes (pom poms)
____ Absorbents (pads, rolls, etc)
____ Spot Washing: Wands
____ Beach Cleaner
____ Other (see comments)

COMMENTS: Recommended treatment is removal of oiled rope and remaining tar patties as shown on attached sketch map.

TAG COMMENTS:

______________________________________________________________________________

______________________________________________________________________________

______________________________________________________________________________

______________________________________________________________________________

TAG APPROVAL DATE:________________________

ADEC
EXXON
NOAA
USCG

FOSC:________________________ Date:_______
SEGMENT ST  PE  SUBDIVISION:  2  DATE: 5-29-90

USCG NAME: AEC Van der Pels  SIGNATURE: AEC Van der Pels

☐ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS: 20 pits were dug ranging in depth from 20 to 61 cm. No oil was found in any pit. The tarballs that were found were picked up by the survey team. The oiled length of rope that was found was left. It was partly buried in among other debris (non-spill related).

ADEC NAME:  SIGNATURE:  

☐ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS: 

LAND MANAGER NAME:  SIGNATURE:  

☐ NO TREATMENT RECOMMENDED  ☐ TREATMENT SUGGESTED

COMMENTS:
FIELD SHORELINE COMMENT SHEET

SEGMENT ST 1, PF 2, SUBDIVISION: A, DATE 5/1/92

☐ NO TREATMENT RECOMMENDED ☐ TREATMENT SUGGESTED

☐ NO TREATMENT RECOMMENDED ☐ TREATMENT SUGGESTED

Most of the recoverable oil was picked up by the cleaning crew. There is 1 large oily film toward the south end of the segment which should be picked up.

☐ NO TREATMENT RECOMMENDED ☐ TREATMENT SUGGESTED

☐ NO TREATMENT RECOMMENDED ☐ TREATMENT SUGGESTED
Perl Island
Land Representative Report
for May 29, 1990, Oil Inspection Trip
Perl Island
Land Representative Report
for May 29, 1990, Oil Inspection Trip

People present:

Rex Coulter - EXXON Supervisor
Marty Cramer - Oil geologist on contract to EXXON
John Dixon - Biologist on contract to EXXON
Russell Kunibe - Alaska Department of Environmental Conservation
Chief Rich Vandepels - U.S. Coast Guard
Stephen Anderson - Land owners representative
Harley Hess - Homesteader and island resident

2 ERA Helicopter pilots

We began the survey on the southern beach property line. We dug seven holes with no oil found in the sandy/stoney beach up to the salmon stream that empties into the ocean. This segment had many small oil splatters on rocks with larger coating on various pieces of driftwood. The predominant feature was a 3 foot square tangle of rope and electrical wire which was heavily oiled.

The second segment moves north from the stream along the gradually sloping, fine-sand beach up to the steep gravel bank near the lodge. We dug thirteen more holes in this segment with no oil found. Again, we found small oil splatters on rocks and some coating on driftwood. Toward the north end we started to find numerous spruce needle tar balls 2-3 inches in length. This region is the predominant area where the oil came ashore in April/May of 1989. Attached are some of David Loutrell's April, June, and July 1989 still photographs of the oil. David, Harley, and lodge employees were on the island when the oil came ashore. Their response was to gather and bag between three and four hundred bird carcasses that might kill predators. Harley describes the oil in this area as appearing like 500 cows had walked the beach leaving their droppings behind. This region is the area that I surveyed and videotaped during a May 10, 1989, inspection trip with other ranch owners. (I gave Marty Cramer a copy of the video tape on May 31, 1990.)

The short section from the front of the lodge to the northern most point of the beach contained many 2-3 inch tar balls mixed with spruce needles and other debris. We gathered many of these in Zip-lock bags as we walked through the area. An extremely large tar ball was found about the size of a flattened football. The party members were very impressed with the size and kept it mostly intact for origin analysis and possible display. No holes were dug.
The final section of beach turns east from the point to the cliffs. We walked through this section and observed no oil. We dug no holes.

While I can't conclude where the oil from April and May 1989 currently resides, I am pleased that it is not more readily noticeable. My recommendation for the Perl Island beach would be to remove the large oil/rope tangle near the salmon stream and have the same party walk the beach to recover more of the tar balls. Our ranch partners could then monitor the beach for more oil that may be discovered or come ashore.

Stephen W. Anderson
6/1/90
SHORELINE OILING SUMMARY

COH Mac V. Grant \nUSCG \n1 - 17 - 1971 \nSEGMENT ST/PE

BIO John Deway \nLAND REP \nJoe Michael \nSUBDIVISION \nA \n1 (1 OF 1)

EXXON Ray Coulter \nADEC \nRussell Knouse \nTIME 11:45 10 14-00

AM NO. 6 \nTIDE LEVEL \n+2 to -0.8 to +2 \nDATE \n5 1 79/80

T. SUBDIVISION LENGTH: \n1473 m

□ Sun □ Clouds □ Fog □ Rain □ Snow

UPLANDS DESCRIPTION: □ Grass □ Forest □ Rock □ Grass + SE 40 + Trees AT N/G END
SURVEYED FROM: □ Foot □ Boat □ Helo \nWORKING DIRECTION: S to NE

SURFACE SEDIMENTS: □ 5% B □ 5% G □ 30% P □ 20% G □ 10% S □ 30% M □ 10% V □ 10% FL
SLOPE: Lang 70% Hang 30% Vert — — WAVE EXPOSURE: □ Low □ Med □ High

OIL CATEGORY LENGTH: W 0 m M 0 m N 0 m VL 825 m NO 550 m

SURFACE OIL

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

PAVEMENT

H F S O sq. m by O cm

PATTIES (TARBALLS) 0.6 BAGS

NEAR SHORE SHEEN? NO BR RW SL TL

OILED DEBRIS AMOUNT

<table>
<thead>
<tr>
<th>Debris</th>
<th>S</th>
<th>M</th>
<th>D</th>
<th>L</th>
<th>G</th>
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</table>

DID YOU COLLECT DEBRIS?

YES NO

TYPE TARBALLS

#BAGS 0.5

PHOTOGRAPHS:

Roll No. J0-1
Frames 9-20

SUBSURFACE OIL

<table>
<thead>
<tr>
<th>PIT NO.</th>
<th>PIT DEPTH (cm)</th>
<th>SUBSURFACE OIL CHARACTER</th>
<th>OILED (cm)</th>
<th>OILED DEBRIS</th>
<th>OILED (10 cm)</th>
<th>OILED (5 cm)</th>
<th>OILED (1 cm)</th>
<th>OILED (0.1 cm)</th>
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</table>

COMMENTS:

Oiling was primarily tiny splatters (dots) on occasional corbels and pebbles in SOT 2 at south end of segment. Any splatters on a few logs and pieces of driftwood along south and central portions of segment. Numerous tarballs ranging from 1-10 cm in diameter were found along spring high tide line in north central part of segment along with one mousse patty that appeared to be more representative of waxy oil or waxy crude. The patty and most of the tarballs were recorded by survey team. One length of 1/4" rope was found intermingled and tangled in debris at south end. It was not recorded.
### 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</th>
<th>Oil / Film Color</th>
<th>Pit Zone</th>
<th>Anal. Sheen</th>
<th>Surface Subsurface Sediments</th>
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<td>S - S</td>
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</tbody>
</table>

**Comments**

**Reviewed:** [Signature] **Date:** June 20
**SHORELINE ECOLOGICAL SUMMARY**

**Segment ST PE-2 Subdivision:**

**Date (mo/day/yr):** 5/29/80

**Biolist:** John Dixon

(A) **Substrate type and % of segments:**
1. Bedrock 5
2. Boulder 5
3. Cobble 30
4. Pebble 20
5. Sand 30
6. Silt

(B) **Overall % cover of biota (% of segment):** Dense 10 Moderate 5 Low 85

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

- **juveniles / adults (X), new settlement (3) Photos:**
  - Roll No: PE-2
  - Frames: E-9-20

---

### BARNACLES

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<th>Moderate</th>
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<th>Rare</th>
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### MYTILUS

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### GASTROPODS

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**Wildlife Observations/General Comments:**

- Water line during survey - 0.7 to 4.5 ft.

- The estimates of overall abundance in the above matrix are not very meaningful because of the extreme habitat heterogeneity.

- The rocky dark brown sand/pebble gravel flat is the primary habitat for the mussels.

**Ecological Considerations:**

- The rocky area of dense mussels in the cobble/pebble/gravel flats should be avoided. The beach south of the stream mouth should be avoided. The beach below the area where mussel patches were collected is a sensitive area.
ECOLOGICAL SUMMARY

This 1433-m long segment is made up of three major habitat types: (1) rock outcrop with a patchy boulder veneer; (2) gently sloping, protected cobble/pebble beach, and; (3) high energy pebble/sand/cobble beach. The southern part of the segment is partially in the shadow of two rocky spits and wave energy and the coarseness of the substrate tends to increase toward the north, where the beach is also narrower and steeper.

Rock outcrop and boulders, and protected cobbles make up less than 20 percent of the segment but contain essentially all of the biota. The stable outcrop and boulders have 80 to 100% algal cover in the LITZ and MITZ. Alaria is very abundant in the lower areas and juvenile plants (< 10 cm long) are common. Ulva, Fucus, Palmaria, and filamentous reds and greens are also abundant. Under the boulders, the most prominent organisms were the seastar Leptasterias (around 30% brooding eggs), the whelk Searlsia, the isopod Idotea, and hermit crabs. Higher on the shore Alaria drops out and Fucus is more abundant. Besides the algae seen lower on the shore, Odonthalia, Halosaccion, Urospora, and Porphyra are common. The barnacle Semibalanus cariosus was common on outcrops in the MITZ. Grazing snails were rare.

The protected cobble/pebble beach in the LITZ supports about 80% algal cover with many of the species seen on the more stable substrates present. Alaria was less abundant and Fucus more so. Littorines are sparse in the LITZ but increase in abundance higher on the shore. In the lower areas the cobbles and pebbles are set in a a sandy gravel matrix and hence the crevice fauna is not well represented. In the MITZ the cobbles are larger and more protected. Littorina scutulata recruits (c. 2 mm) are common. Under the rocks there are very high densities of hermit crabs, the isopods Idotea and Gnirorimopsphaeroma and many Littorina egg masses. In the area south of the anadromous stream, there is substantial freshwater runoff and many shallow pools. Rhodomela larix is abundant and mussels, Mytilus edulis, dense among the pebbles and gravel.

