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POTENTIAL RESTORATION PROJECTS AND COSTS FOLLOWING THE EXXON-VALDEZ OIL SPILL:

PRELIMINARY DRAFT REPORT
to the
U.S. DEPARTMENT OF JUSTICE

(9/7/90 Version)

AS FAX'D
TO SUSAN
MACMULLIN,
11:40 AM AST,
9-7-90
-BR

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IMPORTANT NOTE:

This document is INCOMPLETE.

This is a preliminary working version, and is provided for discussion purposes ONLY.

Total costs for a restoration package CANNOT be calculated from this version.

Restoration options have not yet been prioritized, and lack of discussion on particular options at this time DOES NOT mean they are not important or will not be added.

**THIS DOCUMENT SHOULD NOT BE COPIED OR
FURTHER DISTRIBUTED**

| | | |
|-------|--|----|
| 1. | INTRODUCTION | 1 |
| 1.1 | PURPOSE | 1 |
| 1.2 | GENERAL APPROACH..... | 1 |
| 1.3 | SPECIFIC APPROACH/ASSUMPTIONS..... | 2 |
| 2. | DESCRIPTION OF RESTORATION PROJECTS | 3 |
| 2.1 | COASTAL HABITATS | 3 |
| 2.1.1 | Injury Statement..... | 4 |
| 2.1.2 | Restoration Options..... | 4 |
| 2.2 | FISH AND SHELLFISH..... | 7 |
| 2.3 | BIRDS | 8 |
| 2.4 | MAMMALS | 9 |
| 2.5 | RECREATIONAL USES AND INTRINSIC VALUES | 9 |
| 2.6 | CULTURAL AND SUBSISTENCE RESOURCES | 10 |
| 2.7 | MONITORING..... | 11 |
| 2.8 | RESEARCH..... | 11 |
| 3. | SYNTHESIS DISCUSSION | 11 |
| 4. | RECOMMENDED RESTORATION PACKAGE AND COST | 12 |
| 5. | REFERENCES | 12 |

1. INTRODUCTION

1.1 PURPOSE

This preliminary draft document has been prepared at the request of the U.S. Department of Justice to help support its preparation for potential out-of-court negotiations regarding settlement of damages caused by the *Exxon-Valdez* oil spill. *This document is meant only for this purpose, where rigorous proofs are not at issue, and should not be used or referenced outside of that narrow context.* Also, this document does not present an overall Natural Resource Damage Assessment (NRDA) settlement proposal. Nor does it address uses for additional funds (beyond those necessary for the restoration projects discussed herein) that may become available based on direct injuries and lost use values. Rather, this document supports only one portion of a potential settlement: restoration. It is assumed that direct injuries and use values are being compiled and evaluated separately, and that restoration needs/costs will be integrated with those efforts. Information contained in this document can be updated as results from ongoing NRDA studies become available.

1.2 GENERAL APPROACH

The overall philosophy of this document is to help achieve a negotiated settlement of the maximum possible amount. Consistent with this purpose, restoration projects are included that may be in excess of injuries that can be reasonably proven with presently available NRDA data. Therefore, potential restoration measures are evaluated individually so that adjustments to the recommended restoration "package" can be made easily as appropriate to the negotiations, and as additional NRDA data becomes available. At the same time the overall benefits described for the total restoration package would still be realized, albeit to a modified degree.

The recommended measures reflect an ecosystem approach to restoration (with resource-specific components). In particular, restoration measures that benefit multiple resources are given preference over actions that would benefit only individual species. This helps to address ecosystem components and interactions not directly targeted by NRDA studies, and in many cases also advances the goal of maximizing the realized benefit of a settlement by pooling even slightly injured resources to help justify larger "equivalent resource" acquisitions.

Potential restoration measures have been identified with both technical and public input obtained by the Restoration Planning Work Group, as documented in its three reports.^{a,b,c/} All options are based on the definition of "restoration" contained in the draft Memorandum of Agreement (MOA) between all of the Trustee agencies and EPA (the MOA definition itself is based on the definition in the Department of the Interior NRDA regulations [43 CFR Part 11]):

"Restore" or "Restoration" means any action in addition to cleanup response activities required or authorized by state or federal law which serves to restore any natural resource injured, lost or destroyed as a result of the Oil Spill and the services provided by that resource to their pre-spill condition, or which replaces or substitutes for the injured, lost or destroyed resource and affected services. Restoration includes, without limitation, replacement of resources and acquisition of equivalent resources and services, and, to the extent permitted by law, long-term environmental monitoring and research programs in the area affected by the Oil Spill directed to the prevention, containment, cleanup and amelioration of oil spills .

1.3 SPECIFIC APPROACH/ASSUMPTIONS

Each potential restoration project is evaluated in terms of the "6 Burdens" that are expected to be relevant should the NRDA settlement go to litigation, as outlined by the Department of Justice. (This document does not attempt to satisfy these burdens to the degree that would be required for litigation.) The "6 Burdens" are:

1. Relationship to (proof of) injury
2. Natural recovery is "inadequate"
3. Restoration measure is technically feasible
4. Restoration measure would have a net environmental benefit
5. Cost of implementing the restoration measure would not be "grossly disproportionate" to the values of the resource
6. Restoration measure is cost-effective relative to alternative methods for restoring the resource

With respect to these points, this document assumes that #1 (proof of injury) exists for all of the resources addressed. It is assumed that the necessary proofs are being compiled and will be presented elsewhere. The "injury statements" given in this document for each resource represent independent assumptions about injuries that could reasonably be expected from the spill (and in some cases preliminary information from discussions with NRDA principal investigators), and are presented only for the purposes of preparation for negotiation. These injury statements should not be referenced outside of that context.

Similarly, #2 (natural recovery is inadequate) is assumed to be the case for the resource addressed. The primary justification for this assumption relates to the overall "ecosystem approach" to this restoration proposal. Different ecosystem components (individuals, populations, communities, and the ecosystem as a whole) will exhibit different rates of natural recovery. For example, it is to be expected that barnacles will be among the most resilient intertidal organisms in terms of recolonization rates. However, other intertidal species (including certain crustaceans and molluscs) will be much slower to recover to pre-spill conditions. The time necessary for "full recovery" of intertidal communities will in turn be dictated by the recovery rates of the slowest species in that community. At the same time, recovery of higher trophic level species that use intertidal areas as habitat - such as those that feed extensively in the intertidal zone (e.g., sea otters, oystercatchers, some sea ducks) - will be linked to the recovery rates of the species on which they feed (not necessarily the fastest recolonizers). Therefore, this document takes the approach that restoration of the ecosystem as a whole is inextricably tied to the

recovery of all its major components. In this sense, relatively rapid recovery of individual species or habitats does not necessarily constitute "adequate" recovery.

Burdens 3, 4, and 6 are evaluated directly for each resource.

Burden #5 ("grossly disproportionate" test) is not evaluated for the resources addressed in this document. First, we have no information at this time about the degree of injury that DOJ will present (for negotiating purposes or otherwise). Therefore, the application of this test is currently outside the scope of this document. In addition, the Ohio case (State of Ohio v. Department of the Interior; July 14, 1989) is vague about what could be considered as "grossly disproportionate," and it would be inappropriate for this document to make any independent assumption in this regard. Finally, consistent with the philosophy of supporting negotiations by maximizing the absolute size of the proposed settlement package (i.e., the mix of ultimately recommended restoration measures) rather than to each of the potential restoration options outlined. This is also consistent with the overall "ecosystem" approach, where resources (such as intertidal habitats, discussed above) are recognized as having ecological values (uses) beyond their individual values.

In addition to the considerations described above this document makes numerous other assumptions, particularly with respect to estimating costs. For example, although it is recognized that some resources may require longer periods of attention while others may require less, 10 years is routinely used for calculating operating costs, monitoring periods, etc. The pertinent resource-specific assumptions are presented along with the discussions for the individual resources.

2. DESCRIPTION OF RESTORATION PROJECTS

2.1 COASTAL HABITATS

This category includes those areas directly injured by the oil spill and subsequent clean-up activities. Virtually all of the oil that did not evaporate or was not quickly recovered ended up in these habitats. These areas include the "supratidal" (splash zone and immediately adjacent uplands including beach ryegrass zones), intertidal, and nearshore subtidal areas. These areas represent important and in some cases critical habitats for a variety of plant, invertebrate, and vertebrate species, many of which were also directly injured by the spill. Supratidal are key interface areas for upland species, incl. mammals and birds. Intertidal and shallow subtidal areas, including estuarine salt marshes and eelgrass beds (which comprise a small % of spill area, but are disproportionately important habitats) are critical for many feeding and rearing bird, fish, and marine mammal species.

Some measures are presented that address direct restoration of some of the injuries to coastal habitats. However, for many coastal habitat injuries, feasible techniques do not exist to directly accelerate natural recovery. Another major consideration in considering coastal habitat restoration projects is the fact that all Alaska tidelands

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(intertidal) and submerged lands are presently in public ownership. Therefore, acquisition of unoiled tidelands and submerged lands to replace damaged areas is generally not possible. However, changes in management practices/use restrictions on public lands, and enhanced protection of adjacent upland and marine areas (through acquisition or other means) can benefit both the coastal habitats themselves and the species they support, by reducing cumulative effects on stressed populations/habitats.

Injury Statement

[CALL DAVE G.! Consider ryegrass, high fringing salt marshes, erosion, debris, connection to archaeological injuries, habitat values for birds, mammals, carbon source for aquatics, connection to recreational uses and subsistence gathering, etc.] [NEED handle on potential amt of coastline needing attention - absent, can assume ryegrass exists along 25-30% of injured coastline, and was 10-25% (?) injured there; marshes occur along 1% of injured coastline with about 50% of them being injured to a degree; etc ...]

Options

- BEACH RYEGRASS RESTORATION: **Feasibility:** Techniques proven in Alaska, rapid coverage, high success rate. **Benefit:** To erosion, cultural resource site stabilization, recreational resource aspects incl. aesthetics, habitat values for associated species. **Cost:** [CALL Stoney W. to get idea of unit cost, incl. logistics support, etc.] **Cost-effectiveness:** Direct, on-site in-kind measure using established technology; addresses multiple species/resources; assumed highly cost-effective (without addressing "grossly disproportionate" test).
- ESTUARINE SALT MARSH RESTORATION: **Feasibility:** Techniques proven elsewhere (fertilization and transplanting), moderate success rates, may require follow-up work depending on degree of remnant oiling. **Benefit:** To feeding birds and fish, terrestrial mammals, local water quality, erosion in sheltered embayments. **Cost:** \$10 million [\$500,000/acre full restoration (adjusted for Alaska based on \$300,000/acre N.J. experience) for 10 acres plus \$5 million total for less intensive restoration work (limited replanting, fertilization, and reapplication, plus monitoring for up to 10 years) on up to 100 acres]. **Cost-effectiveness:** Direct, on-site in-kind measure using established technology; addresses multiple species/resources; assumed highly cost-effective (without addressing "grossly disproportionate" test).
- EELGRASS RESTORATION/ENHANCEMENT: **Feasibility:** Techniques established elsewhere, moderate success rates, may require some follow-up work. **Benefit:** To feeding and rearing fish and shellfish including juvenile salmonids, crabs, and shrimp; to feeding shorebirds and diving ducks; to ecosystem functions such as nutrient cycling and stabilization from erosion; and to other (mostly non-targeted) resources. **Cost:** \$___ (___ acres, estimated \$___/acre transplanting, monitoring, and re-planting). **Cost-effectiveness:** Direct, in-kind, on- or off-site measure using established technology; addresses multiple species/resources; assumed highly cost-effective (without addressing "grossly disproportionate" test).
- EQUIVALENT RESOURCES: Enhanced protection of supratidal and intertidal areas can be achieved through management changes on and/or direct acquisition of upland and marine areas immediately adjacent to the shoreline. To be most directly beneficial, lands threatened by potential timber harvest and associated log-transfer sites,

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subsurface (mineral) development, or other disturbance-creating activities (including tourism developments such as lodges or ports/marinas) should be targeted. (Note that many of these options have benefits to other than coastal habitat resources. Other sections of this document will refer to these options where appropriate to avoid multiple accounting.)

ACQUISITIONS:

Potential acquisitions are presented below in no particular order. Acquisition options are prioritized in the "Recommendations" section. (It is assumed that all acquisitions would be made on a willing buyer-willing seller basis. Eminent domain is assumed not to be an option.)

- Native-selected lands along the shoreline of Kenai Fjords National Park (direct purchase: 77,450 acres, estimated value/acquisition cost \$77.5 million);¹
- Other non-federal lands within Kenai Fjords, excluding mining claims (direct purchase, 20,125 acres, estimated value/acquisition cost \$20 million);
- Mining claims within Kenai Fjords (estimated 800 acres, estimated value/acquisition cost \$___ million);
- Native inholdings, allotments, and applications within Katmai National Park (53,706 acres, estimated value/acquisition cost \$54 million);
- Other non-federal lands within Katmai (128,379 acres, estimated value/acquisition cost \$128 million);
- Inholdings and subsurface interests within Aniakchak National Monument and Preserve (197,817 acres, estimated value/acquisition cost \$198 million);
- Inholdings in the Chugach National Forest within Prince William Sound (surface and subsurface rights to 262,000 acres, estimated acquisition cost \$262 million);²
- Inholdings in Kachemak Bay State Park (surface and subsurface rights to 23,000 acres, estimated acquisition cost \$30 million);³
- Lands on the southwest tip of the Kenai Peninsula (surface and subsurface rights to 111,000 acres, estimated acquisition cost \$111 million);⁴
- Kenai River corridor wetlands/riparian zone (development rights, 9,100 acres, estimated acquisition cost \$82 million);⁵

¹ Figures for lands associated with National Parks/Monuments based on average cost of \$1,000 per acre, which reflects higher assumed value for these lands than have been paid in recent agreements for purchasing lands & development rights (where little timber/mineral potential was thought to exist) in Alaska. (Incl. the Kijiik agreement that paid approximately \$400/acre for a conservation easement, and the USAF's "Backscatter" radar project which purchased title to Interior lands at \$450/acre.)

² Acreage from the Coastal Coalition "Draft Proposal for a Comprehensive Settlement of Natural Resource Damages from the 'Exxon-Valdez' Oil Spill" ("Proposal") dated July 4, 1990. Costs adjusted upward from average of Proposal by approximately 50% (to \$1,000 per acre) to include an estimate for acquisition of subsurface right as well as timber harvest rights, and to include operating (management) costs for a period of 10 years.

³ Legislative purchase proposal of \$20 million, adjusted upward by 50% as in footnote 2, above.

⁴ See footnote 2, above.

⁵ Acreage from Kenai River Management Plan. Cost estimate based on 5 major parcels valued at from \$8,000 - \$10,000/acre each.

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- Non-federal lands within the Kodiak National Wildlife Refuge (surface and subsurface rights to 400,000 acres, estimated acquisition cost \$200 million)⁶
- Native timber lands rights on Afognak Island (surface {and subsurface?} rights to 211,664 acres, appraised value \$210 million)
- Non-federal lands within the Alaska Maritime National Wildlife Refuge (purchase of 260 acres {two islands}, estimated cost \$0.3 million)

Feasibility: Feasible to acquire development rights (in perpetuity or for specific periods - i.e., 10 years) in such a manner that title and subsistence use rights are retained by the Native corporations. (Can be addressed for individual acquisitions, as well.) **Benefit:** Addresses multiple species, habitats, and uses. Reduction of cumulative effects will provide for enhanced recovery of eagles, peregrine falcons, sea ducks, some Alcids, oystercatchers and other shorebirds, sea otters, sea lions and harbor seals, terrestrial mammals, intertidal organisms, salmonids and other fish, cultural resources, and recreational resources. Acquisition options also provide the only direct benefit for resources not specifically targeted in NRDA studies (including fish and wildlife species that receive limited commercial, recreational. or subsistence use). **Cost:** Up to \$___ million (total detailed above). Note that additional opportunities are available, but would have less direct benefits than the options listed. **Cost-effectiveness:** Addresses many species/resources, including resources and ecosystem components not targeted in NRDA studies; for several resources, methods do not exist to undertake direct restoration measures. Therefore reducing cumulative effects through acquisition of equivalent resources is one of the only means of enhancing natural recovery. Assumed extremely cost-effective overall (without addressing "grossly disproportionate" test).