The only marine organisms noted on the sandy high energy beaches were amphipods in the HITZ.
ECOLOGY MAP
SEGMENT US-2
SUBDIVISION ___ (___ of ___)
METERS

⭐ Seasbirl Colony
🔺 Eagle Nest
# PHOTOGRAPHY LOG

**ROLL NO.**: PE-2  **FROM**: 5/29  **TO**: 5/29  **TEAM NO.**: PWS (KENAI) KODIAK/AK. PENINSULA

<table>
<thead>
<tr>
<th>FRAME NUMBER</th>
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<tbody>
<tr>
<td>1</td>
<td>Contier</td>
<td>5/29</td>
<td>PE-2</td>
<td>West across 11x13 garbage pit</td>
</tr>
<tr>
<td>2</td>
<td>Contier</td>
<td></td>
<td></td>
<td>(seaward) across 11x13 garbage pit</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td>South</td>
</tr>
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<td>4</td>
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<td></td>
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<td></td>
<td></td>
<td>North</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td>Trash pile in garbage pit</td>
</tr>
<tr>
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<td>8</td>
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</tr>
<tr>
<td>9</td>
<td>Dixon</td>
<td></td>
<td></td>
<td>From 3rd boundary of segment (Perry's line) toward rock 1917</td>
</tr>
<tr>
<td>10</td>
<td></td>
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<td></td>
<td>N toward other end of section 1917</td>
</tr>
<tr>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td>Topsoil/ash (not under MITZ boulder)</td>
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<tr>
<td>12</td>
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<td></td>
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<td>Rock spur at 3rd boundary of segment 8.0 foot saline</td>
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<td>13</td>
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<tr>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td>Oiled line tangled in cable on storm berm - Salty</td>
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<tr>
<td>17</td>
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<td></td>
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<td>Oiled drift on sand berm - 100m N of Dixon</td>
</tr>
<tr>
<td>18</td>
<td></td>
<td></td>
<td></td>
<td>Weathered mottled - mid-segment berm</td>
</tr>
<tr>
<td>19</td>
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<td>N boundary of segment from storm berm</td>
</tr>
<tr>
<td>20</td>
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<td></td>
<td>View E from rock outcrop at N boundary of segment</td>
</tr>
<tr>
<td>21</td>
<td>Contier</td>
<td></td>
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<td>Trash pile next to house</td>
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<tr>
<td>25</td>
<td>Dixon</td>
<td>5/29</td>
<td>US-2</td>
<td>From back beach - mid-segment View East</td>
</tr>
<tr>
<td>26</td>
<td></td>
<td></td>
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<td>View West</td>
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<td>From head of segment View East</td>
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<td>Contier</td>
<td>5/29</td>
<td>EN Lab</td>
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SHORELINE EVALUATION

SEGMENT ST/PE-002 SUBDIVISION A (1 OF 1) DATE 5/29/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
- 1A Salmon stream mouth - fry outmigration (3/1 to 5/15)
- 1B Salmon stream mouth - spawning (7/10 to 8/31)
- 9BB Privately developed lands

See attached Ecological Constraint sheet for specific constraints and contacts.

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

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

>>> PHONE 564-3274 (Anchorage) OR 229-1508 (24 hrs.) <<<

SHPO SIGNATURE: [Signature] DATE: June 27, 1990

OILING CATEGORIZATION:
Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 807 m: No Oil 626 m
Subsurface Oil Observed: Yes No X Maximum Depth

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

COMMENTS: Recommended treatment is removal of oiled rope and remaining tar patties as shown on attached sketch map.

TAG COMMENTS:

TAG APPROVAL DATE: 6/16/90
ADEC [Signature] FOSC: DATE: 7/10/90
EXXON [Signature] NOAA
NOAA
USCG [Signature]
5/29/90  Photo locations US-2


ECOLOGY MAP  SEGMENT US-2

SUBDIVISION ___ (___ of ___)

EXxon Company, USA  Map Key: K0H-US-2

★  Seabird Colony
▲  Eagle Nest

METERS
ADDENDUM: SUBDIVISION CONSTRAINTS

SEGMENT PE-2 SUBDIVISION A (1 of 1)

WORK WINDOW

Manual Pickup

OPEN

ARCHAEOLOGICAL INSPECTION/CONSULTATION REQUIRED.

>>> PHONE 564-3274 (Anchorage) OR 229-1508 (24 hrs.) <<<

APPLICABLE ECOLOGICAL TIME CONSTRAINTS

1A,B Salmon Stream An ADF&G uncatalogued anadromous stream is in Subdivision A. No constraint to manual pickup.

OTHER ECOLOGICAL CONSIDERATIONS

No disturbance to stream bed or banks. Avoid any unnecessary disturbance or damage to unrolled biota and substrate.

FOSC \\

Date 7-11-90

Prepared by P. Phillips \\

Date 7/10/90
ECOLOGY MAP
SEGMENT PE-2

SUBDIVISION ___ (___ of ___)

METERS

Exxon Company, USA
Map Key: KEN-PE-2
June 10, 1990

Exxon

EXON

Seabird Colony
Active Eagle Nest
Inactive Eagle Nest

1 inch = 1480 feet
SHORELINE EVALUATION

SEGMENT ST/PE-002 SUBDIVISION A (1 OF 1) DATE 5/29/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:

• Salmon stream mouth - fry outmigration (3/1 to 5/15)
• Salmon stream mouth - spawning (7/10 to 8/31)
• Privately developed lands
See attached Ecological Constraint sheet for specific constraints and contacts.

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

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

>>> PHONE 564-3274 (Anchorage) OR 229-1508 (24 hrs.) <<<

SHPO SIGNATURE: <signature> DATE: June 27, 1990

OILING CATEGORIZATION:

Wide: 0 m; Medium: 0 m; Narrow: 0 m; V.Light: 807 m; No Oil: 626 m
Subsurface Oil Observed: Yes No X Maximum Depth:

RECOMMENDATIONS:

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

COMMENTS: Recommended treatment is removal of oiled rope and remaining tar patties as shown on attached sketch map.

SEE CONSTRAINTS ADDENDUM DATED 7/10/90

TAG COMMENTS:

TAG APPROVAL DATE: 6/16/90
ADEC Bay Marine’s [signature]
NOAA [signature] FSCG [signature]
REGION: KENAI

SEGMENT: ST/PP-01

SUBDIVISIONS: A (1 OF 1)
SEGMENT ST/ PP-01 SUBDIVISION A (1 OF 1) DATE 4/27/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:

4GG Alaska State Parks
ST-1 All bald eagle nests (3/1 to 6/1)-Active eagle nests (3/1 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 0 m: Narrow 0 m: V.Light 24 m: No Oil 1993 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 Removal ____ Beach Cleaner
____ Other (see comments)

COMMENTS:__________________________________________________________
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TAG COMMENTS:_____________________________________________________
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________________________________________________________

TAG APPROVAL DATE:____________
ADEC ___________________________ FOSC:________________ DATE:__________
EXXON ___________________________ NOAA ___________________________
USCG ___________________________
PWS, SEWARD AND HOMER ECOCLOGICAL 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 without authorization from ADF&G. No use of methods which might affect nearshore oil or toxicity levels, such as hot water wash or lnipol 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 or mechanical 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 267-2224

1C 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 lnipol 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

1D Esther Hatchery release (4/15 to 6/15)
1E Main Bay Hatchery release (4/20 to 6/15)
1F Sawmill Bay Hatchery release (4/15 to 6/15)
1G Cannery Creek Hatchery release (4/21 to 6/15)

1H Remote release site
No use of methods which might affect nearshore oil or toxicity levels, such as hot water wash or lnipol application, prior to at least July 1 unless authorized by ADF&G and/or PWS Aquaculture Association. 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 or PWS Aquaculture Association for confirmation and authorization.
AGENCY CONTACT PERSON: 1E ADF&G Larry Peltz 424-3214

1J Gill net area (6/7 to 8/31)
1K Purse seine area (7/20 to 9/30)
1K Purse seine hook-off (7/20 to 9/30)
1L Set net sites (6/11 to 7/25)
Contact ADF&G for specific dates, locations and constraints. 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 lnipol 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

2M Herling spawning (4/1 to 6/15)
Contact ADF&G for confirmation - dates and locations may vary. Restrict boat traffic to essential minimum. Avoid damage to uncolored intertidal and subtidal algae and seagrass. If plans for treatment include methods such as hot water wash or lnipol 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

3S Harbor seal and sea lion pupping (5/15 to 7/1)
3V 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 animals. Application of lnipol 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
ADFG Don Calkins 267-2403

5R 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 736-3377

5S Shorebird/waterfowl concentration (4/1 to 6/15)
Restrict all activity to essential minimum, especially air traffic. Contact USFWS and ADF&G for confirmation.
AGENCY CONTACT PERSON: USFWS Jill Parker 736-3377
ADFG Tom Rothby 267-2206

ST All Bald Eagle nests (3/1 to 6/1)
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 736-3377

6U Recreation:
6V Tent sites (6/1 to 9/15)
6W Anchorage (6/1 to 9/15)
6X Forest Service cabin (6/1 to 9/15)
6X Lodge (6/1 to 9/15)
6Y Special use destination

7Z Subsistence area: Salmon harvesting (5/1 to 9/30)
7H Finnish harvesting
7H Door harvesting (8/15 to 2/28)
7I 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 lnipol 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/PP1  SUBDIVISION: A (SEGMENT) DATE 4/27/90

USCG NAME JERRY SCHULTZ SIGNATURE Jerry Schultz

☐ NO TREATMENT RECOMMENDED ☐ TREATMENT SUGGESTED

COMMENTS

ADEC NAME MIKE EBEL SIGNATURE Michael Ebel

☐ NO TREATMENT RECOMMENDED ☐ TREATMENT SUGGESTED

COMMENTS No further impact recommended.

PP-1-A Moving from Petros Point Northward was a large sand beach which midway through the segment graded into cobble boulders & finally bedrock cliffs. Because the sand beach was observed to have heavy oil during the 1989 ADEC survey we dug a transect of 3 pits every 50m moving along the length of the shoreline. No subsurface oil was found. About 1/2 gallon of small tarballs (and 2 patties) were collected from the UTZ-STZ boundary. One LANDING MANAGER NAME MIKE TETREAU SIGNATURE

☐ NO TREATMENT RECOMMENDED ☐ TREATMENT SUGGESTED

COMMENTS

NPS is not the primary land manager for this segment. Good survey, it does not appear that treatment is necessary.
SHORELINE OILING SUMMARY

REVIEWED: 4/27/90

OIL: Randy Siegel  USCG 
BIO: Lewis Sherman  LAND REP. Pella 
EXXON: Leonard Harbst  ADEC  Mike Ebel  
TEAM NO.: 12  TIDE LEVEL: 8' 6" 3:30  DATE: 4/27/90

SURVEYED FROM: Ground  WORKING DIRECTION: S to N
UPLANDS DESCRIPTION: Grass  Forest  Rock
SURFACE SEDIMENTS: R 5% B 5% C 10% P 30% G 30% S 10% M 0% V 0%
SLOPE: Lang 25% Hang 25% Vert 25%
OIL CATEGORY LENGTH: W 6 m  M 6 m  N 0 m  V 6 m  NO 906 m

SURFACE OIL

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<thead>
<tr>
<th>CHARACTER</th>
<th>DISTRIBUTION</th>
<th>OIL / FILM COLOR</th>
<th>IMPACTED ZONES</th>
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<tbody>
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<tr>
<td>Cover</td>
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<tr>
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<td>Stain</td>
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PAVEMENT: H 0  F 0  S 0  sq. m by 0 cm
PATTIES/TARBALLS: 0 BAGS
NEAR SHORE SHEEN? NO

OILED DEBRIS AMOUNT
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Photographs:
Roll No.: None
Frames:

SUBSURFACE OIL

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<th>PIT NO.</th>
<th>PIT DEPTH (cm)</th>
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<th>OILED INTERVAL</th>
<th>OILED WALL</th>
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COMMENTS
The No. Exxon segment length provided to me. Length indicated was taken from computer map.

Length of shoreline consisting of gravel, sand, and boulders. Sediments increasing in thickness from north to south.

28 pits were dug, concentrated at southern end of beach. No oiling observed. One stretch of beach had small pellets. Tar balls extends from N7 to the beach edge. All observed tar balls were picked up.
## Subsurface Oil (Continued)

<table>
<thead>
<tr>
<th>PIT NO.</th>
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<th>Subsurface Oil Character</th>
<th>Oiled Interval (cm)</th>
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<th>Oil / Film Color</th>
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**Comments**
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**Comments**
LEGEND

- No Subsurface Oil

\[ \begin{align*}
1 & \text{ Subsurface Oil} \\
2 & \text{ Subsurface Oil} \\
\end{align*} \]

\[ \begin{align*}
\text{CT/C} & \text{ continuous Distribution} \\
\text{CT/B} & \text{ broken Distribution} \\
\text{CT/P} & \text{ patchy Distribution} \\
\text{CT/S} & \text{ spotted Distribution} \\
\text{LR} & \text{ Dead Vegetation} \\
\end{align*} \]

\[ \begin{align*}
\text{D, D.} & \text{ location, direction, nd number} \\
\end{align*} \]

Character Length (m): AP \( \Phi \) PO \( \Phi \) CV \( \Phi \) CT \( \Phi \) ST \( \Phi \) MS \( \Phi \) PT \( \Phi \) TB \( \Phi \) FL \( \Phi \) NO \( 19 \Phi \)
**SHORELINE ECOLOGICAL SUMMARY**

**Segment ST / PP-2**  
**Subdivision** A  
**Date (mo/day/yr)** 4/27/70

**Time (24 hr) 1105-1245**  
**Biologist** SHARMAH

(A) **Substrate type and % of segments:**
- Bedrock 5
- Boulder 5
- Cobble 10
- Pebble 30
- Sand 50
- Sea

(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

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### GASTROPODS (ANGELLA, LITTORINA, LIMACES)

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**Wildlife Observations/General Comments:** 1 pajama seal, 2 sea lions, 1 sea otter.  
Very abundant sea otters, turtles + seals of digging in the sandy substrates, LIT, & MTL.  
Also some porpoises, 1 killer whale. 1 pelagic comber.  
Various turtles and rays in shallow.  
The situation and effects of this segment are  
especially hard to evaluate - a very fine mesh of reefs & diademas.  
(Cont.)

**Ecological Considerations:**

We received no information regarding marine communities previously  
infested for this segment.  We defined no single zone, principal deadlock,  
and marine strata, etc., and no no research is attested.  Biological  
communities here are healthy and normal.  If their substrates typical, this  
segment cannot benefit biologically from further human disturbance.
General Comments (cont.):

On other portions, however, and below the sand beach in a couple places (in LT3) are boulder fields which support a reasonably diverse and productive intertidal community. Sub-boulder habitats support, for example, Gracilisphatina, Heteropsis, small barnacles, amphipods, nematodes, and limpets. Algae in the boulderfields include laminarians, ulvans, 3 red foliose spp., Pelagophila/Pencrassiphila forms, Escuredo, and green filamentous (Acanthophora). Barnacles, mussels, Escuredo, and limpets appear to be recruiting fairly well. Generally healthy intertidal assemblages.
SEGMENT ST/ PP-01 SUBDIVISION A (1 OF 1) DATE 4/27/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:
4GG Alaska State Parks
5T-1 All bald eagle nests (3/1 to 6/1) - Active eagle nests (3/1 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: 5/18/90

OILING CATEGORIZATION:
Wide 0 m: Medium 0 m: Narrow 0 m: V.Light 24 m: No Oil 1993 m
Subsurface Oil Observed: Yes X No 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 Removal ______ Beach Cleaner
_____ Other (see comments)

COMMENTS: ____________________________________________

TAG COMMENTS: Monitor to assess area indicated on sketch for significance of remaining oil

TAG APPROVAL DATE: May 7, 1990
ADEC Art Weitkamp______FOSC: ______ DATE: 5-12-90
EXXON Amy Smith______ NOAA Gary Peterson ______
USCG Captain G.A. Hunter
1991 MAYSAP EVALUATION

SEGMENT: PP_001   SUB: A   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:

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<th>TREATMENT REQUIRED (Y or N)</th>
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Manual Pickup (Check as Req.)
Spot Washing
Bio-Customblen Only
Bio-Inipol/Customblen
Other: ______________________
Other: ______________________

COMMENTS:
INITIAL:

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

TAG:

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

FOSC:

________________________________________________________________________

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________________________________________________________________________

TAG APPROVAL DATE: ___________ FOSC APPROVAL DATE: ___________

ADEC: ______________________
EXXON: _____________________
USCG: ______________________
NOAA: _____________________
In the past (1990) finding the buried beam of mouse in the sandy creek bed was a couple hundred yards or so in the drift line on either side of the creek mouth. On this survey only one 2½ x 2½ x 3½' piece of mouse was observed of the creek mouth. There seems to have been more bad deposited in the creek bed this past winter than was deposited in the winter of 1989-1990. Also much of the heavily oiled wood that was removed in 1989 had been replaced with new drift. It will be interesting to see if the oil emerges with increasing temperatures and summer runoff which will probably erode the stream banks and deposited beam. The area is frequented by land otters and shorebirds. The area is also within Kachemak Bay Wilderness Park. Recommend resurveying the site in late June or early July.

SEE Attached Typed Comments typed to prevent point beam being lost through photocopying.

NAME: R. Coulter
SIGNATURE: Rep. R. Coulter

NTR AGENCY NOTED THAT THE STREAM IN THIS SUBDIVISION IS NOT AN ANADROMOUS STREAM. THE AREA AROUND THE STREAM MOUTH IS A NATURAL REPOSITORY. A LARGE COLLECTION OF TREES, LOGS TRASH AND DEBRIS LINED THE BACKSHORE AREA AS WELL AS THE STREAM BED. THE STREAM BED WAS DRY AND FILLED WITH SAND. ONE MOUSE PATTY WAS FOUND AND REMOVED. SIX PITS IN AND NEAR THE CREEK BED REMAINED NO OIL. THERE IS NOTHING TO DO AT THIS SUBDIVISION.

NAME: J. Johnson
SIGNATURE: J. Johnson

NTR I concur with AFGL, USCG and NOAA comments, though I recommend periodic re-survey to monitor possible future convergence of buried mouse.
We need to be flexible on this site. It is within Kachemak Bay State Park, established for its scenic qualities, and therefore deserves to be watched.

NAME: Chief Jensen / G. Shigenaka
SIGNATURE: Chief Jensen / G. Shigenaka

There is no longer any detectable oil present on the water adjoining shorelines, or places where it is likely to reach the water again.

THE FOCUS OF THIS VISIT WAS A STREAM THAT HAD BEEN IDENTIFIED AS ANADROMOUS BUT AT THE TIME OF THE SURVEY WAS NOT FLOWING AND SHOWED SIGNS OF HAVING BEEN DRY FOR SOME TIME. THE SHORELINE ON BOTH SIDES OF THE STREAM FOR SOME DISTANCE EACH WAY, AND THE STREAM BED ITSELF, WERE FINE SAND. RIVER OTTER TRACKS AND RABBIT WERE PLENTIFUL IN THE SAND; NEAR THE STREAM COURSE, BEAR TRACKS WERE OBSERVED. A LARGE AMOUNT OF GRITWOOD DEBRIS HAS COLLECTED IN THE LOWER PORTION OF THE STREAM BED. ALTHOUGH YOUR REP JOHNSON SAYS THIS BEACH WAS SEVERELY OILED, THE ONLY OIL RESIDUE OBSERVED ON THE SURFACE AND IN SEVERAL PITS DUE TO DEPTHS OF ABOUT 1'M WAS ONE SMALL MOUSE PATTY FOUND ON THE NORTH BANK OF THE STREAM. NO OTHER OIL WAS FOUND.
Comments of Doug Hill (ADF&G)---These comments have been typed to prevent loss of the printed word on the "comment sheet" from fading through photo copying.

In the past (1990) finding the buried seam of mousse in the sandy creek bed has been hit and miss. Also in the past tarballs and tar patties were usually found for a couple hundred yards or so in the drift line on either side of the creek mouth. On this survey only one 5 cm X 5 cm patty of mousse was observed on the creek's north bank.

There seems to have been more sand deposited in the creek bed this past winter than was deposited in the of 1989-90. Also much of the heavily oiled wood that was removed in 1989 has been replaced with new drift wood.

It will be interesting to see if oil emerges with increasing temperatures and summer runoff which will probably erode the stream banks and deposited berm.

The area is frequented by land otters and shorebirds. The area is also within Kachemak Bay Wilderness Park.