MANAGEMENT ALTERNATIVES:

- ESTABLISH NATIONAL MARINE SANCTUARIES within the spill area, adjacent to federally-managed uplands. Combined with protections afforded to upland habitats and uses by National Parks, Monuments, and Wildlife Refuges, this approach would allow better regulation of (reduction/minimization of impacts from) developments and disturbance-producing activities that could injure coastal habitats. Without this type of status, federal land managers have little real ability to regulate activities occurring just offshore, even if the activities adversely affect the management purposes and uses of the upland areas (e.g., recreational activities, fish harvest methods/levels). **Feasibility:** several federal sanctuaries already exist (none in Alaska), flexible regulatory aspects (can establish purposes/regulate uses specifically to benefit injured or recovering marine resources), extensive public and legislative involvement required to establish. **Benefit:** to fish, shellfish, aquatic birds, marine mammals, recreation, and to scientific study of the sanctuaries' ecosystem. **Cost:** \$45 million (for three sanctuaries).⁷ **Cost-effectiveness:** Addresses multiple species and uses, addresses gap in uplands acquisition programs by

⁶ Potentially less threatened lands. \$500/acre average assumed, as paid in the recent Kijiik agreement for purchasing development rights in Alaska (where little timber/mineral potential was thought to exist - approximately \$400/acre for surface and subsurface rights).

⁷ Based on existing sanctuaries: includes \$2 million each for the public establishment process (EIS, hearings, etc.), \$1 million per year each operating expenses for 10 years, and \$3 million each capital costs for boats capable of administering/conducting research in all seasons.

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complementing and supplementing abilities to protect aquatic resources injured by the oil spill. Assumed highly cost-effective.

- ESTABLISH STATE MARINE PARKS adjacent to state-managed uplands.

Feasibility and Benefits: similar to those listed for national marine sanctuaries, but potentially with less certainty about effectiveness of restrictions. **Cost:** (Not yet available; expected to be substantially less expensive than national marine sanctuaries.) **Cost-effectiveness:** assumed highly cost-effective.

- ESTABLISH COLLEGE FJORD/NELLIE JUAN WILDERNESS AREA(s) within Prince William Sound. **Feasibility:** Existing Wilderness Study Area(s), extensive public/legislative participation required to establish. **Benefits:** Similar to coastal habitats benefits of upland habitat acquisitions, above. Benefits multiple species/habitats/resources. More protective of natural resources and more restrictive of uses. Particular benefit to recreational uses of coastal habitats. **Cost:** (Not yet available; expected to be relatively small.) **Cost-effectiveness:** Assumed highly cost-effective.

- ESTABLISH PRINCE WILLIAM SOUND NATIONAL RECREATION AREA from major portion of the existing Chugach National Forest. **Feasibility:** Feasible to establish; potentially extensive public and legislative participation required, but expected to be considerably less that for marine sanctuaries, wilderness areas, etc. **Benefits:** Will disallow all logging within the NRA. Similar to coastal habitats benefits of upland habitat acquisitions, above. Benefits multiple species/habitats/resources. Particular benefit to recreational uses of coastal habitats. **Cost:** (Not yet available; expected to be relatively small.) **Cost-effectiveness:** Assumed highly cost-effective.

- [ADD: other (more minor) measures, incl. intertidal debris pick-up programs, public education programs, "Adopt-a-shoreline" type programs, etc.] **Feasibility:**

Benefit: Cost: Cost-benefit:

-- [ADD: NO ACTION ("natural recovery") ALTERNATIVE] **Feasibility:**

Benefit: Cost: Cost-benefit:

2.2 FISH AND SHELLFISH

(Same Format)

- Category intro: specific assumptions, etc.
- Species-specific presentations:
 - Injury statement (or assumption)
 - Statement on adequacy of natural recovery
 - Restoration Options

[INCL: commercial and recreational fishing area/time restrictions; establishment of limited entry-type programs for injured species not yet so regulated, hatcheries for salmon, spawning enhancements for wild salmon stocks (egg boxes, habitat rehab, etc.), buy-back of limited entry permits (with or without redistribution to Natives/locals), temporary buy-back of permits during a "recovery" period, support for development of "new" fisheries, rehabilitation or substitution of subsistence shellfish harvest areas, expansion of monitoring facilities for contaminants in seafoods (particularly with access by locals), public education program (for commercial, recreational, and subsistence harvesters), artificial habitat structures for both fish and shellfish, **etc.**]

[ROUGH COST OF TENTATIVELY IDENTIFIED PROJECTS (not listed elsewhere):
\$700 million]

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- (for each resource, list):
- Feasibility statement,
 - Environmental benefit statement,
 - Cost, and cost-effectiveness discussion.
- Other (non-targeted by NRDA) resources (discussion)
- [- Resource list for Fish and Shellfish (tentative):
- Sport fish harvest and effort
 - Salmon spawning areas
 - Egg/pre-emergent fry
 - Early marine, salmon
 - Adult salmon returns (coded-wire tags)
 - Sockeye overescapement
 - Dolly Varden
 - Herring
 - Larval fish
 - Rockfish
 - Groundfish (trawl survey)
 - Clams
 - Spot shrimp
 - Crabs
 - Sea urchins
 - Other fish and shellfish resources (not targeted by NRDA)]

2.3 BIRDS

(Same Format)

[INCL: introduced predator (fox) removal from island nesting colonies, nesting and roosting habitat protection/acquisition within the spill area, forage base enhancements (incl. fishing restrictions), reduction/elimination of mortalities due to high seas drift net fisheries, management changes to minimize disturbance of rookeries, nesting habitat enhancement ("Ducks Unlimited" type) projects, acquisition/protection of San Juan Islands winter loon habitat, Willamette National Wildlife Refuge expansion, etc.]

**[ROUGH COST OF TENTATIVELY IDENTIFIED PROJECTS (not listed elsewhere):
\$150 million]**

- [- Resource list for Birds (tentative):
- Bald eagles
 - Peregrines
 - Sea Ducks (Harlequins, etc.)
 - Passerines
 - Seabird colonies
 - Loons
 - Common Murres
 - Marbled Murrelets
 - Pigeon Guillemots
 - Other Alcids
 - Black-legged Kittiwakes
 - Glaucous-winged Gulls

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- Oystercatchers
- Cormorants
- Mergansers
- Other bird species (not targeted by NRDA)]

2.4 MAMMALS;
(Same Format)

[INCL: rookery/haulout habitat acquisitions, forage base enhancements (incl. fishing restrictions), management changes/actions to minimize disturbance, public education programs, limited reintroductions, etc.]

**[ROUGH COST OF TENTATIVELY IDENTIFIED PROJECTS (not listed elsewhere):
\$35 million]**

- [- Resource list for Mammals (tentative):
- Humpback whales
- Orcas
- Sea lions
- Harbor seals
- Sea otters
- Black-tail deer
- Black bear
- Brown bear
- River otter and mink
- Small mammals]

2.5 RECREATIONAL USES AND INTRINSIC VALUES
(To Be Same Format)

**[ROUGH COST OF TENTATIVELY IDENTIFIED PROJECTS (not listed elsewhere):
\$150 million]**

- [- Resource list for Recreational Uses and Intrinsic Values (tentative):
- Kayaks and canoes
- Other pleasure boats
- Charters, tour boats, etc.
- Marine sport fishing
- Freshwater sport fishing
- Shellfishing
- Trapping
- Hunting, terrestrial mammals
- Hunting, waterfowl
- Public-use cabins/sites
- Low-impact camping
- Hiking and climbing
- Berry picking, picnicking, etc.
- Photography
- Nature study
- Other recreation uses
- Aesthetic values

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- "In-absentia" values (including option, existence, and bequest values)]

Intro and Assumptions:

Human use of ecological resources for recreation is an important category of services which must be addressed by the restoration process. Biological and physical restoration of ecological resources is fundamental to the restoration of recreational uses; however, such biophysical restoration is not sufficient to address certain wilderness values, aesthetic values, and other "in-absentia" values such as option, existence, and bequest values. To the extent that restoration of recreational uses is partially accomplished by biophysical restoration, it is assumed that those actions are discussed under the appropriate biological resource. This section includes recreation-specific restoration actions.

All recreational uses are not equal; to the extent possible, the same type and quality of recreational experience must be restored. Injury to recreational resources must be evaluated in terms of changes in both actual use and perceptions. (Perception is at least as important as reality.) Measures of simple use levels are inadequate because they do not capture important changes in the type and quality of experience. Similarly, increased use numbers are not necessarily desirable. Impacts may be higher to some recreational uses than to others. For example, beach-dependent activities (e.g., kayak camps) will be more impacted than off-shore activities (e.g., cruise ship tourism).

Injury Statement (tentative):

Little injury assessment information is available; some use level data is available for Kenai Fjords National Park, but necessary data on quality of experience and user perceptions is lacking. Data available for Kenai Fjords National Park follows:

- Approximately 30 percent of the 400 miles of coastline within Kenai Fjords National Park received some degree of oiling: 50 miles experienced very light impact, 50 miles light impact, 5 miles moderate impact, and 0.31 miles heavy impact.
- Visitation of park has increased approximately 10-13% per year since establishment in 1980.
- Between 1988 and 1989 overall visitation increased 30% from 59,000 to 77,000 visitors. Note that a decrease in some types of recreational use requiring early reservations (such as cruise ship packages) would not be expected to suffer a decline in visitation immediately following a spill. A decrease in Kenai Fjords National Park visitation by other groups (kayakers and anglers) was observed in 1989.

Resource-specific Presentations:

[REITERATE: importance of overall ecosystem restoration. INCL: Establishment of National Recreation Area, wilderness area(s), marine sanctuaries/parks, acquisition of development rights in important recreation areas, establishment of additional public-use recreational facilities/uses/species in the spill area or at alternate locations, sea-going vessels for Katmai National Park and Preserve and other management units, etc.]

Include: No action / natural recovery.

2.6 CULTURAL AND SUBSISTENCE RESOURCES
(SAME FORMAT)

[EMPHASIZE.: Idea that archeological/historic resources are unique with respect to restoration in that they have no capacity for self-regeneration). INCL: site stabilization/rehabilitation work; intensive archeological surveys on spill area; search,

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catalog, and/or repatriation of artifacts; "site watch" type programs (local involvement); increased enforcement; public education programs; museum/exhibit establishment/support; etc.]

**[ROUGH COST OF TENTATIVELY IDENTIFIED PROJECTS (not listed elsewhere):
\$150 million]**

- [- Resource list for Cultural and Subsistence Resources (tentative):
- Archaeological/historical sites and artifacts
- Subsistence lifestyle and values
- Subsistence hunting
- Subsistence fishing
- Public trust (in subsistence resources and in government)
- Other]

2.7 MONITORING

- Approach (incl. MOA)
- Basis (Puget Sound, Chesapeake)

[ROUGH COST OF TENTATIVELY IDENTIFIED PROGRAM (not yet determined)]

2.8 RESEARCH

- Approach/Basis (incl. MOA)
- Additional restoration benefit (connection to cultural/social restoration, etc.)

[ROUGH COST OF TENTATIVELY IDENTIFIED PROGRAM (not yet determined)]

3. SYNTHESIS DISCUSSION

- Ecosystem as a whole benefitted by acquisitions, incl.:
 - avoidance often = surest
 - addresses non-targeted resources, as well
 - addresses cultural/social/political aspects of restoration, as well
- Justifications for combining restoration options common to multiple resources
- Ability to reduce (negotiated) magnitude of acquisition while retaining overall benefits
- Application of cost-effectiveness/"grossly disproportionate" tests to combined options
- Brief discussion of restoration projects not recommended
- (Note relation to Coastal Coalition proposal vis-a-vis acceptability)

(Continues ...)

4. RECOMMENDED RESTORATION PACKAGE AND COST

- Reminders re: degree-of-injury assumptions, and that we can't address "grossly d."
- List suggested restoration package (prioritized plan elements/projects)
- Note injured resources addressed by each
- Total cost presented for recommended restoration package: \$___
 - Coastal Habitats restoration cost: \$___
 - Fish and Shellfish restoration cost: \$___
 - Birds restoration cost: \$___
 - Mammals restoration cost: \$___
 - Recreational Resources restoration cost: \$___
 - Cultural Resources restoration cost: \$___
 - Other Ecosystem Components restoration cost: \$___

5. REFERENCES

MEMORANDUM
OF CALL

Previous editions usable

TO:

Buon

YOU WERE CALLED BY--

YOU WERE VISITED BY--

Taj Phool

OF (Organization)

W-M

(FAX)

703-524-1453

PLEASE PHONE ►

FTS

AUTOVON

(W) 703-524-1888 (H) 698-0857

WILL CALL AGAIN

IS WAITING TO SEE YOU

RETURNED YOUR CALL

(INCL. SEARCH) APPOINTMENT

MESSAGE

Artifacts - 500-750 / artifacts to catalog

Re Burial of sites = \$1000 to catalog/grow
plus costs of burial itself

Cost to set up museum: initial = \$5mm +
a few 100k/yr (Museum of Ariz) →

RECEIVED BY

Buon

DATE

9-6

TIME

9:25

63-110 NSN 7540-00-634-4018

STANDARD FORM 63 (Rev. 8-81)

Prescribed by GSA

☆ U.S.G.P.O.: 1990-254-312

FPMR (41 CFR) 101-11.6

Re: mining rights -

Talked to ~~Pat~~ Peter Moroy,
US Bureau of Mines.

1942-1943 (747) M-11

1943-1944 (11) 1942-1943 (11)

(1942-1943)

Re: Bureau of Mines -
plus cost of land
Work to be done on
1942-1943

1942-1943

MEMORANDUM
OF CALL

Previous editions usable

786-3350

TO:

YOU WERE CALLED BY-

YOU WERE VISITED BY-

OF (Organization)

Being R. Coal (next to Cordova) (≠ timber)

PLEASE PHONE ▶

FTS

AUTOVON

WILL CALL AGAIN

IS WAITING TO SEE YOU

RETURNED YOUR CALL

WISHES AN APPOINTMENT

MESSAGE

400 acres ac Non-Fed
w/in Kodiak NWR.
211,664 ac Native & ~~the~~-owned
(210 MM appraisal) on AFOGNH
(Incl. some but not all timber & subsurface)
A la Maritime = 260 ac @ 1000/acre timber

RECEIVED BY

DATE

TIME

rights only.

MEMORANDUM
OF CALL

Previous editions usable

TO:

Tej Phoo

YOU WERE CALLED BY-

YOU WERE VISITED BY--

W-M

OF (Organization)

PLEASE PHONE ►

FTS

AUTOVON

WILL CALL AGAIN

IS WAITING TO SEE YOU

RETURNED YOUR CALL

WISHES AN APPOINTMENT

MESSAGE

Update

*More info: from Museum of N. Am
recently gave Congress info on cataloging
remains (1194 in collection).
\$600 each to catalog \odot
~~if already cataloged~~*

*30000 ft³ bulk
collections, not
cataloged = 4 ft²/hr
= $\frac{5151}{hr} = 4 \text{ ft}^2/hr$
+32% overhead →*

RECEIVED BY

Brian

DATE

9-6

TIME

3:35

Cecile Gauteaume @ Mus. of Am. Indian
in NY. - Cataloging Apache artifacts
cataloged 2000 artifacts ~~with~~ with \$25K
grant. ("easy" artifacts)

David Phillips - Museum of NM - San & Fe.
~ \$1,000 to return remains to tribe.
\$5000 X to rebury. (\$20K for joint
ceremony, multiple remains)

Geology: Mitch Enning, DNR Dept of Mining →
directed to US Bureau of Mines. Will follow-up
tomorrow.