Recommend resurveying the site in late June or early July.
MAYSAP SHORELINE OILING SUMMARY

TEAM NO. 6 - Helo

OG D. Fitzgerald

ADEC O. Hill of ADFG

EXXON R. Coulter

bio T. Schroeder

LANDMANAGER J. Johnson for AONR

USCG/NOAA Chief Sepen / G. Shigenaka

DATE 13 May 1991

SEGMENT PP-1

SUBDIVISION A

TIME 8:00 to 8:45

TIDE LEVEL -1.4 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: 500 m

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

EST. OIL CATEGORY LENGTH: W____m M____m N____m VJ____m NO____m US 1447____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>LENGTH</th>
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</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

PHOTO ROLL # MAYSAP__

FRAMES

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

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

OG COMMENTS: The southern portion of this segment is a broad sandy beach backed by vegetated dunes and fronted by Nuka Passage. Previous surveys indicated that mouse and sea occurred at the mouth of the ephemeral stream and landward up the stream channel. More than six pits dug to depths of at least 30 to 45 cm failed to penetrate any oiled sediments. Only one mouse path was found and picked up in the entire surveyed shoreline.
The beach area around the suggested candidate stream is composed of low sandy, red clay, mostly a forested site environment for most plant and animal life. A large bluff help keep existing offshore conditions away from the site. A small stream enters onto the beach segment a roosted pitch located 200 yards south of the area. This site located in the first false area, which supports a variety of plant and animal organisms.

No water was present in the candidate stream in units of deep water in the area. The stream area was comprised of tufted grass, shrub, and gravel and no spawning areas were present in the area. The site definitely is not a major salmon producer.

**WILDLIFE OBSERVATIONS**
**TO BE COMPLETED IN ALL SUBDIVISIONS**

<table>
<thead>
<tr>
<th>BIRDS</th>
<th># OF SPECIES</th>
<th>TOTAL BIRDS</th>
<th>FISH OBSERVED SPECIES PRESENT</th>
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<td>Eagles</td>
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<td></td>
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</tr>
<tr>
<td>Gulls/Kittiwakes</td>
<td></td>
<td></td>
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<tr>
<td>Shorebirds</td>
<td>1 seagulls</td>
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<tr>
<td>Corvids</td>
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<tr>
<td>Other Birds</td>
<td>1 mallard</td>
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**MARINE MAMMALS**

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<td>Seals</td>
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<tr>
<td>Whales(specify)</td>
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<td>Long Estuaries</td>
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</table>

Shoreline subdivision map showing important biological features attached.
1991 MAYSAP EVALUATION

SEGMENT: PP 001  SUB:  A  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: 5/24/91

RECOMMENDATIONS:

TREATMENT REQUIRED (Y or N)  INITIAL  TAG  FOSC

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

COMMENTS:
INITIAL:

TAG:

FOSC:

TAG APPROVAL DATE:  6/1/91  FOSC APPROVAL DATE:  6/1/91

ADEP  FOSC

EXXON  E. E. PAGE, CDR, USCG

USCG  CHIEF OF STAFF, FOSC

NOAA  

Comments of Doug Hill (ADF&G)---These comments have been typed to prevent loss of the printed word on the "comment sheet" from fading through photo copying.

In the past (1990) finding the buried seam of mousse in the sandy creek bed has been hit and miss. Also in the past tarballs and tar patties were usually found for a couple hundred yards or so in the drift line on either side of the creek mouth. On this survey only one 5 cm X 5 cm patty of mousse was observed on the creek's north bank.

There seems to have been more sand deposited in the creek bed this past winter than was deposited in the of 1989-90. Also much of the heavily oiled wood that was removed in 1989 has been replaced with new drift wood.

It will be interesting to see if oil emerges with increasing temperatures and summer runoff which will probably erode the stream banks and deposited berm.

The area is frequented by land otters and shorebirds. The area is also within Kachemak Bay Wilderness Park.

Recommend resurveying the site in late June or early July.
In the past (1990) finding the buried seam of moussee in the sandy creek bed has been hit and miss. Also in the past, tarballs and tarotties were usually found for a couple hundred yards or so in the driftline on either side of the creek mouth. On this survey only one 3 x 3 m tarball of moussee was observed on the creek mouth bank. There seems to have been more sand deposited in the creek bed this past winter than was deposited in the winter of 1989-90. Also much of the heavily oiled wood that was removed in 1989 has been replaced with new driftwood.

It will be interesting to see if the oil emerges with increasing temperatures and summer waves which will probably erode the stream banks and deposited term. The area is frequented by land otters and shorebirds. The area is also within Kachemak Bay Wilderness Park.

Recommend re-surveying the site in late June or early July.

SPE: Attached typed comments typed to prevent point from being lost through photocopying.

RE: C. Pealer

NAME J. Johnson

OF ADNR

SIGNATURE

NTR AGENCY MONITORS NOTED THAT THE STREAM IN THIS SUBDIVISION IS NOT AN AGENT STREAM. THE AREA AROUND THE STREAM MOUTH IS A NATURAL RESERVOIR, A LARGE COLLECTION OF TREES, LOGS, TRASH AND DEBRIS, AND THE BACKSHORE AREA AS WELL AS THE STREAM BED. THE STREAM BED WAS DRY AND FREE OF SAND. ONE MOUSSEE PATTY WAS FOUND AND REMOVED. SIX PITS IN AND NEAR THE CREEK BED REVEALED NO OIL. THERE IS NOTHING TO DO AT THIS SUBDIVISION.

NAME Chief Jensen: G. Shigenaka

SIGNATURE

NTR I concur with ADFG, USCG and NOAA comments, though did recommend periodic re-survey to monitor possible future emergence of buried moussee. We need to be flexible on this site. It is within Kachemak Bay State Park, legislatively established for its scenic qualities, and therefore deserves to be watched.

NTR SHORELINES, OR PLACES WHERE IT IS LIKELY TO REACH THE WATER AGAIN.

NAME: Chief Jensen: G. Shigenaka

SIGNATURE

The focus of this visit was a stream that had been identified as anadromous but at the time of the survey was not flowing and showed signs of having been dry for sometime. The shoreline on both sides of the stream for some distance each way, and the streambed itself were fine sand. River otter tracks up to six were plentiful in the sand; near the stream course, bear tracks were observed. A large amount of driftwood debris was collected in the lower portion of the stream bed. Although ADNR Rep. Johnson says this beach was severely oiled, the only oil residue observed on the surface and in several pits dug to depths of about 1 m was one small moussee patty found on the north bank of the stream. No other oil was found.
OG COMMENTS: The southern portion of this segment is a broad sandy beach backed by vegetated dunes and fronted by Nokomis Passage. Previous surveys indicated that mouse and sea otter occurred at the mouth of the ephemeral stream and landward up the stream channel. More than six pits dug to depth of at least 30 to 45 cm failed to penetrate any oiled sediments. Only one mouse pellet was found and picked up on the entire surveyed shoreline.
KENAI PENINSULA

Piled Logs and Trash

Moussse Patty
Picked up by VECO Worker

Petrof Point

MLW

NUKA PASSAGE

0 30
METERS
MAYSAP BIOLOGICAL SUMMARY FORM

TEAM #: 6
DATE: 5/3/71
SEGMENT #: PP-001
TIDAL HEIGHT (Range): -2.2 to -1.0
BILOLOGIST: T. L. Schramm
SEA STATE: Calm
WIND SPEED/DIRECTION: Calm
PHOTOGRAPHS: ROLL #: 
FRAME #: 

COMMENTS/OBSERVATIONS (to be completed in oiled subdivisions only):
The beach area around the suggested anadromous stream is comprised of large boulders and a substantial
portion of the stream is covered with seaweed and kelp, providing a suitable habitat environment for
most plant and animal species. A large tidepools exist at the entrance to the tidal segment. A dead
pilot whale is located in the tidal pool at the mouth of the stream. Location is at the first tidal
pool area, which supports a variety of algae and invertebrates.

Wildlife was present in the area.

WILDLIFE OBSERVATIONS
TO BE COMPLETED IN ALL SUBDIVISIONS

BIRDS

<table>
<thead>
<tr>
<th>Species</th>
<th># of Species</th>
<th>Total Birds</th>
<th>Fish Observed</th>
<th>Species Present</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eagles</td>
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<td>Seabirds</td>
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<tr>
<td>Waterfowl</td>
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<td></td>
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<tr>
<td>Gulls/Kittiwakes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shorebirds</td>
<td>1 sandpipers</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corvids</td>
<td></td>
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<tr>
<td>Other Birds</td>
<td>1 whistleduck</td>
<td>1</td>
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</table>

MAMMALS

<table>
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<tr>
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<th># Observed</th>
<th>Species</th>
<th># Observed</th>
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<tbody>
<tr>
<td>Sea Otters</td>
<td>1</td>
<td>Bear</td>
<td>1</td>
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<tr>
<td>Pinnipeds</td>
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<td>Deer</td>
<td>1</td>
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<tr>
<td>Whale</td>
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<td>Otter</td>
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</tbody>
</table>

Shoreline subdivision map showing important biological features attached.
REGION: KENAI

SEGMENT: ST/PY-01

SUBDIVISIONS: A (1 OF 1)
SHORELINE EVALUATION

SEGMENT ST/ PY-01 SUBDIVISION A (1 OF 1) DATE 4/26/90

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 178 m: Medium 154 m: Narrow 0 m: V.Light 211 m: No Oil 3921 m
Subsurface Oil Observed: Yes X No Maximum Depth 15 cm

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: ____________
Salmon stream mouth - fry outmigration (3/1 to 5/15)
Salmon stream mouth - spawning (7/10 to 8/31)

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

AGENCY CONTACT PERSON: ADG & 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 Inpool application, prior to July 31 unless authorized by ADG. 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 ADG & prior to treatment for confirmation and advice.

AGENCY CONTACT PERSON: ADG & Larry Peltz 424-3214

Estero 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)
Canyon Creek Hatchery release (4/21 to 6/1)
Remote release site

No use of methods which might affect nearshore oil or toxicity levels, such as hot water wash or Inpool application, prior to at least July 1 unless authorized by ADG and/or PWS Aquaculture Association. 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 ADG and/or PWS Aquaculture Association for confirmation and authorization.

AGENCY CONTACT PERSON: 1E ADG & Larry Peltz 424-3214
1D 1F 1G PWS Aquaculture Association John McMillan or Bruce Suzumoto 424-7511

Gill net area (6/7 to 6/31)

Purse seine area (7/26 to 9/30)
Purse seine hook-off (7/26 to 9/30)
Set net sites (6/11 to 7/29)

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

AGENCY CONTACT PERSON: ADG & James Brady 424-3212

Herring spawning (4/1 to 6/15)

Contact ADG for confirmation - dates and locations may vary. Restrict boat traffic to essential minimum. Avoid damage to uncollected intertidal and subtidal algae and seagrass. If plans for treatment include methods such as hot water wash or Inpool application which might affect nearshore oil or toxicity levels, contact ADG for consultation and authorization.

AGENCY CONTACT PERSON: ADG & Evelyn Biggs 424-3235

Harbor seal and sea lion pupping (6/15 to 7/1)
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. No application of Inpool within two weeks of arrival dates (work window at these sites is limited to 7/2 to 7/31).

Contact ADG and USFWS prior to treatment for confirmation.

AGENCY CONTACT PERSON: US National Marine Fisheries Service Steve Zimmerman 586-7235
ADG & Don Calcote 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 786-3377

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

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

AGENCY CONTACT PERSON: USFWS & Jill Parker 786-3377
ADG & Tom Roth 267-2206

All Bald Eagle nests (3/1 to 6/1)
Active Bald Eagle nests (3/1 to 9/1)

Restrict air traffic and all disturbance to essential minimum. No personnel within 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 786-3377

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

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

Finfish harvesting
Deer harvesting (8/15 to 2/28)

Contact ADG & 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 Inpool which might affect intertidal or nearshore oil or toxicity levels, contact ADG and appropriate Native Corporation for authorization - see Native Corporation Contact List for each Native Corporation's contact person.

AGENCY CONTACT PERSON: ADG & Jim Fall 267-2359
FIELD SHORELINE COMMENT SHEET

SEGMENT ST PY 001 SUBDIVISION: A DATE: Dec. 24, 1990

NAME: Donald A. MacDowell SIGNATURE: Donald A. MacDowell

☐ NO TREATMENT RECOMMENDED ☐ TREATMENT SUGGESTED

COMMENTS:
The segment is located on the southern shore of Kegedock Island and is largely subject to high wave action. Most of the segment had very light to no oil, or beach had moderate oiling with some tar spots well up into the exposures seen on cliff face. Mammals are present in the area. About 80% of the segment was cleaned from the cliff with steam washes when it first pocket beaches.

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

☐ NO TREATMENT RECOMMENDED ☐ TREATMENT SUGGESTED

COMMENTS:
Mostly scattered coat on bedrock and boulders in small pocket beaches in the southern end of PY-01. Area were warm water wash was done last year looks much better. I agree with all data on SSAT forms.

LAND MANAGER - USFWS
NAME: Mary Parker SIGNATURE: Mary Parker

☐ NO TREATMENT RECOMMENDED ☐ TREATMENT SUGGESTED

COMMENTS:
Oil persists in this segment on several pocket beaches. Most surface coat is dry and tarry or present on vertical rock faces and will be difficult to remove with current treatment methods. Other areas, coat and stain is present beneath the surface layer of gravel and boulders especially where warm water wash was utilized as a treatment method last year. There is some
SHORELINE OILING SUMMARY

OG Sawyer
NOAA MacDonald

BIO Carr
LAND REP. Partner

SUBDIVISION A

TIDE LEVEL 3.5 to +2.0

DATE Apr 12, 1990

EST. SUBDIVISION LENGTH: 5181 m

SURVEYED FROM: Foot

SLOPE: Lang 10 % Hang 5 % Vert 85 %

OIL CATEGORY LENGTH: W 125 m M 120 m N 0 m V L 270 m NO 4666 m

SURFACE OIL

CHARACTER DISTRIBUTION OIL / FILM COLOR IMPACTED ZONES

ASPHALT PAVEMENT

POOLED

COVER

COAT

STAIN

MOUSSE

PATTIES TARBALLS

FILM

NO OIL

PAVEMENT H

PATTIES TAR BALLS

NEAR SHORE SHEEN? NO

OILED DEBRIS NO

AMOUNT SM MD LG

DID YOU COLLECT DEBRIS?

YES O NO

TYPE

# BAGS

Photographs:

Roll No.
Frames

SUBSURFACE OIL

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<th>OILED INTERVAL</th>
<th>OILED DEBRIS</th>
<th>BELOW OIL/FILM COLOR</th>
<th>OIL/FILM COLOR</th>
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COMMENTS: ST/PY-1 consists almost entirely of bedrock cliffs, with the exception of a few small "pocket" beaches. The most significant oiling occurs in the southernmost part of this segment.
See Sketch Map - A

Oil Character Length (m): AP PO CV CT ST MS PT TR FL
SHORELINE ECOLOGICAL SUMMARY

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

Biologist MARK 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 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

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MYTILUS

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GASTROPODS

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Wildlife Observations/ General Comments:
- harlequin duck (24), Steller's sea lion (1), glaucous-winged gull (200),
  scoters (4), ruby-headed kinglet (song), sea otter (2), cormorant (2),
  pigeon guillemot (1)

Ecological Considerations:
- 4 QQ (National Wildlife Refuge)
SHORELINE EVALUATION

SEGMENT ST/ PY-01 SUBDIVISION A (1 OF 1) DATE 4/26/90

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 CONSTRAINT: If cultural resources are uncovered during shoreline treatment, stop work in the vicinity, mark the location of the find and contact Exxon's Cultural Resource Program immediately (564-3274 (Anchorage) or 229-1508 (24 hrs.).)

SHPO SIGNATURE: [Signature] DATE: 5/10/90

OILING CATEGORIZATION:

Wide 178 m: Medium 154 m: Narrow 0 m: V. Light 211 m: No Oil 3921 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 Removal ___ Beach Cleaner
● Other (see comments)

COMMENTS:

_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________

TAG COMMENTS: Manual Pickup of Tarmat & Debris as indicated + Bioremediation as indicated

TAG APPROVAL DATE: 5/8/90
ADEC Art Wagenet Dr. Deen
EXXON Andy Gal Ben King
NOAA Gary Peter Don Pederson
USCG G.A. Peter G. Keaton

Bioremediation not authorized - coordinate treatment with USF-WL rep.
ADDENDUM: SUBDIVISION CONSTRAINTS

SEGMENT PY-1 SUBDIVISION A

WORK WINDOW

Manual Pickup
Tarmac Removal
CLOSED

ARCHAEOLOGICAL STANDARD CONSTRAINT

If cultural resources are uncovered, PHONE 584-3274.

APPLICABLE ECOLOGICAL TIME CONSTRAINTS

5R Seabird Colony Closed to all activities; work site is less than 800m from seabird colony.

OTHER ECOLOGICAL CONSIDERATIONS

If seabird colony constraint is removed, other ecological considerations will apply.

FOSC

Prepared by

Date

6/13/90

Date

6/12/90
SHORELINE EVALUATION

SEGMENT ST/Py-01  SUBDIVISION A (1 OF 1)  DATE  4/26/90

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 unspoiled biota and
substrate.

ARCHAEOLOGICAL CONSTRAINT: If cultural resources are
uncovered during shoreline treatment, stop work in the
vicinity, mark the location of the find and contact Exxon's
Cultural Resource Program immediately (564-3274 (Anchorage)
or 229-1508 (24 hrs.)).

SHPO SIGNATURE: [Signature]  DATE:  5/10/90

OILING CATEGORIZATION:

Wide 178 m; Medium 154 m; Narrow 0 m; V.Light 211 m; No Oil 3921 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 Removal

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

COMMENTS:  SES CONSTRAINTS AMENDMENT DATED 6/12/90

TAG COMMENTS:  Manual pickup of Tarmats + DEBGC3 as indicated +
Bioremediation as indicated

TAG APPROVAL DATE:  5/8/90
ADEC  Art Wengert  MTW
EXXON  Amy Cal"  A
NOAA  Cerf-Pack P
USCG  G.A. Beiler  G. A. Beiler

FOSC: [Signature]  DATE:  5/15/90
Bioremediation not authorized - coordinate
treatment with USFWS rep.
REGION: KENAI

SEGMENT: ST/PY-02

SUBDIVISIONS: A (1 OF 1)
SHORELINE EVALUATION

SEGMENT ST, PY-02 SUBDIVISION A (1 OF 1) DATE 4/25/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:

□ 4QQ National Wildlife Refuge
□ ST-1 All bald eagle nests (3/1 to 6/1) - Active eagle nests (3/1 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 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_397_m: Medium_1275_m: Narrow_3214_m: V.Light_599_m: No Oil_5874_m
Subsurface Oil Observed: Yes X No Maximum Depth_12_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 Removal □ Beach Cleaner
□ Other (see comments)

COMMENTS: Recommended treatment includes manual pickup of tarmats, pooled oil and mousse followed by bioremediation in areas indicated on sketch map. Work should be conducted after 6/1 with approval of USFWS regarding eagle constraints.

TAG COMMENTS:

__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________

TAG APPROVAL DATE: ____________

□ ADEC
□ EXXON ___________________________ FOSC: ____________ DATE: ____________
□ NOAA ___________________________
□ USCG ___________________________
Salmon stream mouth - fry outmigration (3/1 to 5/15)
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 Inipol 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 (4/21 to 7/31)
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 6/11)
Cannery Creek Hatchery release (4/21 to 6/1)
Remote release sites
No use of methods which might affect nearshore oil or toxicity levels, such as hot water wash or Inipol application, prior to July 1 unless authorized by ADF&G and/or PWS Aquaculture Association. 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 or PWS Aquaculture Association for confirmation and authorization.
AGENCY CONTACT PERSON: 1E PWS Aquaculture Association John McMillan or Bruce Suzumoto 424-7511

Gill net area (6/7 to 8/31)
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 specific dates, locations and constraints. Restrict boat and air traffic to essential minimum. When set net sites are present (1) restrict boat 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, ADF&G for consultation and authorization.
AGENCY CONTACT PERSON: ADF&G Evelyn Biggs 424-3235

Herring spawning (4/1 to 6/15)
Contact ADF&G for confirmation - dates and locations may vary. Restrict boat traffic to essential minimum. Avoid damage to unconsolidated intertidal and subtidal algae and seagrass. 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 Biggs 424-3235

Harbor seal and sea lion pupping (5/15 to 7/1)
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. Inipol application 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 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 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 8/1)
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 seabird only; maintain 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 (8/1 to 9/15)
Anchorage (8/1 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)
Finfish harvesting
Bear harvesting (8/15 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


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

☐ NO TREATMENT RECOMMENDED ☒ TREATMENT SUGGESTED: Manual cleaning

COMMENTS: Large areas of wat and mousse were found along with accumulations of mousse 15 cm and greater. This segment brought out serious problems with the shoreline oiling summary form. The list of surface oil characteristics玥es terms which describe the character of the oil with terms that describe the distribution of the oil. "Asphalt pavement", "mousse" and "turbulent" are terms which describe the character of the oil while "pooled", "coated", "wet", "stained" and "film" describe the horizontal and vertical distribution of the oil. "Stained" and "pooled" describe horizontal distribution; the fact that mousse was observed is cause for concern although it could have been put there as long ago or post placed. The final report does not agree with the following summary.