Doug Silver (L.H. Hood Colorado) on purchasing
gold mines: Of 180 acquisitions, 120 by getting
entire properties, 40 by corporate, others by negotiation.
③ Most acquisitions = \$5-10 million range (some as
high as \$50 million) FAT ING CHARTS

Fisheries - DOI Dave Erickson, Fish Hatcheries
Division, D.C. - 77 hatcheries in country - 18
focus on NW Salmon. annual \$4.5 million operating
= 4 million

MEMORANDUM
OF CALL

Previous editions usable

TO:

(A) Page Pool



YOU WERE CALLED BY-



YOU WERE VISITED BY-

703 524 1888

OF (Organization)



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MESSAGE

BRIAN

786-3350

PLZ
Call



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DATE

9/7

TIME

ing

Costs from Catfish Farmers of
America →

25 acre project (20 ac. water)

Capital = \$70k, Annual = \$47k

[Faint handwritten notes and signatures]

from Sandy 9-6

\$ 219,200,000

Aniakchak National Monument + Preserve 197,817 acres (1986 GMP) p. 51
• includes surface ; subsurface selections

197,817 acres X \$400/acre

\$ 79,126,800

Kenai Fjords National Park (1986 GMP p. 57)

77,450 acres Native Corps

5 private

120 allotments

20,000 Nuka Island + ~~State~~ Nuka Bay area (approx)

800 mining claims (rough guess!)

98,375

98,375 acres X \$500/acre

\$ 49,187,500

Katmai National Park - Preserve (GMP p. 61)

50,000 State

78,199 State tidelands, shorelands, submerged lands

16,559 Village Corp.

940 Regional Corp.

180 Small tracts

2,771 allotments

33,436 applications - allotments, village + regional

182,085

X \$500/acre

\$ 91,042,500

9/6/90

Kenai River

| <u>ACRES</u> | <u>PRICE/ACRE</u> | |
|--------------|----------------------|--|
| 2500 | \$ 8,000 (20 mil) | • At mouth of Cook Inlet. Owned by city - subject to development. Goes upstream 26 miles |
| 3600 | 10,000 (38 mil) | • SNA lands - downstream from Funny R. - both sides of Kenai R. |
| 1000 | 8,000 (8 mil) | • Kenai Nat. Assoc - outlet of Skilak L. high habitat value |
| 1000 | 8,000 (8 mil) | • Misc. - parcels lower river |
| <u>1000</u> | <u>8,000 (8 mil)</u> | • Misc. parcels upper river |
| 9100 | \$ 82,000,000 | |



United States
Department of
Agriculture

Office of the
General
Counsel

Washington,
D.C.
20250-1400

RPWG
F

William D. Brighton, Esq.
Environmental Enforcement Section
Environment and Natural Resources Division
U.S. Department of Justice
Washington, D.C. 20530

September 24, 1990

Subject: Exxon Valdez Oil Spill
Settlement and Restoration Projects

Dear Bill:

Enclosed are comments from the Forest Service and Bob Maynard from OGC, Juneau, regarding EPA's draft plan for restoration.

While we believe any listing of our restoration needs are conjectural at this point, the Forest Service has provided a list of potential categories of restoration and sample projects along with cost estimates if needed for settlement purposes. That list is attached to Bob Maynard's memorandum.

We emphasize that the Forest Service's list of restoration projects is made for settlement purposes only and should not be used as the basis for developing the proposed 1991 restoration plan and project list. As we learn more in the damage assessment process, and move forward on restoration planning, we should be able to identify restoration needs with greater assurance, and to prioritize those needs in terms of importance and chronology.

Finally, with regard to EPA's draft restoration program memorandum, we take exception to a number of projects listed. Our concerns are set out in the Forest Service's and Bob Maynard's memoranda. In particular, we disagree with the implication that management activities on the National Forests have a negative impact on resources.

We look forward to further discussion of these matters.

Sincerely,

Alan Charles Raul
General Counsel

Enclosures
cc (w/encl): Thomas A. Campbell
Daniel Esty
Martin L. Suuberg
George Van Cleve



United States
Department of
Agriculture

Office of
General
Counsel

P.O. Box 21628
Juneau, Alaska
99802-1628
(907) 586-8826

September 20, 1990

CONFIDENTIAL ATTORNEY WORK PRODUCT/DO NOT RELEASE UNDER FOIA

TO: Alan Raul, General Counsel
FROM: Robert A. Maynard *RMM*
Assistant Regional Attorney

SUBJECT: Exxon Valdez Oil Spill; Settlement Considerations;
Potential Restoration Projects

Attached is an updated list of potential restoration projects for settlement negotiation purposes provided by the Forest Service.

Without a more complete assessment of the injuries resulting from the spill, determining specific restoration projects that should be implemented remains very speculative. Efforts to expedite damage assessment and restoration planning and implementation are underway. But at present, rather than incorporate specific restoration projects into a settlement or rely very much on ideas about possible projects in reaching a settlement, it remains preferable that any settlement agreement provide for the establishment of a restoration fund, a process for managing the fund, a planning and implementation process for restoration projects, a timeframe for completion of all restoration work, and a mechanism for returning any balance to the responsible parties. The planning and implementation process should be controlled by the designated Natural Resource Trustees. If any specific restoration projects are included in a negotiated settlement, the projects should be subject both to further review and modification by the Trustees as part of the restoration planning and implementation process and to preliminary and final results of the damage assessment process.

Also attached are Forest Service comments regarding the preliminary draft report of Potential Restoration Projects and Costs prepared by the EPA. The EPA draft illustrates the current great uncertainties about restoration options, priorities, and costs. The EPA draft neither prioritizes the suggested restoration projects nor bases its approach on the damage assessment process. The proposed measures appear to be based on comments from town meetings and a public restoration symposium. The projects proposed are not based on documented injury and do not reflect Forest Service or, apparently, other trustee agency concern or priorities

regarding restoration.

The restoration options suggested for coastal habitats restrict management activities on the national forest and specifically target timber harvesting, mineral development, and "other disturbance-creating activities." A suggested management alternative is to create a national recreation area from existing portions of the Chugach National Forest. No basis, however, is given for the assumption that current timber or minerals management practices adversely affect either supratidal or intertidal habitat. The draft furthermore includes an unsupported value judgment that such activities "threaten" upland and freshwater habitats used by fish and wildlife species affected by the spill. The draft further assumes, without substantiation, that alteration of such habitat must be minimized to encourage recovery of such species from oil spill injury in inter- and supra-tidal coastal habitats and to compensate for perceived degradation of oil impacted habitat in regard to recreation and other direct human habitat use.

Similarly, no priorities or objectives are stated for the proposed acquisitions of Native Corporation and other private land. The restoration objective for each listing must be clarified if proposed acquisitions are to be identified at this time. Since some private land holdings as well as public land areas in the spill area encompass potentially significant fossil fuel geologic structures, consideration of acquisition or restrictions on development of these areas should encompass impacts on national energy needs.

The listing of actions for land acquisitions and other means of restricting development and multiple use management options in the spill area, in sum, appear to reflect a larger agenda espoused by national and some local environmental groups to minimize alteration of the "natural" ecosystems in Prince William Sound and elsewhere in the region. This agenda existed prior the Exxon Valdez oil spill. It should be evaluated carefully in terms of scientific merit, as a contribution to restoring oil spill injured resources and related uses, direct costs, and potential adverse economic and other impacts, prior to a decision to adopt such a strategy as part of an oil spill restoration plan by the Trustees. Unless implemented by legislation, imposition of substantial changes in management policies on Chugach National Forest lands would probably have to be preceded with a revision to the forest plan under the National Forest Management Act, including preparation of an EIS. Restrictions on mineral entry would require withdrawals in compliance with the Federal Land Policy and Management Act as well.

The discussion regarding diminished recreational uses provides no substantive documentation to support the approach that recreation has only been injured perceptually. The Forest Service indicates restoration projects for recreation should include interpretive programs in the spill-affected area to improve public understanding

of oil spill effects and the recovery efforts being made.

I am available to further discuss this matter.

Attachments

cc: R.Fowler
M.Lisowski
K.Toffenetti
M.Barton

TENTATIVE POTENTIAL RESTORATION PROJECTS BY PRIORITY
[in tentative order of priority from highest to lowest]

- | | <u>Est. Cost</u> |
|---|------------------|
| 1. Complete restoration projects for affected wildlife and fisheries species in Prince William Sound and the Copper River Delta. For example: | \$135,000,000 |
| <ul style="list-style-type: none">- Anadromous fish habitat improvement in Prince William Sound and on the Copper River Delta including spawning channels, rearing pond development, channel stabilization, and lake fertilization- Prevent the decline of the Threatened Dusky Canadian Geese by adding nest islands on the Copper River Delta and by purchasing key wetland habitat in the Willamette Valley. This bird just last year was federally classified as threatened due to its recent rapid population decline- Largest concentration of shorebirds in North America use the Copper River Delta and traverse Prince William Sound while migrating. Management strategies and habitat analyses need to be prepared for a multitude of species- Endow the Copper River Delta Institute to conduct baseline fish, wildlife and related habitat studies on the National Forest in Prince William Sound and on the Copper River Delta- Assist in the transplantation of bald eagles to Prince William Sound. | |
| 2. Complete restoration options for injuries identified in the Coastal Habitat study. For example: | \$210,000,000 |
| <ul style="list-style-type: none">- Conduct Restoration feasibility studies on supra- and intertidal flora and fauna. For example:<ul style="list-style-type: none">- rock weed re-establishment in rocky low energy beaches- re-establishment of critical fauna in low energy rocky intertidal ecosystems- restoration of intertidal and supratidal marshes- Restoration of intertidal and subtidal ecosystems via enrichment and other forms of enhancement including incubation facilities and hatcheries. | |
| 3. Inventory, restore and interpret injured cultural resources | \$6,000,000 |
| For example | |
| <ul style="list-style-type: none">- Recover and display selected significant archeological artifacts in | |

Prince William Sound.

4. Plan, design and construct interpretative, information and \$50,000,000
recreational facilities to improve visitor understanding of
the oil spill and the use of injured resources. For example:
 - establish interpretative and information centers at Valdez,
Whittier and Cordova
 - construct public cabins and trails

 5. Conduct long-term recovery monitoring of supra-tidal and \$45,000,000
intertidal habitats along the path of the spill concentrating
on Prince William Sound. For example:
 - select representative sites within oiled and nonoiled areas,
as well as within the five habitat types identified during the
damage assessment process: rocky exposed and non-exposed,
coarse textured exposed and non-exposed, and fine textured.

 6. Assist private land owners through a cooperative extension \$10,000,000
program of State and Private Forestry in vegetation management.
Coordinate the extent of this assistance to the quantity of
available, suitable habitat classes for key fish and wildlife
species. For example:
 - vegetation management on timber harvested portions of
Afognak Island
- TOTAL.....\$456,000,000

ALASKA AFFAIRS COORDINATION

"Providing Support to the National Forests of Alaska"

Date: 9/17/90

To: Alan Raul thru Kathryn Toffenetti

Re: Comments on Draft EPA Restoration Settlement Agreement

This memo reflects the combined comments of the Forest Service in Alaska, Bill Opfer, and myself. They are intended to assist you in the upcoming meeting with the Washington Policy Group on this subject.

General Comments: The purpose of the report is not well documented nor does it contain a strong linkage to the Damage Assessment work that is currently underway. It will be some time yet before the damage assessment work is completed, evaluated and a complete picture of the injury to natural resources as a result of the Exxon Valdez oil spill is developed. Without a complete picture of this damage, it is premature in many cases to discuss the specific type of restoration work or effort. Any specific restoration projects included in a potential settlement should be subject to further review and modification by the Trustees as part of the restoration planning and implementation process.

We feel that that it would be preferable that any settlement agreement be limited to establishment of a funding pool, a process for managing the pool, establishment of criteria to qualify and to set priorities, a timeframe for completion of all restoration work and a mechanism for returning any balance to Exxon. The planning and implementation process should be controlled by the designated Natural Resource Trustees. Specific restoration projects included in a potential settlement should also be subject to further review and modification by the Trustees as part of the restoration process.

Specific Comments:

Section 1.3 - The document assumes that proof of injury exists for all of the specific resources. This should be revised to indicate that injury has occurred and the extent is being determined through the damage assessment work currently underway. The reference to an assumption that "natural recovery is inadequate" should be deleted as there is no basis for validation of this statement.

Section 2.1: The first paragraph includes a statement that all oil that didn't evaporate or wasn't recovered ended up in the coastal habitat. This may be a correct statement but cannot be validated at this time, so it should be deleted or revised.

The second paragraph includes a proposal to restrict management activities on National Forest lands/public lands. We do not view activities that occur on the National Forest lands within the scope of the Forest Plan for the Chugach National Forest such as log transfer sites and resorts or marinas as having a negative effect on the resources involved. Therefore we strongly oppose this proposal as it does not meet the "6 Burdens" for qualifying as a restoration project.

The section on ACQUISITIONS is particularly weak. The priorities and objectives need to be clearly stated if the proposed acquisitions are to be identified at this time. The relationship is not very obvious for many of the areas which certainly weakens the case for acquiring lands as a restoration means.

The section dealing with Management Alternatives appears to ignore potential social restoration effects. Closing or reducing commercial and sport hunting and fishing should also be considered as alternatives and added actions for restoration of wildlife and fish numbers in the affected areas.

This is not considered to be the appropriate forum for considering establishment of Prince William Sound as a National Recreation Area. Designating of the National Forest lands as an NRA would preclude any logging on National Forest Lands but not stop it on private lands.

Section 2.5 : The discussion on recreational use provides no substantive information to support the conclusion that recreation is impacted other than preceptually. We do not believe this is entirely the case. We believe the narrative should address the need for significantly expanding the interpretive programs in the area affected by the oil spill to improve public understanding of the effects and recovery efforts being made to deal with them.

In closing our real concern is that we try to get the settlement agreement to be more generic in nature and wait until the damage assessment is completed if possible. Otherwise we may wind up arguing about the merit of a bunch of specific proposals without anything substantive to support our argument. We recognize the role of establishing a negotiating position to work from but fear the framework as currently laid out grossly exceeds its own premise that "restoration projects are included that may be in excess of injuries that can be reasonably proven with presently available NRDA data". It also assumes sources of injuries for some agencies that are unfounded.

Bill and I would be happy to further discuss these comments. Copies of this memo will be provided to OGC in Alaska as well.

/s/ Dave

DAVE RITTENHOUSE
Alaska Affairs Coordinator

cc: Opfer
Barton
Gibbons
Maynard
Lisowski
Wolfe

RAWG
F

**POTENTIAL RESTORATION PROJECTS AND COSTS
FOLLOWING THE EXXON-VALDEZ OIL SPILL:**

PRELIMINARY DRAFT REPORT
to the
U.S. DEPARTMENT OF JUSTICE

(9/7/90 Version)

"DOT INTRO"⁻¹¹

NOT SENT

(INC'S LONG VERSION
OR RECREATION)

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TABLE OF CONTENTS

| | | |
|-------|--|----|
| 1. | INTRODUCTION | 1 |
| 1.1 | PURPOSE | 1 |
| 1.2 | GENERAL APPROACH..... | 1 |
| 1.3 | SPECIFIC APPROACH/ASSUMPTIONS..... | 2 |
| 2. | DESCRIPTION OF RESTORATION PROJECTS | 3 |
| 2.1 | COASTAL HABITATS | 3 |
| 2.1.1 | Injury Statement..... | 4 |
| 2.1.2 | Restoration Options..... | 4 |
| 2.2 | FISH AND SHELLFISH..... | 7 |
| 2.3 | BIRDS | 8 |
| 2.4 | MAMMALS | 9 |
| 2.5 | RECREATIONAL USES AND INTRINSIC VALUES | 9 |
| 2.6 | CULTURAL AND SUBSISTENCE RESOURCES | 16 |
| 2.7 | MONITORING..... | 17 |
| 2.8 | RESEARCH..... | 17 |
| 3. | SYNTHESIS DISCUSSION | 17 |
| 4. | RECOMMENDED RESTORATION PACKAGE AND COST | 17 |
| 5. | REFERENCES | 17 |

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1. INTRODUCTION

1.1 PURPOSE

This preliminary draft document has been prepared at the request of the U.S. Department of Justice to help support its preparation for potential negotiations regarding settlement of damages caused by the Exxon-Valdez oil spill. This document is meant only to support potential out-of-court negotiations, where rigorous proofs are not at issue, and should not be used or referenced outside of that narrow context. Also, this document does not present an overall Natural Resource Damage Assessment (NRDA) settlement proposal. Nor does it address uses for additional funds (beyond those necessary for the restoration projects discussed herein) that may become available based on direct injuries and lost use values. Rather, this document supports only one portion of a potential settlement: restoration. It is assumed that direct injuries and use values are being compiled and evaluated separately, and that restoration needs/costs will be integrated with those efforts. Information contained in this document will be updated as results from ongoing NRDA studies become available.