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

☐ NO TREATMENT RECOMMENDED ☒ TREATMENT SUGGESTED

COMMENTS: I am suggesting manual removal of pooled oil and mousse patches and asphalt pavements in this segment. All form of oiling characteristics persists in this segment. The OG map shows in detail were the oil persists. This oil should be easily removed with the use of hand shovels or hand pump. I agree with data on SSAT Forms.

LAND MANAGER
NAME: ___________________________ SIGNATURE: ___________________________

☐ NO TREATMENT RECOMMENDED ☐ TREATMENT SUGGESTED

COMMENTS: 
NOAA NAME: Donald W. MacDonald

SUBDIVISION: A
DATE: Apr. 26, 1990

NAME: Donald W. MacDonald

SIGNATURE: Donald W. MacDonald

NO TREATMENT RECOMMENDED

TREATMENT SUGGESTED

□ NO TREATMENT RECOMMENDED    □ TREATMENT SUGGESTED

COMMENTS continued.

The area, as shown on sketch map B, where the thick deposit of marine was reported on and among the boulders and in the stream should be manually cleaned using shovels and trowels. Because a relatively large amount of oil could be picked up with a minimum of effort.

ADEC NAME: 

SIGNATURE: 

□ NO TREATMENT RECOMMENDED    □ TREATMENT SUGGESTED

COMMENTS

LAND MANAGER NAME: 

SIGNATURE: 

□ NO TREATMENT RECOMMENDED    □ TREATMENT SUGGESTED

COMMENTS
SEGMENT ST: PY-02  
SUBDIVISION:  
DATE: 4/26/90

☐ NO TREATMENT RECOMMENDED  
☐ TREATMENT SUGGESTED

ADEC
NAME:  
SIGNATURE:  
☐ NO TREATMENT RECOMMENDED  
☐ TREATMENT SUGGESTED

LAND MANAGER - USFS
NAME: Mary Potter  
SIGNATURE:  
☐ NO TREATMENT RECOMMENDED  
☐ TREATMENT SUGGESTED

Persistence of this subdivision on severely low angle boulder and cobble beaches
buoyed with rock and debris, asphalt, pavement, gravel, stone, mixed and tumbled
surface oil exists to at least a depth of 1/2 cm. A "bathub ring" remains on
shale rock face in the eastern portion of the area. Asphalt, pavement, gravel oil,
and debris should be removed using hand tools including shovels, spades,
scrapers, etc. In many cases, cobble and mixed boulders must be turned, removed,
from the underside and removed from subsurface sediments. Oil persists
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from the underside and removed from subsurface sediments.

Due to the extent of damage, in addition to the recovery described, the land
owner is requested to perform additional cleanup. Due to the extent of damage,
additional cleanup is required.
# Shoreline Oiling Summary

**Segment:** PY 2  
**Subdivision:** A  
**Date:** 12/12/90  
**Time:** 6:30 to 9:15  
**AM/PM:** AM  
**Surveyed by:**  
**Reported by:**  
**O&G Surveyor:**  
**Land Rep.:**  
**Date:**  
**Tide Level:**  
**Height:**  
**Wave Exposure:**  
**Uplands Description:**  
**Surface Sediments:**  
**Slope:**  
**Oil Category Length:**  
**Surface Oil**

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<th>Distribution</th>
<th>Oil/Film Color</th>
<th>Impacted Zones</th>
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**Pavement:** H F  
**Footprints:** 45 sq. m by 4 cm  
**Patties/Tarballs:** 1 Bag  
**Near Shore Sheen:** No  
**Debris:**  
**Did You Collect Debris:** Yes  
**Type:**  
**Sorbolene Oiled:** 5 bags  
**Photographs:**  
**Roll No.:** ST-18-8  
**Frames:** 27-34

**Subsurface Oil**

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<th>Oiled Interval</th>
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**Comments:**
**SEGMENT ST/ PY 2**

**SUBDIVISION** A (part of)

**DATE** Apr 12 90

**CHECKLIST**

- N Ave
- Appur. Scale
- Spr/Sub Endry
- Oil Dist.
- Width
- Length
- % Cover
- Substrate Character
- Est. HWL/WL
- SSL
- Profile Location(s)
- Profile(s)
- Pit Location(s)
- Photo Location(s)

**LEGEND**

1 △

PR - No Subsurface Oil

2 △

PR - Subsurface Oil

**CT/C**

Continuous Distribution

**CT/S**

Broken Distribution

CT/P

Patchy Distribution

**CT/S**

Splashed Distribution

EEE

Oiled Vegetation

∞

Photo location, direction, and number

→ See Map A

*Oil Character Length (m): AP PO CV CT ST MS PT TP CI UK*
SHORELINE ECOLOGICAL SUMMARY

Segment ST PY-2
Subdivision A

Date (mo/day/yr) 4-23-80

Biol. (24 hr) 4-24 (650)
Biologist MARK CHER

(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 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)

Photographs:
Roll No. ST-18-8
Frames 27-34

BARNACLES

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FUCUS

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<td>6 M</td>
<td>6 L</td>
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</table>

Wildlife Observational/General Comments:

Sea otter (3), harlequin ducks (3), oyster catcher (2), bald eagle (2) mature,
river otter (1)

Ecological Considerations:

5T (bald eagle nest), 499 (national wildlife refuge)
SHORELINE EVALUATION

SEGMENT ST/PY-02 SUBDIVISION A (1 OF 1) DATE 4/25/90

SEGMENT ENVIRONMENTAL SENSITIVITIES AND TIME CONSTRAINTS:

4QQ National Wildlife Refuge
5T-1 All bald eagle nests (3/1 to 6/1) - Active eagle nests (3/1 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 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: 5/2/90

OILING CATEGORIZATION:

Wide_397_m: Medium_1275_m: Narrow_3214_m: V.Light_599_m: No Oil_5874_m
Subsurface Oil Observed: Yes X No ______ Maximum Depth __12 cm

RECOMMENDATIONS:

______ No Treatment Recommended

X Treatment Recommended

X Manual Pickup

X Bioremediation

X Tarmat Removal

______ Snare/Absorbent Booms

______ Oil Snares (pom poms)

______ Absorbents (pads, rolls, etc)

______ Spot Washing: X Wands

______ Beach Cleaner

______ Other (see comments)

COMMENTS: Recommended treatment includes manual pickup of tarmats, pooled oil and mousse followed by bioremediation in areas indicated on sketch map. Work should be conducted after 6/1 with approval of USFWS regarding eagle constraints.

TAG COMMENTS: __________ TO PAY PARTICULAR ATTENTION TO APPLICATION OF BIOREMEDIATION TO AVOID THE DENSE INTESTINAL BIOTA. IF MANUAL REMOVAL OF Mousse IS NOT POSSIBLE, DUE TO INTENSITY, SPOT WASH WITH OIL SNARE.

TAG APPROVAL DATE: 5/8/90

ADEC __________

EXXON __________

NOAA __________

USCG __________

FOSC: ______ DATE: 5-12-90

Biorremediation __ unauthorized
SHORELINE EVALUATION

SEGMENT ST/ PY-04 SUBDIVISION A (1 OF 1) DATE 4/25/90

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: [Signature] DATE: 5/5/90

OILING CATEGORIZATION:

Wide 0 m; Medium 0 m; Narrow 0 m; V.Light 0 m; No Oil 2572 m
Subsurface Oil Observed: Yes ___ 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: 5/4/90

ADEC [Signature] DATE: 5/9/90

EXXON [Signature]

NOAA [Signature]

USCG [Signature]
1991 MAYSAP EVALUATION

SEGMENT: PY 002    SUB: A    REGION:    SURVEY DATE: 5/12/91

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: 5/24/91

RECOMMENDATIONS:

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

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

COMMENTS:

INITIAL:

TAG:

FOSC:

TAG APPROVAL DATE: 5/24/99    FOSC APPROVAL DATE: 5/29/91

ADEC    Exxon    USCG    NOAA

The State will evaluate the need for further treatment.
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.
ADEC  Clara S. Crosby

Survey was conducted on cold - rainy day - MS was observed to be Lt. Brown & of a pudding consistency -

Treatment is suggested for sites/locations

1, 2, 5, 7. Manual removal of MS using hand trowels/shovels & pompons is recommended.
Significant oiling occurs at M to V intertidal & impact to C intertidal should be minimalized.

MS is accessible at sites 2, 6 or lowlying Bedrock - pooled in crevasses.

Sites 1 & 5 would require rolling of C/sm B. to access MS - although it is also present - pooled in Bedrock.

Site #7. Removal at this site would be labor intensive - although suggest removal of fairly accessible MS.

This beach is fairly high energy. Use 69 B/c - Bedrock. MS is in protected areas behind B/c -

One area on west shore w/ previous oiling data - was not observed -
ADEC
NAME: CLARA S. CROSBY
SIGNATURE: CLARA S. CROSBY

TREATMENT RECOMMENDED

See attached:

EXXON
NAME: GEORGE P. STILES
SIGNATURE: GEORGE P. STILES 5/12/91

NTR The mussel throughout the segment is very weak and inert. It clean up is recommended it would be for cosmetic reasons. The work would be with hand trials and must be performed early in the summer. The large boulders throughout the segment will hinder the success of any clean up performed.

LANDMANAGER
NAME: JOHN A. HARDISTEE
SIGNATURE: JOHN A. HARDISTEE 5/13/91

NTR Manual removal of mussels with trowel/shoulder and absorbent towel is recommended for the most heavily infested section of the segment. Cleaning would be labor intensive because of the nature of the terrain (cable, boulder, bedrock) and safety for workers should also be a strong consideration for the cleaning operation. Thus, the most readily accessible areas with the most silt should be considered for cleaning.

USCG/NOAA
NAME: CARL J. McMAHON
SIGNATURE: CARL J. McMAHON

NTR Although there are sporadic patches of TP or TB and very sporadic "mussel-like" patches imprinted in bedrock, clean-up measures would be excessively costly in view of their insignificant contribution to minimizing a threat to the public health or environment.

VYTH DEAN A. MCDOWARD

SIGNED: DEAN A. MCDOWARD
### MAYSAP SHORELINE OILING SUMMARY

**TEAM NO.** H  
**GRID**  
**BIO.** J. Barry  
**ADEC.** Clare Crosby  
**LANDMANAGER.** John Heisler, USFWS  
**USCG/NOAA.** McMahon/McDonald  
**TIME.** 06:31 to 10:07  
**TIDE LEVEL.** 1.3 ft.  
**ENERGY LEVEL.** H  
**SURVEYED FROM.** FOOTS  
**WEATHER.** SUN  
**TOTAL LENGTH SHORELINE SURVEYED.** 850 m  
**NEAR SHORE SHEEN.**  
**EST. OIL CATEGORY LENGTH.** W m  212 m  N m  545 m  NO m  93 m  US/OS m  

<table>
<thead>
<tr>
<th>SURFACE OIL CHARACTER</th>
<th>SURFACE SEDIMENT</th>
<th>SHORE SLOPE</th>
<th>AREA</th>
<th>ZONE</th>
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<td>AP</td>
<td>MS</td>
<td>TB</td>
<td>SOUR</td>
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<tr>
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<td>A7</td>
<td>S</td>
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**DISTRIBUTION:** C = 91-100%; B = 51-90%; P = 11-50%; S = 1-10%; T = <1%

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

**PHOTO ROLL #:** MAYSAP-1 to 24

**Framed:**

### SUBSURFACE OIL CHARACTER

<table>
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<tr>
<th>PIT NO.</th>
<th>DEPTH (cm)</th>
<th>OP</th>
<th>HOR</th>
<th>MOR</th>
<th>LOR</th>
<th>OF</th>
<th>TR</th>
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<th>OILED ZONE</th>
<th>CLEAN ZONE</th>
<th>H2O LEVEL</th>
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<th>PIT ZONE</th>
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</table>

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

### OG COMMENTS:

Subdivision Py. 002. A consists mostly of steep bedrock shoreline, sometimes with small patches of boulders or cobble. Colors of the rocks are seen in the oil at many locations. The exact distribution and quantity of oil are very difficult to determine because of the abundance of very large boulders and the frequent boulder/cobble cover.
OG SKETCH MAP

PY-002-A
LOCATION II
"SEMPELS"
MAY 13/91
SK: 063-6

Legend

- Bedrock cliffs
- Large boulders
- Small boulders

Al
1: MS 3x10, 20%
2: NS 3x15, 20%
3: CT, ST, 4x50, <5%
<20 cm diameter, a few CV, all on bedrock and boulder surfaces.

Very small cave in faulted bedrock.

Small stream with fallen boulders fault plane. Steep bedrock backshore. Large (several m.) boulders in Uitz, smaller one and cobbles in Mitz. Cave bounded by low bedrock cliffs.

Band of NS around base of large boulders, almost around stream, max thickness 5 cm in pools. Also CV, CT, ST in 3x50 m band in Uitz on bedrock on boulder surfaces <20 cm diameter <5% coverage. May 30 4-1-104 clock-wise pan-river from S.W.

Extremity of cave. 5: example of CV on rock, 6: MS heath. 6/28
Large angular boulders among and on bedrock outcrops.
Steep vegetated backshore.

OC occurs in a 4 m wide band in W12.
1: MS in depressions, around base of boulders, in bedrock fractures, in small tidal pools, max 6 cm, average 1-2 cm, sometimes an HSOA black mousse
2: band of small pocket of mixed fine sediments (very fine) and 3: CV and CT splotches, all <20 cm diameter on bedrock or boulder surfaces.
Skidmore made up of low rounded boulders and nearshore outcrops. Few large angular boulders. Frequent fractures in boulders.

Oil occurs in few coats and covers all less than 20 cm diameter coat on bedrock surfaces and covers at base of fractures. All within a 4 m wide band in unit, with less than 10% average coverage. Cover decreases from west to east when it disappears.
<table>
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<td>64 Samples</td>
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<td>May 12/91</td>
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- **Py. 009. A**
- **Location IV**
- 64 Samples
- May 12/91

<table>
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<tr>
<td>40</td>
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</table>

- **Legend**
  - Low steep
  - Bedrock
  - Few large boulders
  - Steep vegetation
  - Rock slide
  - Rindbend

- **Outline of steep bedrock cliffs, occasionally with a few large angular boulders.**
- **Very few cl (<10%)**
- **clastics < 20 cm dia. on bedrock surfaces.**
  - (1 × 100 m)
  - 1 large (40 cm dia.)
  - Flower / rope festi
  - picked up

- **Very few cl (<10%)**
- **clastics < 20 cm dia. on bedrock surfaces.**
  - (1 × 100 m)
  - 1 large (40 cm dia.)
  - Flower / rope festi
  - picked up

- **May 4-1-91**
- **13**
- **12**

- **Reviewed 5/16/91**
- **99**
- **Accept 5/16**
Location V

Small area of angular boulders/cobbles in front of low, steep bedrock cliffs.
25-30 m wide intertidal zone
Oil occurs as 75% and scattered at < 20 cm disk all in 4 m wide band over 70 cm long in U1T2.  75% at base of boulders and between cobbles < 30 cm by < 5 cm thick flakes.
Oil covers slightly greater at western extremity of cove.

Reviewed 5/16/91 GY
Crossed 5/16
Area consists of a breachland of low rounded bedrock elongated west-east, separated by a wide intertidal (2-4m) zone of cobble/boulder/sand from a steep bedrock cliffed hillyland fringed by a talus of very large angular boulders.

Occurrence on:
1: 1 x 30m band of MS in fractured zone on bedrock headwall
2: Aga pitons < 30 cm dia.
3: Few splatter on boulder surface
4: 1 3x7 m MS 20% pitch around base of boulders as shown above.

1 large green ball (not error) picked up.

40 x 40 cm boulder cobble cave between step bedrock rim. Abundant clean log and large angular boulders in witz. 2 major patches of m+s: 1: 4 x 40 cm band in witz of CT, CV, and m+s together 5% coverage. (CT CV on boulder and bedrock surfaces, m+s around base of boulders) and in bedrock fractured zone. All < 20 cm diameter.

2: A much wider area on the western side of cave of m+s between boulders cobblef possible as RS or 07 AP in top 5 cm of sediments < 5% coverage binding blocks together in this unit. Exact distribution and coverage of m+s impossible to determine because of abundance of large boulders.

Reviewed 5/16/91 QY
MAYSAP BIOLOGICAL SUMMARY FORM

TEAM # 4
SEGMENT # PY002
SUBDIVISION A
SEA STATE 0-1 ft

DATE/TIME May 12, 1991 0615 - 1007
TIDAL HEIGHT (Range) -1.3 => +5.5
BIOLOGIST JIM BARRY
WIND SPEED/DIRECTION Variable 0-10, light rain

COMMENTS / OBSERVATIONS - OILED SUBDIVISIONS

Location I - (A1)
This oiled location has patchy mousse in the upper zone of the intertidal. Biota are
scarce directly in or adjacent to the oiled site, as they are at this tidal level
throughout the area. Littorine snails are occasionally observed on mousse patties. Black
lichen (Verrucaria sp.) is found slightly above and scattered around the oiled site. The
abundance and diversity of biota increases towards the lower intertidal. Green and brown
filamentous or film-like algae are moderately abundant slightly below (1-2 ft) the level
of the oiling. Very near this level, branched red algae, mainly Endocladia sp., form a
low turf on many boulders. Limpets and littorine snails are quite abundant in this zone,
which grades in its lower extent to a zone dominated by barnacles (Semibalanus cariosus
and Balanus glandula), with dense aggregations of dog whelks (Nucella lima; adults,
juveniles). Fucus is sparse to moderately dense below and overlapping the barnacle zone.
The lowest intertidal zones are thick with several species of red (Palmeria,
Membranoptera, Pilotia), green (Cladophora, Ulva) and brown (Alaria marginata, Laminaria
dentigera) algae, as well as a diverse community of invertebrates (isopods, amphipods,
polychaete worms, limpets, chitons, sea stars, anemones, sponges, bryozoans).

This pocket beach is somewhat protected from large swell, but is clearly moderately
exposed. Mussels are not abundant at this site, except for small patches scattered
between boulders throughout the location. The high zones are nearly bare, with increasing
abundance of algae towards the lower zones, and very rich and high cover of algae in the
lowest intertidal zones and into the subtidal.

Manual Pickup was performed on this beach. Additional cleanup operations, if recommended,
will have little or no adverse effect on the biotic communities at the location, owing to
the location of the oil in the high intertidal zone.

(continued)

WILDLIFE OBSERVATIONS - Completed on all subdivisions

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<tr>
<td>Whales (specify)</td>
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</table>

Shoreline subdivision map showing important biological features attached.
Location II - (A2)
Mousses present at this location were present from the extreme upper intertidal to the lower edge of the upper zone, with the greatest oiling in the highest zone. At the highest level there was little biota in close proximity to the oil, or on any other substrata at that zone. The oiled locations slightly lower in the intertidal were among a sparse cover of green and brown filamentous algae. Otherwise, the zonation of the intertidal biota was similar to location I (above). This site was slightly more exposed that location I and has slightly higher diversity of species and greater dominance by large brown algae in the low intertidal zone (Alaria marginata), and bull kelp (Nereocystis leutkeana) offshore. Mussels are not present in great abundance, but are common as young juveniles (probably less than 1 year old) amongst Fucus and other turf-forming algae in the middle intertidal zone.

Manual cleanup was performed at this location. Additional cleanup will have no adverse effects on the biota at this location.

Location III - (A3)
Oiling here is similar to location II. Little biota, other than scattered black lichen, green algae, and a few littorine snails, is present in the vicinity of the oil. Littorines are, however, found directly on the mousse, though in lower density than adjacent sites with no oil. Here again, mussels are abundant as young juveniles amongst the turf-forming species of headland boulders and in small aggregations throughout the site. Fucus, barnacles, dog whelks (Nucella), littorines, and many species of red and brown algae are present as adults and juveniles.

Manual cleanup, if recommended, will likely not adversely impact the biota at this site, providing cleanup is limited to the upper intertidal zone.

Location IV - (A4)
This oiled site is similar to Location III, but is somewhat more exposed to waves. Oil is present as scattered patches of mousse, and as a scattered coat. Most of the oil is in the extreme high intertidal zone, where little biota normally occurs. Sparse patches of black lichen, green algae, and some sparse littorines, are present near the oil patches. Littorines are again found on the oiled areas, but in lower densities than adjacent areas on clean rock. At lower intertidal levels, the abundance and diversity of the biota increase. The general patterns of distribution are similar to those described above, with high cover of red and brown algae in the lowest zones, Fucus and barnacles in the middle zone, and scattered cover of red and green algae, as well as limpets, littorines, and barnacles above. Mussels are more abundant at this exposed location, and are present in quite dense patches on the middle to high zone of exposed headlands.