1.2 GENERAL APPROACH

The overall philosophy of this document is to help achieve a negotiated settlement of the maximum possible amount. Consistent with its purpose to support negotiations, restoration projects are included that may be in excess of injuries that can be reasonably proven with presently available NRDA data. Therefore, potential restoration measures are evaluated individually so that adjustments to the recommended restoration "package" can be made easily as may be appropriate to the negotiations. At the same time the overall benefits described for the recommended restoration package would still be realized, albeit to a lesser degree.

The recommended measures reflect an ecosystem approach to restoration (with resource-specific components). In particular, where alternatives exist for restoring and injured resource, restoration measures that benefit multiple resources are given preference over actions that would benefit individual species. This not only helps to address ecosystem components not directly targeted by NRDA studies, but in most cases also advances the goal of maximizing the (requested) settlement amount in that pooling many slightly injured resources can help justify larger "equivalent resource" acquisitions than could be the case if smaller-scale direct restoration measures were proposed. In addition, this approach reflects the realization that few direct restoration measures will even remain viable if negotiations (or litigation) were to become protracted.

Potential restoration measures have been identified with both technical and public input obtained by the Restoration Planning Work Group, as documented in its three reports.^{a,b,c/} All options are based on the definition of "restoration" contained in the draft Memorandum of Agreement (MOA) between the Trustee agencies and EPA (the MOA definition itself is based on the definition in the Department of the Interior (DOI) NRDA regulations [43 CFR Part 11]):

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"Restore" or "Restoration" means any action in addition to cleanup response activities required or authorized by state or federal law which serves to restore any natural resource injured, lost or destroyed as a result of the Oil Spill and the services provided by that resource to their pre-spill condition, or which replaces or substitutes for the injured, lost or destroyed resource and affected services. Restoration includes, without limitation, replacement of resources and acquisition of equivalent resources and services, and, to the extent permitted by law, long-term environmental monitoring and research programs in the area affected by the Oil Spill directed to the prevention, containment, cleanup and amelioration of oil spills .

1.3 SPECIFIC APPROACH/ASSUMPTIONS

Each potential restoration project is evaluated in terms of the "6 Burdens" that are expected to be relevant should the NRDA settlement go to litigation, as outlined by the Department of Justice. (This document does not attempt to satisfy these burdens to the degree that would be required for litigation.) The "6 Burdens" are:

1. Relationship to (proof of) injury
2. Natural recovery is "inadequate"
3. Restoration measure is technically feasible
4. Restoration measure would have a net environmental benefit
5. Cost of implementing the restoration measure would not be "grossly disproportionate" to the values of the resource
6. Restoration measure is cost-effective relative to alternative methods for restoring the resource

With respect to these points, this document assumes that #1 (proof of injury) exists for all of the resources addressed. It is assumed that the necessary proofs are being compiled and will be presented elsewhere. The "injury statements" given in this document for each resource represent independent assumptions about injuries that could reasonably be expected from the spill (and in some cases preliminary information from discussions with NRDA principal investigators), and are presented only for the purposes of preparation for negotiation. These injury statements should not be referenced outside of that context.

Similarly, #2 (natural recovery is inadequate) is assumed to be the case for the resource addressed. The primary justification for this assumption relates to the overall "ecosystem approach" to this restoration proposal. Different ecosystem components (individuals, populations, communities, and the ecosystem as a whole) will exhibit different rates of natural recovery. For example, it is to be expected that barnacles will be among the most resilient intertidal organisms in terms of recolonization rates. However, other intertidal species (including certain crustaceans and molluscs) will be much slower to recover to pre-spill conditions. The time necessary for "full recovery" of intertidal communities will in turn be dictated by the recovery rates of the slowest species in that community. At the same time, recovery of higher trophic level species that use intertidal areas as habitat - such as those that feed extensively in the intertidal zone (e.g., sea otters, oystercatchers, some sea ducks) - will be linked to the recovery rates of the species on which they feed (not necessarily the fastest recolonizers). Therefore, this document takes the approach that restoration of the ecosystem as a whole is inextricably tied to the

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recovery of all its major components. In this sense, relatively rapid recovery of individual species or habitats is "inadequate" until all the other uses of those species or habitats have also been restored.

Burdens 3, 4, and 6 are evaluated directly for each resource.

Burden #5 ("grossly disproportionate" test) is not evaluated for the resources addressed in this document. First, we have no information at this time about the degree of injury that DOJ will present (for negotiating purposes or otherwise). Therefore, the application of this test is currently outside the scope of this document. In addition, the Ohio case (State of Ohio v. Department of the Interior; July 14, 1989) is vague about what could be considered as "grossly disproportionate," and it would be inappropriate for this document to make any independent assumption in this regard. Finally, consistent with the philosophy of supporting negotiations by maximizing the absolute size of the proposed settlement, it is suggested that the "grossly disproportionate" test be applied to the recommended settlement package (i.e., the mix of ultimately recommended restoration measures) rather than to each of the potential restoration options outlined. This is also consistent with the overall "ecosystem" approach, where resources (such as intertidal habitats, discussed above) are recognized as having ecological values (uses) beyond their individual values.

In addition to the considerations described above this document makes numerous other assumptions, particularly with respect to estimating costs. For example, although it is recognized that some resources may require longer periods of attention while others may require less, 10 years is routinely used for calculating operating costs, monitoring periods, etc. The pertinent resource-specific assumptions are presented along with the discussions for the individual resources.

2. DESCRIPTION OF RESTORATION PROJECTS

2.1 COASTAL HABITATS

This category includes those areas directly injured by the oil spill and subsequent clean-up activities. Virtually all of the oil that did not evaporate or was not quickly recovered ended up in these habitats. These areas include the "supratidal" (splash zone and immediately adjacent uplands including beach ryegrass zones), intertidal, and nearshore subtidal areas. These areas represent important and in some cases critical habitats for a variety of plant, vertebrate, and invertebrate species that were also directly injured by the spill. Supratidal are key interface areas for upland species, incl. mammals and birds. Intertidal and shallow subtidal areas, including estuarine salt marshes and eelgrass beds (which comprise a small % of spill area, but are disproportionately important habitats) are critical for many feeding and rearing bird, fish, and marine mammal species.

Some direct restoration measures are available to address some of the injuries to coastal habitats. However, for most species feasible techniques do not exist to accelerate natural recovery. Another major consideration in identifying restoration projects that would benefit coastal habitats is the fact that all Alaska tidelands (intertidal) and

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submerged lands are already in public ownership. Therefore, direct acquisition of unoiled tidelands and submerged lands to replace damaged areas is not possible. However, changes in management practices/use restrictions on public lands, and enhanced protection of adjacent upland and marine areas (through acquisition or other means) can benefit both the coastal habitats themselves and the species they support, by reducing cumulative effects on stressed populations/habitats.

Injury Statement

[CALL DAVE G.! Consider ryegrass, high fringing salt marshes, erosion, debris, connection to archaeological injuries, habitat values for birds, mammals, carbon source for aquatics, connection to recreational uses and subsistence gathering, etc.] [NEED handle on potential amt of coastline needing attention - absent, can assume ryegrass exists along 25-30% of injured coastline, and was 10-25% (?) injured there; marshes occur along 1% of injured coastline with about 50% of them being injured to a degree; etc ...]

Options

- BEACH RYEGRASS RESTORATION: **Feasibility:** Techniques proven in Alaska, rapid coverage, high success rate. **Benefit:** To erosion, cultural resource site stabilization, recreational resource aspects incl. aesthetics, habitat values for associated species. **Cost:** [CALL Stoney W. to get idea of unit cost, incl. logistics support, etc.] **Cost-effectiveness:** Direct, on-site in-kind measure using established technology; addresses multiple species/resources; assumed highly cost-effective (without addressing "grossly disproportionate" test).
- ESTUARINE SALT MARSH RESTORATION: **Feasibility:** Techniques proven elsewhere (fertilization and transplanting), moderate success rates, may require re-work depending on degree of remnant oiling. **Benefit:** To feeding birds and fish, terrestrial mammals, local water quality, erosion in sheltered embayments. **Cost:** \$10 million [\$500,000/acre full restoration (adjusted for Alaska based on \$300,000/acre N.J. experience) for 10 acres plus \$5 million total for less intensive restoration work (limited replanting, fertilization, and reapplication, plus monitoring for up to 10 years) on up to 100 acres]. **Cost-effectiveness:** Direct, on-site in-kind measure using established technology; addresses multiple species/resources; assumed highly cost-effective (without addressing "grossly disproportionate" test).
- EELGRASS RESTORATION/ENHANCEMENT: **Feasibility:** Techniques established elsewhere, moderate success rates, may require some re-work. **Benefit:** To feeding and rearing fish and shellfish including juvenile salmonids, crabs, and shrimp; to feeding shorebirds and diving ducks; to ecosystem functions such as nutrient cycling and stabilization from erosion; and to other (mostly non-targeted) resources. **Cost:** \$___ (___ acres, estimated \$___/acre transplanting, monitoring, and re-planting). **Cost-effectiveness:** Direct, in-kind, on- or off-site measure using established technology; addresses multiple species/resources; assumed highly cost-effective (without addressing "grossly disproportionate" test).
- EQUIVALENT RESOURCES: Enhanced protection of supratidal and intertidal areas can be achieved through management changes on and/or direct acquisition of upland and marine areas immediately adjacent to the shoreline. To be most directly beneficial, lands threatened by potential timber harvest, subsurface (mineral)

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development, or other disturbance-creating activities (such as lodges) should be targeted. (Note that many of these options have benefits to other than coastal habitat resources. Other sections of this document will refer to these options where appropriate to avoid multiple accounting.)

ACQUISITIONS: Potential acquisitions are presented below in no particular order.

Acquisition options are prioritized in the "Recommendations" section. (It is assumed that all acquisitions would be made on a willing buyer-willing seller basis. Eminent domain is assumed not to be an option.)

- Native-selected lands along the shoreline of Kenai Fjords National Park (direct purchase: 77,450 acres, estimated value/acquisition cost \$77.5 million);¹
- Other non-federal lands within Kenai Fjords, excluding mining claims (direct purchase, 20,125 acres, estimated value/acquisition cost \$20 million);
- Mining claims within Kenai Fjords (estimated 800 acres, estimated value/acquisition cost \$___ million);
- Native inholdings, allotments, and applications within Katmai National Park (53,706 acres, estimated value/acquisition cost \$54 million);
- Other non-federal lands within Katmai (128,379 acres, estimated value/acquisition cost \$128 million);
- Inholdings and subsurface interests within Aniakchak National Monument and Preserve (197,817 acres, estimated value/acquisition cost \$198 million);
- Inholdings in the Chugach National Forest within Prince William Sound (surface and subsurface rights to 262,000 acres, estimated acquisition cost \$262 million);²
- Inholdings in Kachemak Bay State Park (surface and subsurface rights to 23,000 acres, estimated acquisition cost \$30 million);³
- Lands on the southwest tip of the Kenai Peninsula (surface and subsurface rights to 111,000 acres, estimated acquisition cost \$111 million);⁴
- Kenai River corridor wetlands/riparian zone (development rights, 9,100 acres, estimated acquisition cost \$82 million);⁵

¹ Figures for lands associated with National Parks/Monuments based on average cost of \$1,000 per acre, which reflects higher assumed value for these lands than have been paid in recent agreements for purchasing lands & development rights (where little timber/mineral potential was thought to exist) in Alaska. (Incl. the Kijiik agreement that paid approximately \$400/acre for surface and subsurface rights, and the USAF's "Backscatter" radar project which purchased title to Interior lands at \$450/acre.)

² Acreage from the Coastal Coalition "Draft Proposal for a Comprehensive Settlement of Natural Resource Damages from the 'Exxon-Valdez' Oil Spill" ("Proposal") dated July 4, 1990. Costs adjusted upward from average of Proposal by approximately 50% (to \$1,000 per acre) to include an estimate for acquisition of subsurface right as well as timber harvest rights, and to include operating (management) costs for a period of 10 years.

³ Legislative purchase proposal of \$20 million, adjusted upward by 50% as in footnote 2, above.

⁴ See footnote 2, above.

⁵ Acreage from Kenai River Management Plan. Cost estimate based on 5 major parcels valued at from \$8,000 - \$10,000/acre each.

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- Non-federal lands within the Kodiak National Wildlife Refuge (surface and subsurface rights to 400,000 acres, estimated acquisition cost \$200 million)⁶
- Native timber lands rights on Afognak Island (surface {and subsurface?} rights to 211,664 acres, appraised value \$210 million)
- Non-federal lands within the Alaska Maritime National Wildlife Refuge (purchase of 260 acres {two islands}, estimated cost \$0.3 million)

Feasibility: Feasible to acquire development rights (in perpetuity or for specific periods - i.e., 10 years) in such a manner that title and subsistence use rights are retained by the Native corporations. (Can be addressed for individual acquisitions, as well.) **Benefit:** Addresses multiple species, habitats, and uses. Reduction of cumulative effects will provide for enhanced recovery of eagles, peregrine falcons, sea ducks, some Alcids, oystercatchers and other shorebirds, sea otters, sea lions and harbor seals, terrestrial mammals, intertidal organisms, salmonids and other fish, cultural resources, and recreational resources. Acquisition options also provide the only direct benefit for resources not specifically targeted in NRDA studies (including fish and wildlife species that receive limited commercial, recreational, or subsistence use). **Cost:** Up to \$___ million (total detailed above). Note that additional opportunities are available, but would have less direct benefits than the options listed. **Cost-effectiveness:** Addresses many species/resources, including resources and ecosystem components not targeted in NRDA studies; for several resources, methods do not exist to undertake direct restoration measures. Therefore reducing cumulative effects through acquisition of equivalent resources is one of the only means of enhancing natural recovery. Assumed extremely cost-effective overall (without addressing "grossly disproportionate" test).

MANAGEMENT ALTERNATIVES:

- ESTABLISH NATIONAL MARINE SANCTUARIES within the spill area, adjacent to federally-managed uplands. Combined with protections afforded to upland habitats and uses by National Parks, Monuments, and Wildlife Refuges, this approach would allow better regulation of (reduction/minimization of impacts from) developments and disturbance-producing activities that could injure coastal habitats. Without this type of status, federal land managers have little real ability to regulate activities occurring just offshore, even if the activities adversely affect the purposes and uses of the upland areas (e.g., recreational activities, fish harvest methods/levels). **Feasibility:** several sanctuaries already exist (none in Alaska), flexible regulatory aspects (can establish purposes/regulate uses specifically to benefit injured or recovering marine resources), extensive public and legislative involvement required to establish. **Benefit:** to fish, shellfish, aquatic birds, marine mammals, recreation, and to scientific study of the sanctuaries' ecosystem. **Cost:** \$45 million (for three sanctuaries).⁷ **Cost-effectiveness:** Addresses multiple species and

⁶ Potentially less threatened lands. \$500/acre average assumed, as paid in the recent Kijiik agreement for purchasing development rights in Alaska (where little timber/mineral potential was thought to exist - approximately \$400/acre for surface and subsurface rights).

⁷ Based on existing sanctuaries: includes \$2 million each for the public establishment process (EIS, hearings, etc.), \$1 million per year each operating expenses for 10 years, and

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uses, addresses gap in uplands acquisition programs by complementing and supplementing abilities to protect aquatic resources injured by the oil spill. Assumed highly cost-effective.

- ESTABLISH STATE MARINE PARKS adjacent to state-managed uplands.

Feasibility and Benefits: similar to those listed for national marine sanctuaries, but potentially with less certainty about effectiveness of restrictions. **Cost:** (Not yet available; expected to be substantially less expensive than national marine sanctuaries.) **Cost-effectiveness:** assumed highly cost-effective.

- ESTABLISH COLLEGE FJORD/NELLIE JUAN WILDERNESS AREA(s) within Prince William Sound. **Feasibility:** Existing Wilderness Study Area(s), extensive public/legislative participation required to establish. **Benefits:** Similar to coastal habitats benefits of upland habitat acquisitions, above. Benefits multiple species/habitats/resources. More protective of natural resources and more restrictive of uses. Particular benefit to recreational uses of coastal habitats. **Cost:** (Not yet available; expected to be relatively small.) **Cost-effectiveness:** Assumed highly cost-effective.

- ESTABLISH PRINCE WILLIAM SOUND NATIONAL RECREATION AREA from major portion of the existing Chugach National Forest. **Feasibility:** Feasible to establish; potentially extensive public and legislative participation required, but expected to be considerably less than for marine sanctuaries, wilderness areas, etc. **Benefits:** Similar to coastal habitats benefits of upland habitat acquisitions, above. Benefits multiple species/habitats/resources. Particular benefit to recreational uses of coastal habitats. **Cost:** (Not yet available; expected to be relatively small.) **Cost-effectiveness:** Assumed highly cost-effective.

- [ADD: other (more minor) measures, incl. intertidal debris pick-up programs, public education programs, "Adopt-a-shoreline" type programs, etc.] **Feasibility:**

Benefit: Cost: Cost-benefit:

- [ADD: NO ACTION ("natural recovery") ALTERNATIVE] **Feasibility:**

Benefit: Cost: Cost-benefit:

2.2 FISH AND SHELLFISH

- Category intro: specific assumptions, etc.

- Species-specific presentations:

- Injury statement (or assumption)
- Statement on adequacy of natural recovery
- Restoration Options

[INCL: commercial and recreational fishing area/time restrictions; establishment of limited entry-type programs for injured species not yet so regulated, hatcheries for salmon, spawning enhancements for wild salmon stocks (egg boxes, habitat rehab, etc.), buy-back of limited entry permits (with or without redistribution to Natives/locals), temporary buy-back of permits during a "recovery" period, support for development of "new" fisheries, rehabilitation or substitution of subsistence shellfish harvest areas, expansion of monitoring facilities for contaminants in seafoods (particularly with access by locals), public education program (for commercial, recreational, and subsistence harvesters), artificial habitat structures for both fish and shellfish, etc.]

(for each, list):

\$3 million each capital costs for boats capable of administering/conducting research in all seasons.

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- Feasibility statement
- Environmental benefit statement
- Cost, and cost-effectiveness discussion
- Other (non-targeted by NRDA) resources (discussion)
- [- Resource list for Fish and Shellfish (tentative):
 - Sport fish harvest and effort
 - Salmon spawning areas
 - Egg/pre-emergent fry
 - Early marine, salmon
 - Adult salmon returns (coded-wire tags)
 - Sockeye overescapement
 - Dolly Varden
 - Herring
 - Larval fish
 - Rockfish
 - Groundfish (trawl survey)
 - Clams
 - Spot shrimp
 - Crabs
 - Sea urchins]

2.3 BIRDS

(SAME FORMAT)

[INCL: introduced predator (fox) removal from island nesting colonies, nesting and roosting habitat protection/acquisition within the spill area, forage base enhancements (incl. fishing restrictions), reduction/elimination of mortalities due to high seas drift net fisheries, management changes to minimize disturbance of rookeries, nesting habitat enhancement ("Ducks Unlimited" type) projects, acquisition/protection of San Juan Islands winter loon habitat, Willamette National Wildlife Refuge expansion, etc.]

- Resource list for Birds (tentative):
 - Bald eagles
 - Peregrines
 - Sea Ducks (Harlequins, etc.)
 - Passerines
 - Seabird colonies
 - Loons
 - Common Murres
 - Marbled Murrelets
 - Pigeon Guillemots
 - Other Alcids
 - Black-legged Kittiwakes
 - Glaucous-winged Gulls
 - Oystercatchers
 - Cormorants
 - Mergansers
 - Other bird species

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2.4 MAMMALS;
(SAME FORMAT)

[INCL: rookery/haulout habitat acquisitions, forage base enhancements (incl. fishing restrictions), management changes/actions to minimize disturbance, public education programs, limited reintroductions, etc.]

- Resource list for Mammals (tentative):

- Humpback whales
- Orcas
- Sea lions
- Harbor seals
- Sea otters
- Black-tail deer
- Black bear
- Brown bear
- River otter and mink
- Small mammals

2.5 RECREATIONAL USES AND INTRINSIC VALUES
(TO BE SAME FORMAT)

[INCL: importance of overall ecosystem restoration, establishment of National Recreation Area, wilderness, marine sanctuaries/parks, acquisition of development rights in important recreation areas, establishment of additional public-use recreational facilities/uses/species in the spill area or at alternate locations, sea-going vessels for Katmai NP and other management units, etc.]

Intro and Assumptions

Human use of ecological resources for recreation is an important category of services which must be addressed by the restoration process.

Biological and physical restoration of ecological resources is fundamental to the restoration of recreational uses; however, such biophysical restoration is not sufficient to address certain wilderness values, aesthetic values, and other "in-absentia" values such as option, existence, and bequest values.

To the extent that restoration of recreational uses is partially accomplished by biophysical restoration, it is assumed that those actions are discussed under the appropriate biological resource. This section includes recreation-specific restoration actions.

All recreational uses are not equal; to the extent possible, the same type and quality of recreational experience must be restored.

Injury to recreational resources must be evaluated in terms of changes in both actual use and perceptions. (Perception is at least as important as reality.)

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Measures of use levels are inadequate because they do not capture important changes in the type and quality of experience.

Increased use numbers are not necessarily desirable.

Impacts may be higher on some groups than on others. For example, beach-dependent activities (e.g., kayak camps) will be more impacted than off-shore activities (e.g., cruise ship tourism).

Given the large acreage of public lands in Alaska, providing relatively small public access sites will restore more value than acquisition or designation of additional wilderness acreage.

Little injury assessment information is available; some use level data is available for Kenai Fjords National Park, but necessary data on quality of experience and user perceptions is lacking. Data available for Kenai Fjords National Park follows:

- Approximately 30 percent of the 400 miles of coastline within Kenai Fjords National Park received some degree of oiling: 50 miles experienced very light impact, 50 miles light impact, 5 miles moderate impact, and 0.31 miles heavy impact.
- Visitation of park has increased approximately 10-13% per year since establishment in 1980.
- Between 1988 and 1989 overall visitation increased 30% from 59,000 to 77,000 visitors. Note that a decrease in some types of recreational use requiring early reservations (such as cruise ship packages) would not be expected to suffer a decline in visitation immediately following a spill. A decrease in Kenai Fjords National Park visitation by other groups (kayakers and anglers) was observed in 1989.

Resource-specific Presentations

Public-use cabins/sites:

Injury statement -

Adequacy of natural recovery -

Restoration Strategies

- Provide alternative destinations.
- Minimize further cumulative impacts.
- Manage changes in recreational use patterns.
- No action / natural recovery.

Low-impact camping:

Injury statement -

Adequacy of natural recovery -

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Restoration Strategies

- Provide alternative destinations.
- No action / natural recovery.

Kayaks and canoes:

Injury statement - Kenai Fjords National Park experienced a decline in kayaker use in 1989. Kayakers and canoeists are strongly impacted by visible oiling of beach sediments at sites where they camp or rest. In most areas, solitude is an important component of the paddling experience; therefore, these users have been and will continue to be impacted by clean-up activities, monitoring and research activities, development activities visible (or audible) from the water and adjacent shoreline, and by increased tourism which may result from increased public awareness of the oil-impacted area.

Adequacy of natural recovery - How long will surface and shallow subsurface oil rub off on tent bottoms? How long will stain last on protected beaches?

Restoration Strategies

- Restore prime shoreline use sites.
- Manage changes in recreational use patterns.
- Education / interpretation.
- No action / natural recovery.

Charter, tour boats, etc.:

Injury statement - The NRDA process does not address losses to commercial charter and tour boat operators; however, it should address and restore injuries to the visitor's experience due to natural resource injury. Many of these impacts will be perceptual and can be addressed through education or interpretation.

Adequacy of natural recovery -

Restoration Strategies

- Education / interpretation.
- No action / natural recovery.

Other pleasure boats:

Injury statement - Other pleasure boats includes sailboats, inflatables, skiffs, etc. These users will be affected perceptually in the manner similar to that of passengers on charters and tour boats. In addition, to the extent that they use shorelines and beaches, they will suffer direct use impacts similar to those affecting kayakers and canoeists.

Adequacy of natural recovery -

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Restoration Strategies

- Restore prime shoreline use sites.
- Manage changes in recreational use patterns.
- Education / interpretation.
- No action / natural recovery.

Marine sport fishing:

Injury statement -

Adequacy of natural recovery -

Restoration Strategies

- Education / interpretation.
- No action / natural recovery.

Freshwater sport fishing:

Injury statement -

Adequacy of natural recovery -

Restoration Strategies

- No action / natural recovery.

Shellfishing:

Injury statement -

Adequacy of natural recovery -

Restoration Strategies

- No action / natural recovery.

Hunting, terrestrial mammals:

Injury statement -

Adequacy of natural recovery -

Restoration Strategies

- No action / natural recovery.

Hunting, waterfowl:

Injury statement -

Adequacy of natural recovery -

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Restoration Strategies

- No action / natural recovery.

Trapping:

Injury statement -

Adequacy of natural recovery -

Restoration Strategies

- No action / natural recovery.

Hiking and climbing:

Injury statement -

Adequacy of natural recovery -

Restoration Strategies

- No action / natural recovery.

Berry picking, picnicking, etc.:

Injury statement -

Adequacy of natural recovery -

Restoration Strategies

- No action / natural recovery.

Nature study:

Injury statement -

Adequacy of natural recovery -

Restoration Strategies

- No action / natural recovery.

Photography:

Injury statement -

Adequacy of natural recovery -

Restoration Strategies

- No action / natural recovery.

Aesthetic values:

Injury statement -

Adequacy of natural recovery -

Restoration Strategies

- Acquire equivalent resources.
- Minimize further development.
- Education / interpretation.
- No action / natural recovery.

"In-absentia" values (including option, existence, and bequest values):

Injury statement -

Adequacy of natural recovery -

Restoration Strategies

- Acquire equivalent resources.
- Minimize further development.
- Education / interpretation.
- No action / natural recovery.

Other Recreational Uses and Intrinsic Values

Restoration Options

Strategy: Restore prime shoreline use sites.

- Additional cleanup of prime shoreline use sites.

Feasibility:

Environmental benefit: On a site-by-site basis, additional cleaning of prime shoreline use sites may be justifiable even if it sets back natural, biological recovery. Additional restoration measures (e.g., transplanting) may be considered to address some of these impacts on biological resources.

Cost and cost-effectiveness:

Strategy: Provide alternative destinations.

- Provide alternative destinations for shoreline use where previous sites have been irreversibly damaged.

Feasibility:

Environmental benefit:

Cost and cost-effectiveness:

Strategy: Manage changes in recreational use patterns.

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- Add field personnel and/or revise regulations in response to increased awareness of recreational opportunities following oil spill publicity and clean up.

Feasibility:

Environmental benefit:

Cost and cost-effectiveness:

- Discourage use of new sites as well as continued use of oiled sites where such use would slow natural recovery.

Feasibility:

Environmental benefit:

Cost and cost-effectiveness:

Strategy: Minimize further cumulative impacts.

- Revise public-lands management plans to minimize further degradation of recreational resources.

Feasibility:

Environmental benefit:

Cost and cost-effectiveness:

Strategy: Minimize further development.

- Purchase private inholdings within public lands.

Feasibility:

Environmental benefit:

Cost and cost-effectiveness:

- Minimize development through tax incentives for not logging or developing private lands and by obtaining development rights, easements, etc. (less-than-fee-simple title) on private lands.

Feasibility:

Environmental benefit:

Cost and cost-effectiveness:

Strategy: Acquire equivalent resources.

- Acquire key public access sites within privately-owned lands and along coasts and rivers.

Feasibility:

Environmental benefit:

Cost and cost-effectiveness:

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- Designate Prince William Sound as a national recreation area or national monument.
Feasibility:
Environmental benefit:
Cost and cost-effectiveness:
- Establish new parks, refuges, and other protected areas.
Feasibility:
Environmental benefit:
Cost and cost-effectiveness:
- Acquire or otherwise protect "threatened" wilderness or recreation areas within and outside of Alaska
Feasibility:
Environmental benefit:
Cost and cost-effectiveness:

Strategy: Education / interpretation.

- Publish brochure to educate recreational boaters about environmental protection.
Feasibility:
Environmental benefit:
Cost and cost-effectiveness:
- Develop unified agency-private tourism and public information program
Feasibility:
Environmental benefit:
Cost and cost-effectiveness:
- Construct and/or maintain public interpretive facilities in oil-spill communities, perhaps associated with state or federal conservation units
Feasibility:
Environmental benefit:
Cost and cost-effectiveness:

Strategy: No action / natural recovery.

2.6 CULTURAL AND SUBSISTENCE RESOURCES
(SAME FORMAT)

- Resource list for Cultural and Subsistence Resources (tentative):
 - Archaeological/historical sites and artifacts
 - Subsistence lifestyle and values

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- Subsistence hunting
- Subsistence fishing
- Public trust (in subsistence resources and in government)
- Other

2.7 MONITORING

- Approach (incl. MOA)
- Basis (Puget Sound, Chesapeake)

2.8 RESEARCH

- Approach/Basis (incl. MOA)
- Additional restoration benefit (connection to cultural/social restoration, etc.)

3. SYNTHESIS DISCUSSION

Re. acquisitions:

- Ecosystem benefitted acquisitions, incl.:
 - avoidance often = surest
 - addresses non-targeted resources, as well
 - addresses cultural/social/political aspects of restoration, as well
- Justifications for combining restoration options common to multiple resources
- Ability to reduce (negotiated) magnitude of acquisition while retaining overall benefits
- Application of cost-effectiveness/"grossly disproportionate" tests to combined options
- Brief discussion of restoration projects not recommended
- (Note relation to Coastal Coalition proposal vis a' vis acceptability)

4. RECOMMENDED RESTORATION PACKAGE AND COST

- Reminders re: degree-of-injury assumptions, and that we can't address "grossly d."
- List suggested restoration package (prioritized plan elements/projects)
- Note injured resources addressed by each
- Total cost presented for recommended restoration package: \$___
 - Coastal Habitats restoration cost: \$___
 - Fish and Shellfish restoration cost: \$___
 - Birds restoration cost: \$___
 - Mammals restoration cost: \$___
 - Recreational Resources restoration cost: \$___
 - Cultural Resources restoration cost: \$___
 - Other Ecosystem Components restoration cost: \$___

5. REFERENCES

POTENTIAL RESTORATION PROGRAM

| <u>Project</u> | <u>Cost in Millions \$</u> |
|---|----------------------------|
| Fish and Shellfish | |
| -Salmon hatcheries and stream enhancement in and outside the spill area | 200 |
| -Endowment of hatchery operating costs | 200 |
| -Restoration of intertidal spawning areas for salmon habitat | 15 |
| -Sportfish restoration | 40 |
| -Herring enhancement | 10 |
| -Fishery closures to rebuild stocks | 10 |
| -Shellfish mariculture for subsistence users | 5 |
| -Monitoring subsistence fishery resources (10 years) | 10 |
| -Endow trust fund for more intensive fishery management | 100 |
| -Monitoring, assessment, and management projects for various fishery resources (10 years) | 70 |
| Fisheries subtotal | 660 |
| Coastal/Marine Habitats | |
| - <u>Fucus</u> (marine algae) recolonization | 50 |
| -Marsh rehabilitation (raking, revegetating) | 50 |
| -Re-establishment of intertidal fauna | 50 |
| -Create new marine parks/sanctuaries (include 10 years' operation) | 10 |
| Coastal Habitat Subtotal | 160 |

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Mammals, Marine and Terrestrial

| | |
|---|-----------|
| -Purchase critical pupping and haul-out areas for marine mammals (e.g. Marmot Island for Steller's Sea Lions) | 25 |
| -Increased environmental law enforcement (10 years) | 10 |
| -Reduce competition for prey species by restricting fisheries harvests (10 years) | 30 |
| Mammals Subtotal | 65 |

Birds

| | |
|--|------------|
| -Removal of introduced predators/vermin (e.g., foxes and rats) from islands | 10 |
| -Purchase colony/public viewing sites for marine birds (e.g., Gull Isl., Homer) | 10 |
| -Endow public environmental education | 100 |
| -Restoration of eroded upland nesting habitat (e.g., Simeonoff Isl. [check spelling]) | 10 |
| -Acquisition of winter habitat for waterfowl and other bird populations impacted by the spill (e.g., Canada geese in Oregon) | 50 |
| Birds Subtotal | 180 |