Manual cleanup of this site, if recommended, will likely not adversely affect the biota, providing cleanup is restricted to the upper zone.

Location V - (A5)
Oiled area at this location is similar to those at other sites. Little biota is present at the tidal level of the majority of the oil. Sparse littorine snails, barnacles, and limpets were present in the high zone at the oiled site. Some littorines and limpets were present on the oil. Scattered patches of filamentous green algae (Urospora?) and black lichen also were present near the oiled areas. Somewhat lower in the intertidal, but within 5 m or so of the oil, small patches of mussels, and filamentous red algae were common. In the middle zone, dog whelks (Nucella lima) were present in dense patches, with
high densities of acorn barnacles (Balanus) covering many cobbles. The lowest zone had dense red and brown algae, and the subtidal adjacent to the beach was covered by large brown algae. Sea stars, anemones and several other invertebrates (littorines, limpets, hermit crabs, chitons, isopods, and others) were quite abundant in the low zones.

This location is a cobbled beach which is exposed to medium waves. The abundance of most species is low compared to bedrock outcrops, and cliffs located within the segment, but there still is a well developed community of biota at this location. No evidence of recent oil-related impacts are apparent.

Manual cleanup was performed during the survey. Additional treatment, if recommended, will likely not adversely affect the biota in at this location, unless cleanup is performed during the eagle breeding season, and the nest reported on the MAYSAP maps is nearby and active.

Location VI - (A6)

This location has several habitat types with varying degrees of oiling. Most of the oil is located along the upper intertidal zone where little biota is present (Area A). At area A, scattered littorine snails and limpets are present, with black lichen, sparse to moderate filamentous green algae (Urospora) and little else. At area B, (see sketch map), scattered patches of HSOR are present in a mussel bed in the middle to high zone. This is a sensitive habitat. In this cobbled/pebble beach (see sketch map) mussels have consolidated the sediments into a fairly well formed mussel bed between the cobbles. The observed HSOR patches were removed.

This beach is generally quite healthy looking. Most species are present in all life stages, and are recruiting and reproducing. Additional cleanup at this location should be restricted to areas A and C. Cleanup should NOT be performed on or around the mussel bed (area B) unless caution is used to pick up only obvious and small patties, with as little disturbance to the mussel bed as possible. Area C appears to need cleanup more than A or B. No adverse effects should occur from cleanup activities in these areas, so long as the cleanup impacts and activities are restricted from the more sensitive site.

Location 7 - (A7)

This is a fairly exposed pocket beach with the majority of the oil in the high to middle intertidal zone. Filamentous green algae is the most abundant organism near the oil site. Littorine snails, limpets, and scattered patches of barnacles (Balanus) also are moderately abundant adjacent to the oil. Many cobbles are rolled by waves and thus have little biota on them. At the margins of the wave effects, more biota are abundant, with scattered patches of mussels, barnacles, and Fucus in the middle zones, and dense red algae in the lowest zones.

Manual cleanup was performed on this beach during the survey. Additional cleanup, if recommended, will not adversely affect the biota on the beach.

General Comments

The general condition of this long segment is very healthy. Much of the segment is exposed to high surf. Cobble beaches are highly disturbed by this wave action, resulting in little biota in habitats where cobble are mobilized by storms. In contrast, headlands and bedrock cliffs are highly exposed, but have a richer cover of biota. Low intertidal habitats generally have dense cover of red and brown algae. In the lowest zones and offshore in deeper water, several species of large kelps or brown algae are very abundant.
Recruitment was observed for most of the important species, though not as abundantly as was found on other beaches.

List of Common Species from PY002-A

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

II. Marine Animals
   1. Sponges - Porifera
      Halichondria sp., Halichondria panicea, Ophlstaspongia pennata
   2. Anemones
      Anthopleura artemisia, Epiactis ritteri, Metridium senile, Urticina crassicornis,
   3. Hydroids - Sertularidae - Sertularella?
   4. Flatworms - Platyhelminthes - Polyclads
   5. Nemertean Worms - Ribbon Worms - Empelotonema gracile
   6. Polychaetes -
      Nereidae - Nereis spp.
      Serpulidae -
      Serpula sp., Crucigera sp., Eudistylia polymorpha
      Spirorbidae - Spirorbis sp.
   10. Crustaceans
      a. Amphipods - Orchestia sp.?
      b. Barnacles
         Balanus glandula, Chthamalus dalli, Semibalanus cariosus
      c. Crabs
         Paguridae (hermit crabs), Oregonia gracilis, Pugettia sp.,
      d. Isopods
         Cirdana harfordi, Idotea wosnesenskii, Gnorimosphaeroma oregonensis
   11. Mollusca
      a. Chitons - Mopalia sp., M. mucosa, Katharina tunicata, Tonicella lineata,
      b. Snails - Gastropods
         Fusitriton oregonensis, Littorina scutulata, L. sitkana, L. keenae,
         Nucella lamellosa, N. lima, Searlesia dira
      c. Limpets
         Acmaea mitra, Lottia digitalis, L. persona, T. persona, T. scutum,
         Siphonaria thersites
      e. Mussels and Clams
         Agriodesma saxicola, Chlamys hastata, Hiattella arctica, Modiolus modiolus, Mytilus edulis, Pododesmus cepio, Prototheca staminea,
         Saxidomus giganteus
12. **Echinoderms**
   a. **Brittle Star** - Ophiolus sp.
   b. **Sea Star**
      - Dermoasterias imbricata, Leptasterias hexactis, Pisaster ochraceus,
      - Pycnopodia helianthoides, Solaster sp.
   c. **Sea Cucumbers** - Holothurians - Eupentacta sp.
   d. **Urchins** - Strongylocentrotus droebachiensis


**Birds**

<table>
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<tr>
<th>Bird</th>
<th>Count</th>
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</thead>
<tbody>
<tr>
<td>Bald Eagle</td>
<td>2</td>
</tr>
<tr>
<td>Mew Gull</td>
<td>3</td>
</tr>
<tr>
<td>Glaucous-winged Gull</td>
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<tr>
<td>Black Legged Kittiwake</td>
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</tr>
<tr>
<td>Surf Scoter</td>
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<tr>
<td>Western Sandpiper</td>
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</tr>
<tr>
<td>Red-necked Phalarope</td>
<td>20</td>
</tr>
<tr>
<td>Barrow's Goldeneye</td>
<td>5</td>
</tr>
<tr>
<td>Harlequin Duck</td>
<td>3</td>
</tr>
<tr>
<td>Pelagic Cormorant</td>
<td>25</td>
</tr>
<tr>
<td>Pigeon Guillemot</td>
<td>10</td>
</tr>
</tbody>
</table>
BID SKETCH MAP
PY002-A

LOCATION I

12 May 91
J P Brown

- Lenses Boulders/Sheetrock Outcrops
- Bedrock Cliffs
- Small boulders/cobbles

A1 on O6 map

Species Notes near A1: Only a little black lichen. Slightly below (1-2 ft), filamentous or film-like green and brown algae are moderately abundant. Below this zone, algae and invertebrates increase in abundance, with moderate to dense littorines, limpets, and barnacles. The extreme low zones and subtidal habitat have dense brown algae.
A2

**ON SITE**

- Scattered black lichen, green
- Film-like algae; a few litorina snails. Some litorinas present on oil, but are more abundant elsewhere.
- Lower zones: Dense red & brown algae in low zone. Focus is moderate to dense in the middle zone. Barnacles in dense patches.
Little Bikea near oil, or generally present at this tidal level. Black lichen, sparse lettuce snails, green - mussels, flex, red / brown algae. Manual pickup, if performed, will not negatively impact the boxing at this oil site.

Legend:
- Rounded Bedrock
- Alkali, large boulder
- Steep Vegetated Upland

Location III
J.P. Barry
12 May 1991
Legend

- Low Slope Bedrock
- Upland Vegetation

SPARSE BLACK LICHEN,
GREEN ALGAE, SPARSE CITIONES,
LIMPETS.

Reviewed M.B. 5/64

12 May 97
**Mirror**

- Low steep bedrock cliffs
- Large boulders
- Small boulders / cobble
- Vegetation / plants

**Legend**

- **Location IV**
- **UP Barry**
- 12 May 91

---

**AS**

- Sparse littorines & limpets, some present on oil
- Scattered filamentous green algae, black lichen
- Lower zones (<5m from oil): Dense dogwhelks, barnacles, small patches of mussels, filamentous red algae
- Recrudescent species were present

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*An eagle nest is mapped near this location, but was not observed.*
**Bio Sketch Map**

**LOCATION 6**

- Bedrock
- Large Boulders
- Cobble/Boulder
- Sand/Gravel
- Vegetated Highland

**MS 20%**

**A6 on OG Map**

- MS 20%

- Mussel Bed
- Hoon Paties
- Mussel Bed, Moderate Limpets, Limpets, Some Algae (Sensitive Biota)

**A** - Little Biota - High Solubility Sparse Barnacles, Limpets (Littorine)

**B** - Little Biota in Submerged Channel
- Black Lichen near Oil (slightly above)
- Below Oil:
  - Moderate to Dense Limpets
  - Sparse to Moderate Barnacles (Semibalanus), Moderate Limpets
  - Moderate Endocerina (Crushed), Toad-Like Red Algae
- Lower Pools:
  - Crustose Coralline Algae
  - Sparse Fucus, Crustose Brown Algae (Nilsenibrand)
Abundant filamentous green algae
Some oil
Mussel juveniles present in contact with oil, as are littorines, limpets.

Biota at upper sites: scattered mytilus dense littorines, abundant green filamentous algae.
Lower zones – little or smaller cobble, scattered patches of barnacles, anemones, limpets.
Lowest zone: dense red algae.

Legend
- Bedrock Cliffs
- Large Boulder
- Boulden/Cobble
- Steep Vegetated Upland

Abundant Debris

Location 7

17 May 1991

P4002-A
ADDENDUM: SUBDIVISION CONSTRAINTS

SEGMENT PY-2 SUBDIVISION A (1 of 1)

<table>
<thead>
<tr>
<th>WORK WINDOW</th>
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</thead>
<tbody>
<tr>
<td>Manual Pickup</td>
</tr>
<tr>
<td>Tarmat Removal</td>
</tr>
<tr>
<td>Spot Washing</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. USFWS 6/1/90 map indicates no active nest within 400m of Subdivision A work site.

OTHER ECOLOGICAL CONSIDERATIONS

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

FOSC

Prepared by

Date 6/4/80

Date 6/14/90