Recreation

| | |
|---|----|
| -Construct public-use cabins and other non-intrusive facilities as alternatives to existing facilities at damaged sites | 10 |
| -Construct public use cabins and other non-intrusive facilities beyond the spill area | 50 |
| -Purchase small strategic sites (e.g., fishing/camp sites) for public access in private lands (in spill area and southcentral AK generally) | 40 |
| -Public education and promotional program about post-spill opportunities and problems (10 years) | 10 |
| -Construct visitor facilities to interpret natural | |

| | |
|---|-----|
| history and oil spill for federal and state parks in the impacted area | 50 |
| Recreation Subtotal | 160 |

Cultural

| | |
|--|-----|
| -Stabilization and protection of historic/ burial sites important to Alaskan Natives | 100 |
| -Public education program about post-spill cultural/subsistence resources in rural villages (10 years) | 10 |
| -Museum exhibitions on spill effects and recovery | 10 |
| -Foster Native cultural traditions through buy backs of artifacts, education about methods, etc. | 10 |
| -Public education/law enforcement pertaining to historical/burial sites (10 years) | 5 |
| Cultural subtotal | 135 |

Multipurpose Projects

| | |
|--|-----|
| -Purchase private timber rights in blocks and buffers along coasts, streams, and adjacent uplands (e.g., southeast Montague Island) for wildlife, fisheries, and recreation | 300 |
| -Purchase in-holdings within existing state/ federal protected units (e.g., Kachemak Bay State Park, Kenai Fjords National Park) | 15 |
| -Designate new protected areas (state/federal) (e.g., a National Monument in Prince William Sound) (include 10 years operation) | 10 |
| -Establish trust fund or revolving fund to support future acquisition projects within in oil-spill area | 200 |
| -Restore beaches and supratidal areas damaged during clean up | 10 |
| -Eliminate foreign high-seas gillnet fisheries to benefit salmon, marine mammals, and birds | 5 |

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- Clean up and eliminate future marine debris harmful to marine mammals and birds 10
- Buy back both offshore and inshore oil leases (e.g., Chuchi, Bristol bay) 1000
- Establish new wilderness areas/better protect existing wilderness areas (especially coastal) in continental U.S. 50
- Acquisition of critical wildlife in Alaska (e.g., Lake Florence, Admiralty Island) 50
- "Nongame" wildlife research and education trust in Alaska 100
- Subsidize eco-tourism industry in oil spill area and around Alaska (travel vouchers, Earth keep project) 20
- Enhance monitoring and enforcement related to oil storage and transportation to reduce chronic and catastrophic spills 20
- Abatement of water pollution in spill area from sources other than oil (e.g., sewage) 100
- Establish required recycling program 100
- Improve response capacity to continue and clean up spills 25
- Funds to support public participation in restoration planning and implementation 10
- Arctic Institute for Alternative Energy 100
- Establish an Alaska Environmental Permanent Fund (No Limit)

Multipurpose Subtotal: 2,125 to no limit

RPWG
F

Sandy's comment

**POTENTIAL RESTORATION PROJECTS AND COSTS
FOLLOWING THE EXXON-VALDEZ OIL SPILL:**

PRELIMINARY DRAFT REPORT
to the
U.S. DEPARTMENT OF JUSTICE

(9/7/90 Version)

*Changes made
as noted - BPR
9-7
11:10 AM*

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IMPORTANT NOTE:

*This document is **INCOMPLETE**.*

This is a preliminary working version , and is provided for discussion purposes. ONLY

Total costs for a restoration package **CANNOT** be calculated from this version.

Restoration options have not yet been prioritized, and lack of discussion on particular options at this time DOES NOT mean they are not important or will not be added.

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| | | |
|-------|--|----|
| 1. | INTRODUCTION | 1 |
| 1.1 | PURPOSE | 1 |
| 1.2 | GENERAL APPROACH..... | 1 |
| 1.3 | SPECIFIC APPROACH/ASSUMPTIONS..... | 2 |
| 2. | DESCRIPTION OF RESTORATION PROJECTS | 3 |
| 2.1 | COASTAL HABITATS | 3 |
| 2.1.1 | Injury Statement..... | 4 |
| 2.1.2 | Restoration Options..... | 4 |
| 2.2 | FISH AND SHELLFISH..... | 7 |
| 2.3 | BIRDS..... | 8 |
| 2.4 | MAMMALS | 9 |
| 2.5 | RECREATIONAL USES AND INTRINSIC VALUES | 9 |
| 2.6 | CULTURAL AND SUBSISTENCE RESOURCES | 10 |
| 2.7 | MONITORING..... | 11 |
| 2.8 | RESEARCH..... | 11 |
| 3. | SYNTHESIS DISCUSSION | 11 |
| 4. | RECOMMENDED RESTORATION PACKAGE AND COST | 11 |
| 5. | REFERENCES | 11 |

1. INTRODUCTION

1.1 PURPOSE

This preliminary draft document has been prepared at the request of the U.S. Department of Justice to help support its preparation for potential negotiations regarding settlement of damages caused by the Exxon-Valdez oil spill. This document is meant only to support potential out-of-court negotiations, where rigorous proofs are not at issue, and should not be used or referenced outside of that narrow context. Also, this document does not present an overall Natural Resource Damage Assessment (NRDA) settlement proposal. Nor does it address uses for additional funds (beyond those necessary for the restoration projects discussed herein) that may become available based on direct injuries and lost use values. Rather, this document supports only one portion of a potential settlement: restoration. It is assumed that direct injuries and use values are being compiled and evaluated separately, and that restoration needs/costs will be integrated with those efforts. Information contained in this document will be updated as results from ongoing NRDA studies become available.

can ✓

1.2 GENERAL APPROACH

The overall philosophy of this document is to help achieve a negotiated settlement of the maximum possible amount. Consistent with its purpose to support negotiations, restoration projects are included that may be in excess of injuries that can be reasonably proven with presently available NRDA data. Therefore, potential restoration measures are evaluated individually so that adjustments to the recommended restoration "package" can be made easily as may be appropriate to the negotiations. At the same time the overall benefits described for the recommended restoration package would still be realized, albeit to a lesser degree.

The recommended measures reflect an ecosystem approach to restoration (with resource-specific components). In particular, where alternatives exist for restoring and injured resource, restoration measures that benefit multiple resources are given preference over actions that would benefit individual species. This not only helps to address ecosystem components not directly targeted by NRDA studies, but in most cases also advances the goal of maximizing the (requested) settlement amount in that pooling many slightly injured resources can help justify larger "equivalent resource" acquisitions than could be the case if smaller-scale direct restoration measures were proposed. In addition, this approach reflects the realization that few direct restoration measures will even remain viable if negotiations (or litigation) were to become protracted.

take 5-10 years or more.

Potential restoration measures have been identified with both technical and public input obtained by the Restoration Planning Work Group, as documented in its three reports. abc All options are based on the definition of "restoration" contained in the draft Memorandum of Agreement (MOA) between the Trustee agencies and EPA (the MOA definition itself is based on the definition in the Department of the Interior (DOI) NRDA regulations [43 CFR Part 11]):

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"Restore" or "Restoration" means any action in addition to cleanup response activities required or authorized by state or federal law which serves to restore any natural resource injured, lost or destroyed as a result of the Oil Spill and the services provided by that resource to their pre-spill condition, or which replaces or substitutes for the injured, lost or destroyed resource and affected services. Restoration includes, without limitation, replacement of resources and acquisition of equivalent resources and services, and, to the extent permitted by law, long-term environmental monitoring and research programs in the area affected by the Oil Spill directed to the prevention, containment, cleanup and amelioration of oil spills.

1.3 **SPECIFIC APPROACH/ASSUMPTIONS**

Each potential restoration project is evaluated in terms of the "6 Burdens" that are expected to be relevant should the NRDA settlement go to litigation, as outlined by the Department of Justice. (This document does not attempt to satisfy these burdens to the degree that would be required for litigation.) The "6 Burdens" are:

1. Relationship to (proof of) injury
2. Natural recovery is "inadequate"
3. Restoration measure is technically feasible
4. Restoration measure would have a net environmental benefit
5. Cost of implementing the restoration measure would not be "grossly disproportionate" to the values of the resource
6. Restoration measure is cost-effective relative to alternative methods for restoring the resource

With respect to these points, this document assumes that #1 (proof of injury) exists for all of the resources addressed. It is assumed that the necessary proofs are being compiled and will be presented elsewhere. The "injury statements" given in this document for each resource represent independent assumptions about injuries that could reasonably be expected from the spill (and in some cases preliminary information from discussions with NRDA principal investigators), and are presented only for the purposes of preparation for negotiation. These injury statements should not be referenced outside of that context.

Similarly, #2 (natural recovery is inadequate) is assumed to be the case for the resource addressed. The primary justification for this assumption relates to the overall "ecosystem approach" to this restoration proposal. Different ecosystem components (individuals, populations, communities, and the ecosystem as a whole) will exhibit different rates of natural recovery. For example, it is to be expected that barnacles will be among the most resilient intertidal organisms in terms of recolonization rates. However, other intertidal species (including certain crustaceans and molluscs) will be much slower to recover to pre-spill conditions. The time necessary for "full recovery" of intertidal communities will in turn be dictated by the recovery rates of the slowest species in that community. At the same time, recovery of higher trophic level species that use intertidal areas as habitat - such as those that feed extensively in the intertidal zone (e.g., sea otters, oystercatchers, some sea ducks) - will be linked to the recovery rates of the species on which they feed (not necessarily the fastest recolonizers). Therefore, this document takes the approach that restoration of the ecosystem as a whole is inextricably tied to the

recovery of all its major components. In this sense, relatively rapid recovery of individual species or habitats is ~~"inadequate" until all the other uses of those species or habitats have also been restored.~~ *does not constitute full recovery.* ✓

Burdens 3, 4, and 6 are evaluated directly for each resource.

Burden #5 ("grossly disproportionate" test) is not evaluated for the resources addressed in this document. First, we have no information at this time about the degree of injury that DOJ will present (for negotiating purposes or otherwise). Therefore, the application of this test is currently outside the scope of this document. In addition, the Ohio case (State of Ohio v. Department of the Interior; July 14, 1989) is vague about what could be considered as "grossly disproportionate," and it would be inappropriate for this document to make any independent assumption in this regard. Finally, consistent with the philosophy of supporting negotiations by maximizing the absolute size of the proposed settlement, it is suggested that the "grossly disproportionate" test be applied to the recommended settlement package (i.e., the mix of ultimately recommended restoration measures) rather than to each of the potential restoration options outlined. This is also consistent with the overall "ecosystem" approach, where resources (such as intertidal habitats, discussed above) are recognized as having ecological values (uses) beyond their individual values.

In addition to the considerations described above this document makes numerous other assumptions, particularly with respect to estimating costs. For example, although it is recognized that some resources may require longer periods of attention while others may require less, 10 years is routinely used for calculating operating costs, monitoring periods, etc. The pertinent resource-specific assumptions are presented along with the discussions for the individual resources.

2. DESCRIPTION OF RESTORATION PROJECTS

2.1 COASTAL HABITATS

This category includes those areas directly injured by the oil spill and subsequent clean-up activities. Virtually all of the oil that did not evaporate or was not quickly recovered ended up in these habitats. These areas include the "supratidal" (splash zone and immediately adjacent uplands including beach ryegrass zones), intertidal, and nearshore subtidal areas. These areas represent important and in some cases critical habitats for a variety of plant, vertebrate, and invertebrate species that were also directly injured by the spill. Supratidal are key interface areas for upland species, incl. mammals and birds. Intertidal and shallow subtidal areas, including estuarine salt marshes and eelgrass beds (which comprise a small % of spill area, but are disproportionately important habitats) are critical for many feeding and rearing bird, fish, and marine mammal species.

Some direct restoration measures are available to address some of the injuries to coastal habitats. However, for most species feasible techniques do not exist to accelerate natural recovery. Another major consideration in identifying restoration projects that would benefit coastal habitats is the fact that all Alaska tidelands (intertidal) and

Change

573-5132 phone

- Daryl -

~~Totemoff~~

(Totemoff)

either 17th or 18th

20th or is busy

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NO
managing agencies

submerged lands are already in public ownership. Therefore, direct acquisition of unoiled tidelands and submerged lands to replace damaged areas is not possible. However, changes in management practices/use restrictions on public lands, and enhanced protection of adjacent upland and marine areas (through acquisition or other means) can benefit both the coastal habitats themselves and the species they support, by reducing cumulative effects on stressed populations/habitats.

Injury Statement

[CALL DAVE G.! Consider ryegrass, high fringing salt marshes, erosion, debris, connection to archaeological injuries, habitat values for birds, mammals, carbon source for aquatics, connection to recreational uses and subsistence gathering, etc.] [NEED handle on potential amt of coastline needing attention - absent, can assume ryegrass exists along 25-30% of injured coastline, and was 10-25% (?) injured there; marshes occur along 1% of injured coastline with about 50% of them being injured to a degree; etc ...]

Options

- BEACH RYEGRASS RESTORATION: **Feasibility:** Techniques proven in Alaska, rapid coverage, high success rate. **Benefit:** To erosion, cultural resource site stabilization, recreational resource aspects incl. aesthetics, habitat values for associated species. **Cost:** [CALL Stoney W. to get idea of unit cost, incl. logistics support, etc.] **Cost-effectiveness:** Direct, on-site in-kind measure using established technology; addresses multiple species/resources; assumed highly cost-effective (without addressing "grossly disproportionate" test).
- ESTUARINE SALT MARSH RESTORATION: **Feasibility:** Techniques proven elsewhere (fertilization and transplanting), moderate success rates, may require re-work depending on degree of remnant oiling. **Benefit:** To feeding birds and fish, terrestrial mammals, local water quality, erosion in sheltered embayments. **Cost:** \$10 million [\$500,000/acre full restoration (adjusted for Alaska based on \$300,000/acre N.J. experience) for 10 acres plus \$5 million total for less intensive restoration work (limited replanting, fertilization, and reapplication, plus monitoring for up to 10 years) on up to 100 acres]. **Cost-effectiveness:** Direct, on-site in-kind measure using established technology; addresses multiple species/resources; assumed highly cost-effective (without addressing "grossly disproportionate" test).
- EELGRASS RESTORATION/ENHANCEMENT: **Feasibility:** Techniques established elsewhere, moderate success rates, may require some re-work. **Benefit:** To feeding and rearing fish and shellfish including juvenile salmonids, crabs, and shrimp; to feeding shorebirds and diving ducks; to ecosystem functions such as nutrient cycling and stabilization from erosion; and to other (mostly non-targeted) resources. **Cost:** \$___ (___ acres, estimated \$___/acre transplanting, monitoring, and re-planting). **Cost-effectiveness:** Direct, in-kind, on- or off-site measure using established technology; addresses multiple species/resources; assumed highly cost-effective (without addressing "grossly disproportionate" test).
- EQUIVALENT RESOURCES: Enhanced protection of supratidal and intertidal areas can be achieved through management changes on and/or direct acquisition of upland and marine areas immediately adjacent to the shoreline. To be most directly beneficial, lands threatened by potential timber harvest, subsurface (mineral)

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NO

could

tourism development

development, or other disturbance-creating activities (such as lodges) should be targeted. (Note that many of these options have benefits to other than coastal habitat resources. Other sections of this document will refer to these options where appropriate to avoid multiple accounting.)

ACQUISITIONS:

Potential acquisitions are presented below in no particular order. Acquisition options are prioritized in the "Recommendations" section. (It is assumed that all acquisitions would be made on a willing buyer-willing seller basis. Eminent domain is assumed not to be an option.)

- Native-selected lands along the shoreline of Kenai Fjords National Park (direct purchase: 77,450 acres, estimated value/acquisition cost \$77.5 million);¹
- Other non-federal lands within Kenai Fjords, excluding mining claims (direct purchase, 20,125 acres, estimated value/acquisition cost \$20 million);
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- Lands on the southwest tip of the Kenai Peninsula (surface and subsurface rights to 111,000 acres, estimated acquisition cost \$111 million);⁴
- Kenai River corridor wetlands/riparian zone (development rights, 9,100 acres, estimated acquisition cost \$82 million);⁵

¹ Figures for lands associated with National Parks/Monuments based on average cost of \$1,000 per acre, which reflects higher assumed value for these lands than have been paid in recent agreements for purchasing lands & development rights (where little timber/mineral potential was thought to exist) in Alaska. (Incl. the Kijiik agreement that paid approximately \$400/acre for ~~surface and subsurface rights~~, and the USAF's "Backscatter" radar project which purchased title to Interior lands at \$450/acre.)

² Acreage from the Coastal Coalition "Draft Proposal for a Comprehensive Settlement of Natural Resource Damages from the 'Exxon-Valdez' Oil Spill" ("Proposal") dated July 4, 1990. Costs adjusted upward from average of Proposal by approximately 50% (to \$1,000 per acre) to include an estimate for acquisition of subsurface right as well as timber harvest rights, and to include operating (management) costs for a period of 10 years.

³ Legislative purchase proposal of \$20 million, adjusted upward by 50% as in footnote 2, above.

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⁵ Acreage from Kenai River Management Plan. Cost estimate based on 5 major parcels valued at from \$8,000 - \$10,000/acre each.

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- Non-federal lands within the Kodiak National Wildlife Refuge (surface and subsurface rights to 400,000 acres, estimated acquisition cost \$200 million)⁶
- Native timber lands rights on Afognak Island (surface {and subsurface?} rights to 211,664 acres, appraised value \$210 million)
- Non-federal lands within the Alaska Maritime National Wildlife Refuge (purchase of 260 acres {two islands}, estimated cost \$0.3 million)

Feasibility: Feasible to acquire development rights (in perpetuity or for specific periods - i.e., 10 years) in such a manner that title and subsistence use rights are retained by the Native corporations. (Can be addressed for individual acquisitions, as well.) **Benefit:** Addresses multiple species, habitats, and uses. Reduction of cumulative effects will provide for enhanced recovery of eagles, peregrine falcons, sea ducks, some Alcids, oystercatchers and other shorebirds, sea otters, sea lions and harbor seals, terrestrial mammals, intertidal organisms, salmonids and other fish, cultural resources, and recreational resources. Acquisition options also provide the only direct benefit for resources not specifically targeted in NRDA studies (including fish and wildlife species that receive limited commercial, recreational, or subsistence use). **Cost:** Up to \$___ million (total detailed above). Note that additional opportunities are available, but would have less direct benefits than the options listed. **Cost-effectiveness:** Addresses many species/resources, including resources and ecosystem components not targeted in NRDA studies; for several resources, methods do not exist to undertake direct restoration measures. Therefore reducing cumulative effects through acquisition of equivalent resources is one of the only means of enhancing natural recovery. Assumed extremely cost-effective overall (without addressing "grossly disproportionate" test).

MANAGEMENT ALTERNATIVES:

- ESTABLISH NATIONAL MARINE SANCTUARIES within the spill area, adjacent to federally-managed uplands. Combined with protections afforded to upland habitats and uses by National Parks, Monuments, and Wildlife Refuges, this approach would allow better regulation of (reduction/minimization of impacts from) developments and disturbance-producing activities that could injure coastal habitats. Without this type of status, federal land managers have little real ability to regulate activities occurring just offshore, even if the activities adversely affect the ^{management of the area} purposes and uses of the upland areas (e.g., recreational activities, fish harvest methods/levels). **Feasibility:** several ^{federal} sanctuaries already exist (none in Alaska), flexible regulatory aspects (can establish purposes/regulate uses specifically to benefit injured or recovering marine resources), extensive public and legislative involvement required to establish. **Benefit:** to fish, shellfish, aquatic birds, marine mammals, recreation, and to scientific study of the sanctuaries' ecosystem. **Cost:** \$45 million (for three sanctuaries).⁷ **Cost-effectiveness:** Addresses multiple species and uses, addresses gap in uplands acquisition programs by complementing and

⁶ Potentially less threatened lands. \$500/acre average assumed, as paid in the recent Kijiik agreement for purchasing development rights in Alaska (where little timber/mineral potential was thought to exist - approximately \$400/acre for surface and subsurface rights).

⁷ Based on existing sanctuaries: includes \$2 million each for the public establishment process (EIS, hearings, etc.), \$1 million per year each operating expenses for 10 years, and \$3 million each capital costs for boats capable of administering/conducting research in all seasons.

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supplementing abilities to protect aquatic resources injured by the oil spill. Assumed highly cost-effective.

- ESTABLISH STATE MARINE PARKS adjacent to state-managed uplands.

Feasibility and Benefits: similar to those listed for national marine sanctuaries, but potentially with less certainty about effectiveness of restrictions. **Cost:** (Not yet available; expected to be substantially less expensive than national marine sanctuaries.) **Cost-effectiveness:** assumed highly cost-effective.

- ESTABLISH COLLEGE FJORD/NELLIE JUAN WILDERNESS AREA(s) within Prince William Sound. **Feasibility:** Existing Wilderness Study Area(s), extensive public/legislative participation required to establish. **Benefits:** Similar to coastal habitats benefits of upland habitat acquisitions, above. Benefits multiple species/habitats/resources. More protective of natural resources and more restrictive of uses. Particular benefit to recreational uses of coastal habitats. **Cost:** (Not yet available; expected to be relatively small.) **Cost-effectiveness:** Assumed highly cost-effective.

- ESTABLISH PRINCE WILLIAM SOUND NATIONAL RECREATION AREA from major portion of the existing Chugach National Forest. **Feasibility:** Feasible to establish; potentially extensive public and legislative participation required, but expected to be considerably less that for marine sanctuaries, wilderness areas, etc. **Benefits:** Similar to coastal habitats benefits of upland habitat acquisitions, above. Benefits multiple species/habitats/resources. Particular benefit to recreational uses of coastal habitats. **Cost:** (Not yet available; expected to be relatively small.) **Cost-effectiveness:** Assumed highly cost-effective.

- [ADD: other (more minor) measures, incl. intertidal debris pick-up programs, public education programs, "Adopt-a-shoreline" type programs, etc.] **Feasibility:**

Benefit: Cost: Cost-benefit:

-- [ADD: NO ACTION ("natural recovery") ALTERNATIVE] **Feasibility:**

Benefit: Cost: Cost-benefit:

2.2 FISH AND SHELLFISH

(Same Format)

- Category intro: specific assumptions, etc.
- Species-specific presentations:
 - Injury statement (or assumption)
 - Statement on adequacy of natural recovery
 - Restoration Options

[INCL: commercial and recreational fishing area/time restrictions; establishment of limited entry-type programs for injured species not yet so regulated, hatcheries for salmon, spawning enhancements for wild salmon stocks (egg boxes, habitat rehab, etc.), buy-back of limited entry permits (with or without redistribution to Natives/locals), temporary buy-back of permits during a "recovery" period, support for development of "new" fisheries, rehabilitation or substitution of subsistence shellfish harvest areas, expansion of monitoring facilities for contaminants in seafoods (particularly with access by locals), public education program (for commercial, recreational, and subsistence harvesters), artificial habitat structures for both fish and shellfish, etc.]

(for each, list):

- Feasibility statement,

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- Environmental benefit statement,
- Cost, and cost-effectiveness discussion.
- Other (non-targeted by NRDA) resources (discussion)
- [- Resource list for Fish and Shellfish (tentative):
 - Sport fish harvest and effort
 - Salmon spawning areas
 - Egg/pre-emergent fry
 - Early marine, salmon
 - Adult salmon returns (coded-wire tags)
 - Sockeye overescapement
 - Dolly Varden
 - Herring
 - Larval fish
 - Rockfish
 - Groundfish (trawl survey)
 - Clams
 - Spot shrimp
 - Crabs
 - Sea urchins
 - Other fish and shellfish resources (not targeted by NRDA)]

2.3 BIRDS

(Same Format)

[INCL: introduced predator (fox) removal from island nesting colonies, nesting and roosting habitat protection/acquisition within the spill area, forage base enhancements (incl. fishing restrictions), reduction/elimination of mortalities due to high seas drift net fisheries, management changes to minimize disturbance of rookeries, nesting habitat enhancement ("Ducks Unlimited" type) projects, acquisition/protection of San Juan Islands winter loon habitat, Willamette National Wildlife Refuge expansion, etc.]

- [- Resource list for Birds (tentative):
 - Bald eagles
 - Peregrines
 - Sea Ducks (Harlequins, etc.)
 - Passerines
 - Seabird colonies
 - Loons
 - Common Murres
 - Marbled Murrelets
 - Pigeon Guillemots
 - Other Alcids
 - Black-legged Kittiwakes
 - Glaucous-winged Gulls
 - Oystercatchers
 - Cormorants
 - Mergansers
 - Other bird species (not targeted by NRDA)]

very effective (yes?)

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2.4 MAMMALS;
(Same Format)

[INCL: rookery/haulout habitat acquisitions, forage base enhancements (incl. fishing restrictions), management changes/actions to minimize disturbance, public education programs, limited reintroductions, etc.]

[- Resource list for Mammals (tentative):

- Humpback whales
- Orcas
- Sea lions
- Harbor seals
- Sea otters
- Black-tail deer
- Black bear
- Brown bear
- River otter and mink
- Small mammals]

2.5 RECREATIONAL USES AND INTRINSIC VALUES
(To Be Same Format)

[- Resource list for Recreational Uses and Intrinsic Values (tentative):

- Kayaks and canoes
- Other pleasure boats
- Charters, tour boats, etc.
- Marine sport fishing
- Freshwater sport fishing
- Shellfishing
- Trapping
- Hunting, terrestrial mammals
- Hunting, waterfowl
- Public-use cabins/sites
- Low-impact camping
- Hiking and climbing
- Berry picking, picnicking, etc.
- Photography
- Nature study
- Other recreation uses
- Aesthetic values
- "In-absentia" values (including option, existence, and bequest values)]

Intro and Assumptions:

Human use of ecological resources for recreation is an important category of services which must be addressed by the restoration process. Biological and physical restoration of ecological resources is fundamental to the restoration of recreational uses; however, such biophysical restoration is not sufficient to address certain wilderness values, aesthetic values, and other "in-absentia" values such as option, existence, and bequest values. To the extent that restoration of recreational uses is partially accomplished by biophysical restoration, it is

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assumed that those actions are discussed under the appropriate biological resource. This section includes recreation-specific restoration actions.

All recreational uses are not equal; to the extent possible, the same type and quality of recreational experience must be restored. Injury to recreational resources must be evaluated in terms of changes in both actual use and perceptions. (Perception is at least as important as reality.) Measures of simple use levels are inadequate because they do not capture important changes in the type and quality of experience. Similarly, increased use numbers are not necessarily desirable. Impacts may be higher to some recreational uses than to others. For example, beach-dependent activities (e.g., kayak camps) will be more impacted than off-shore activities (e.g., cruise ship tourism).

Injury Statement (tentative):

Little injury assessment information is available; some use level data is available for Kenai Fjords National Park, but necessary data on quality of experience and user perceptions is lacking. Data available for Kenai Fjords National Park follows:

- Approximately 30 percent of the 400 miles of coastline within Kenai Fjords National Park received some degree of oiling: 50 miles experienced very light impact, 50 miles light impact, 5 miles moderate impact, and 0.31 miles heavy impact.
- Visitation of park has increased approximately 10-13% per year since establishment in 1980.
- Between 1988 and 1989 overall visitation increased 30% from 59,000 to 77,000 visitors. Note that a decrease in some types of recreational use requiring early reservations (such as cruise ship packages) would not be expected to suffer a decline in visitation immediately following a spill. A decrease in Kenai Fjords National Park visitation by other groups (kayakers and anglers) was observed in 1989.

Resource-specific Presentations:

[REITERATE: importance of overall ecosystem restoration. INCL: Establishment of National Recreation Area, wilderness, ^{read} marine sanctuaries/parks, acquisition of development rights in important recreation areas, establishment of additional public-use recreational facilities/uses/species in the spill area or at alternate locations, sea-going vessels for Katmai NP and other management units, etc.]

Include: No action / natural recovery.

2.6 CULTURAL AND SUBSISTENCE RESOURCES
(SAME FORMAT)

[EMPHASIZE.: Idea that archeological/historic resources are unique with respect to restoration in that they have no capacity for self-regeneration). INCL: site stabilization/rehabilitation work; intensive archeological surveys on spill area; search, catalog, and/or repatriation of artifacts; "site watch" type programs (local involvement); increased enforcement; public education programs; museum/exhibit establishment/support; etc.]

[- Resource list for Cultural and Subsistence Resources (tentative):

- Archaeological/historical sites and artifacts
- Subsistence lifestyle and values
- Subsistence hunting

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- Subsistence fishing
- Public trust (in subsistence resources and in government)
- Other]

2.7 MONITORING

- Approach (incl. MOA)
- Basis (Puget Sound, Chesapeake)

2.8 RESEARCH

- Approach/Basis (incl. MOA)
- Additional restoration benefit (connection to cultural/social restoration, etc.)

3. SYNTHESIS DISCUSSION

- Ecosystem as a whole benefitted by acquisitions, incl.:
 - avoidance often = surest
 - addresses non-targeted resources, as well
 - addresses cultural/social/political aspects of restoration, as well
- Justifications for combining restoration options common to multiple resources
- Ability to reduce (negotiated) magnitude of acquisition while retaining overall benefits
- Application of cost-effectiveness/"grossly disproportionate" tests to combined options
- Brief discussion of restoration projects not recommended
- (Note relation to Coastal Coalition proposal vis-a-vis acceptability)

4. RECOMMENDED RESTORATION PACKAGE AND COST

- Reminders re: degree-of-injury assumptions, and that we can't address "grossly d."
- List suggested restoration package (prioritized plan elements/projects)
- Note injured resources addressed by each
- Total cost presented for recommended restoration package: \$____
 - Coastal Habitats restoration cost: \$____
 - Fish and Shellfish restoration cost: \$____
 - Birds restoration cost: \$____
 - Mammals restoration cost: \$____
 - Recreational Resources restoration cost: \$____
 - Cultural Resources restoration cost: \$____
 - Other Ecosystem Components restoration cost: \$____

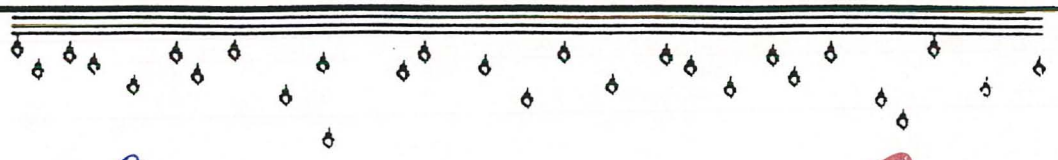
5. REFERENCES

RPWG
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Anchorage, Alaska 99501
(907) 271-2461
FAH: (907) 271-2467

Oil Spill Restoration Planning Office



TO: Carol Gorbics

OFFICE/PHONE: _____

FROM: BRIAN D. ROSS, U.S. EPA
Restoration Planning Team Leader

DATE: 9-7-90

PAGES (incl. cover): 8

MESSAGES:

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9/7/90 Version

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MANAGEMENT ALTERNATIVES:

- ESTABLISH NATIONAL MARINE SANCTUARIES within the spill area, adjacent to federally-managed uplands. Combined with protections afforded to upland habitats and uses by National Parks, Monuments, and Wildlife Refuges, this approach would allow better regulation of (reduction/minimization of impacts from) developments and disturbance-producing activities that could injure coastal habitats. Without this type of status, federal land managers have little real ability to regulate activities occurring just offshore, even if the activities adversely affect the purposes and uses of the upland areas (e.g., recreational activities, fish harvest methods/levels). **Feasibility:** several sanctuaries already exist (none in Alaska), flexible regulatory aspects (can establish purposes/regulate uses specifically to benefit injured or recovering marine resources), extensive public and legislative involvement required to establish. **Benefit:** to fish, shellfish, aquatic birds, marine mammals, recreation, and to scientific study of the sanctuaries' ecosystem. **Cost:** \$45 million (for three sanctuaries).⁷ **Cost-effectiveness:** Addresses multiple species and

⁶ Potentially less threatened lands. \$500/acre average assumed, as paid in the recent Kijik agreement for purchasing development rights in Alaska (where little timber/mineral potential was thought to exist - approximately \$400/acre for surface and subsurface rights).

⁷ Based on existing sanctuaries: includes \$2 million each for the public establishment process (EIS, hearings, etc.), \$1 million per year each operating expenses for 10 years, and

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uses, addresses gap in uplands acquisition programs by complementing and supplementing abilities to protect aquatic resources injured by the oil spill. Assumed highly cost-effective.

- ESTABLISH STATE MARINE PARKS adjacent to state-managed uplands.

Feasibility and Benefits: similar to those listed for national marine sanctuaries, but potentially with less certainty about effectiveness of restrictions. **Cost:** (Not yet available; expected to be substantially less expensive than national marine sanctuaries.) **Cost-effectiveness:** assumed highly cost-effective.

- ESTABLISH COLLEGE FJORD/NELLIE JUAN WILDERNESS AREA(s) within Prince William Sound. **Feasibility:** Existing Wilderness Study Area(s), extensive public/legislative participation required to establish. **Benefits:** Similar to coastal habitats benefits of upland habitat acquisitions, above. Benefits multiple species/habitats/resources. More protective of natural resources and more restrictive of uses. Particular benefit to recreational uses of coastal habitats. **Cost:** (Not yet available; expected to be relatively small.) **Cost-effectiveness:** Assumed highly cost-effective.

- ESTABLISH PRINCE WILLIAM SOUND NATIONAL RECREATION AREA from major portion of the existing Chugach National Forest. **Feasibility:** Feasible to establish; potentially extensive public and legislative participation required, but expected to be considerably less that for marine sanctuaries, wilderness areas, etc. **Benefits:** Similar to coastal habitats benefits of upland habitat acquisitions, above. Benefits multiple species/habitats/resources. Particular benefit to recreational uses of coastal habitats. **Cost:** (Not yet available; expected to be relatively small.) **Cost-effectiveness:** Assumed highly cost-effective.

- [ADD: other (more minor) measures, incl. intertidal debris pick-up programs, public education programs, "Adopt-a-shoreline" type programs, etc.] **Feasibility:**

Benefit: Cost: Cost-benefit:

- [ADD: NO ACTION ("natural recovery") ALTERNATIVE] **Feasibility:**

Benefit: Cost: Cost-benefit:

2.2

FISH AND SHELLFISH

- Category intro: specific assumptions, etc.

- Species-specific presentations:

- Injury statement (or assumption)

- Statement on adequacy of natural recovery

- Restoration Options

[INCL: commercial and recreational fishing area/time restrictions; establishment of limited entry-type programs for injured species not yet so regulated, hatcheries for salmon, spawning enhancements for wild salmon stocks (egg boxes, habitat rehab, etc.), buy-back of limited entry permits (with or without redistribution to Natives/locals), temporary buy-back of permits during a "recovery" period, support for development of "new" fisheries, rehabilitation or substitution of subsistence shellfish harvest areas, expansion of monitoring facilities for contaminants in seafoods (particularly with access by locals), public education program (for commercial, recreational, and subsistence harvesters), artificial habitat structures for both fish and shellfish, etc.]

(for each, list):

\$3 million each capital costs for boats capable of administering/conducting research in all seasons.

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- Feasibility statement
- Environmental benefit statement
- Cost, and cost-effectiveness discussion
- Other (non-targeted by NRDA) resources (discussion)
- [- Resource list for Fish and Shellfish (tentative):
 - Sport fish harvest and effort
 - Salmon spawning areas
 - Egg/pre-emergent fry
 - Early marine, salmon
 - Adult salmon returns (coded-wire tags)
 - Sockeye overescapement
 - Dolly Varden
 - Herring
 - Larval fish
 - Rockfish
 - Groundfish (trawl survey)
 - Clams
 - Spot shrimp
 - Crabs
 - Sea urchins]

2.3 BIRDS

(SAME FORMAT)

[INCL: introduced predator (fox) removal from island nesting colonies, nesting and roosting habitat protection/acquisition within the spill area, forage base enhancements (incl. fishing restrictions), reduction/elimination of mortalities due to high seas drift net fisheries, management changes to minimize disturbance of rookeries, nesting habitat enhancement ("Ducks Unlimited" type) projects, acquisition/protection of San Juan Islands winter loon habitat, Willamette National Wildlife Refuge expansion, etc.]

- Resource list for Birds (tentative):
 - Bald eagles
 - Peregrines
 - Sea Ducks (Harlequins, etc.)
 - Passerines
 - Seabird colonies
 - Loons
 - Common Murres
 - Marbled Murrelets
 - Pigeon Guillemots
 - Other Alcids
 - Black-legged Kittiwakes
 - Glaucous-winged Gulls
 - Oystercatchers
 - Cormorants
 - Mergansers
 - Other bird species

2.4 MAMMALS;
(SAME FORMAT)

[INCL: rookery/haulout habitat acquisitions, forage base enhancements (incl. fishing restrictions), management changes/actions to minimize disturbance, public education programs, limited reintroductions, etc.]

- Resource list for Mammals (tentative):
 - Humpback whales
 - Orcas
 - Sea lions
 - Harbor seals
 - Sea otters
 - Black-tail deer
 - Black bear
 - Brown bear
 - River otter and mink
 - Small mammals

2.5 RECREATIONAL USES AND INTRINSIC VALUES
(TO BE SAME FORMAT)

[INCL: importance of overall ecosystem restoration, establishment of National Recreation Area, wilderness, marine sanctuaries/parks, acquisition of development rights in important recreation areas, establishment of additional public-use recreational facilities/uses/species in the spill area or at alternate locations, sea-going vessels for Katmai NP and other management units, etc.]

Intro and Assumptions

(NANCY'S STAFF - NOT ΔD)

Human use of ecological resources for recreation is an important category of services which must be addressed by the restoration process.

Biological and physical restoration of ecological resources is fundamental to the restoration of recreational uses; however, such biophysical restoration is not sufficient to address certain wilderness values, aesthetic values, and other "in-absentia" values such as option, existence, and bequest values.

To the extent that restoration of recreational uses is partially accomplished by biophysical restoration, it is assumed that those actions are discussed under the appropriate biological resource. This section includes recreation-specific restoration actions.

All recreational uses are not equal; to the extent possible, the same type and quality of recreational experience must be restored.

Injury to recreational resources must be evaluated in terms of changes in both actual use and perceptions. (Perception is at least as important as reality.)

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- Subsistence hunting
- Subsistence fishing
- Public trust (in subsistence resources and in government)
- Other

2.7 MONITORING

- Approach (incl. MOA)
- Basis (Puget Sound, Chesapeake)

2.8 RESEARCH

- Approach/Basis (incl. MOA)
- Additional restoration benefit (connection to cultural/social restoration, etc.)

3. SYNTHESIS DISCUSSION

Re. acquisitions:

- Ecosystem benefitted acquisitions, incl.:
 - avoidance often = surest
 - addresses non-targeted resources, as well
 - addresses cultural/social/political aspects of restoration, as well
- Justifications for combining restoration options common to multiple resources
- Ability to reduce (negotiated) magnitude of acquisition while retaining overall benefits
- Application of cost-effectiveness/"grossly disproportionate" tests to combined options
- Brief discussion of restoration projects not recommended
- (Note relation to Coastal Coalition proposal vis a' vis acceptability)

4. RECOMMENDED RESTORATION PACKAGE AND COST

- Reminders re: degree-of-injury assumptions, and that we can't address "grossly d."
- List suggested restoration package (prioritized plan elements/projects)
- Note injured resources addressed by each
- Total cost presented for recommended restoration package: \$___
 - Coastal Habitats restoration cost: \$___
 - Fish and Shellfish restoration cost: \$___
 - Birds restoration cost: \$___
 - Mammals restoration cost: \$___
 - Recreational Resources restoration cost: \$___
 - Cultural Resources restoration cost: \$___
 - Other Ecosystem Components restoration cost: \$___

5. REFERENCES

001
KRWG
F

FAX FORM
U.S. FISH AND WILDLIFE SERVICE
REGION 7
1011 E. TUDOR ROAD
ANCHORAGE, ALASKA 99503
FAX NUMBER: Commercial (907) 786-3350
FPS 869-3350

| | |
|----------------------------|-------------------------------------|
| TO: Brian Ross | DATE/TIME: |
| FROM: Carol Gorbics | CALL _____ TO HAVE PICKED UP |
| SUBJECT: | |

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All changes made as appropriate
-BOR
9-7 / 10:36



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INTRODUCTION

PURPOSE

This preliminary draft document has been prepared at the request of the U.S. Department of Justice to help support its preparation for potential negotiations regarding settlement of damages caused by the Exxon-Valdez oil spill. This document is meant only to support potential out-of-court negotiations where rigorous proofs are not at issue, and it should not be used or referenced outside of that narrow context. Also, this document does not present an overall Natural Resource Damage Assessment (NRDA) settlement proposal. Nor does it address uses for additional funds (beyond those necessary for the restoration projects discussed herein) that may become available based on direct injuries and lost use values. Rather, this document supports only one portion of a potential settlement: restoration. It is assumed that direct injuries and use values are being compiled and evaluated separately, and that restoration needs/costs will be integrated with those efforts. Information contained in this document will be updated as results from ongoing NRDA studies become available.

delete inserted in

GENERAL APPROACH

The overall philosophy of this document is to help achieve a negotiated settlement of the maximum possible amount. Consistent with ^{Final} ~~its~~ purpose to support negotiations, restoration projects are included that may be in excess of injuries that can be reasonably proven with presently available NRDA data. Therefore, potential restoration measures are evaluated individually so that adjustments to the recommended restoration "package" can be made easily as ~~may be~~ ^{or as additional injury data becomes available} appropriate to the negotiations. At the same time the overall benefits described for the recommended restoration package would still be realized, albeit to a ^{modified} ~~lesser~~ degree.

The recommended measures reflect an ecosystem approach to restoration (with resource-specific components). In particular, where alternatives exist for restoring ^{specific} ~~and~~ injured resource, restoration measures that benefit multiple resources are given preference over actions that would benefit individual species. This not only helps to address ecosystem ^{interactions} ~~components~~ not directly targeted by NRDA studies, but in most cases also advances the goal of maximizing ^{realize a benefit of} the (requested) settlement amount ^{by} ~~in that~~ pooling many slightly injured resources can help justify larger "equivalent resource" acquisitions. ~~that could be the case if smaller-scale direct restoration measures were proposed.~~ In addition, this approach reflects the ^{realization} ~~realization~~ that few direct restoration measures will even remain viable if negotiations (or litigation) were to become protracted. *NO! delete*

Potential restoration measures have been identified with both technical and public input obtained by the Restoration Planning Work Group, as documented in its three reports. ^{abs/} All options are based on the definition of "restoration" contained in the draft Memorandum of Agreement (MOA) between the ^{all of the} Trustee agencies and EPA (the MOA definition itself is based on the definition in the Department of the Interior (DOI) NRDA regulations [43 CFR Part 11]):

I don't understand the point

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"Restore" or "Restoration" means any action in addition to cleanup response activities required or authorized by state or federal law which serves to restore any natural resource injured, lost or destroyed as a result of the Oil Spill and the services provided by that resource to their pre-spill condition, or which replaces or substitutes for the injured, lost or destroyed resource and affected services. Restoration includes, without limitation, replacement of resources and acquisition of equivalent resources and services, and, to the extent permitted by law, long-term environmental monitoring and research programs in the area affected by the Oil Spill directed to the prevention, containment, cleanup and amelioration of oil spills.

SPECIFIC APPROACH/ASSUMPTIONS

Each potential restoration project is evaluated in terms of the "6 Burdens" that are expected to be relevant should the NRDA settlement go to litigation, as outlined by the Department of Justice. (This document does not attempt to satisfy these burdens to the degree that would be required for litigation.) The "6 Burdens" are:

1. Relationship to (proof of) injury
2. Natural recovery is "inadequate"
3. Restoration measure is technically feasible
4. Restoration measure would have a net environmental benefit
5. Cost of implementing the restoration measure would not be "grossly disproportionate" to the values of the resource
6. Restoration measure is cost-effective relative to alternative methods for restoring the resource

With respect to these points, this document assumes that #1 (proof of injury) exists for all of the resources addressed. It is assumed that the necessary proofs are being compiled and will be presented elsewhere. The "injury statements" given in this document for each resource represent independent assumptions about injuries that could reasonably be expected from the spill (and in some cases preliminary information from discussions with NRDA principal investigators), and are presented only for the purposes of preparation for negotiation. These injury statements should not be referenced outside of that context.

Similarly, #2 (natural recovery is inadequate) is assumed to be the case for the resource addressed. The primary justification for this assumption relates to the overall "ecosystem approach" to this restoration proposal. Different ecosystem components (individuals, populations, communities, and the ecosystem as a whole) will exhibit different rates of natural recovery. For example, it is to be expected that barnacles will be among the most resilient intertidal organisms in terms of recolonization rates. However, other intertidal species (including certain crustaceans and molluscs) will be much slower to recover to pre-spill conditions. The time necessary for "full recovery" of intertidal communities will in turn be dictated by the recovery rates of the slowest species in that community. At the same time, recovery of higher trophic level species that use intertidal areas as habitat - such as those that feed extensively in the intertidal zone (e.g., sea otters, oystercatchers, some sea ducks) - will be linked to the recovery rates of the species on which they feed (not necessarily the fastest recolonizers). Therefore, this document takes the approach that restoration of the ecosystem as a whole is inextricably tied to the

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recovery of all its major components. In this sense, relatively rapid recovery of individual species or habitats is "inadequate" until all the other uses of those species or habitats have also been restored.

Burdens 3, 4, and 6 are evaluated directly for each resource.

Burden #5 ("grossly disproportionate" test) is not evaluated for the resources addressed in this document. First, we have no information at this time about the degree of injury that DOJ will present (for negotiating purposes or otherwise). Therefore, the application of this test is currently outside the scope of this document. In addition, the Ohio case (State of Ohio v. Department of the Interior; July 14, 1989) is vague about what could be considered as "grossly disproportionate," and it would be inappropriate for this document to make any independent assumption in this regard. Finally, consistent with the philosophy of supporting negotiations by maximizing the absolute size of the proposed settlement, it is suggested that the "grossly disproportionate" test be applied to the recommended settlement package (i.e., the mix of ultimately recommended restoration measures) rather than to each of the potential restoration options outlined. This is also consistent with the overall "ecosystem" approach, where resources (such as intertidal habitats, discussed above) are recognized as having ecological values (uses) beyond their individual values.

In addition to the considerations described above this document makes numerous other assumptions, particularly with respect to estimating costs. For example, although it is recognized that some resources may require longer periods of attention while others may require less, 10 years is routinely used for calculating operating costs, monitoring periods, etc. The pertinent resource-specific assumptions are presented along with the discussions for the individual resources.

DESCRIPTION OF RESTORATION PROJECTS

COASTAL HABITATS

This category includes those areas directly injured by the oil spill and subsequent clean-up activities. Virtually all of the oil that did not evaporate or was not quickly recovered ended up in these habitats. These areas include the "supratidal" (splash zone and immediately adjacent uplands including beach ryegrass zones), intertidal, and nearshore subtidal areas. These areas represent important and in some cases critical habitats for a variety of plant, vertebrate, and invertebrate species that were also directly injured by the spill. ^{may or may not have been} Supratidal are key ^{interface} areas for upland species, incl. mammals and birds. Intertidal and shallow subtidal areas, including estuarine salt marshes and eelgrass beds (which comprise a small % of spill area, but are disproportionately important habitats) are critical for many feeding and rearing ^{bird, fish, and marine mammal} species.

Some ^{direct} restoration measures are available to address some of the injuries to coastal habitats. However, for ^{many coastal habitat} most species feasible techniques do not exist to accelerate natural recovery. Another major consideration in identifying restoration projects that would benefit coastal habitats is the fact that all Alaska tidelands (intertidal) and submerged lands are ^{presently} already in public ownership. Therefore, ~~direct~~ acquisition of unoiled

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tidelands and submerged lands to replace damaged areas is not possible. However, changes in management practices/use restrictions on public lands, and enhanced protection of adjacent upland and marine areas (through acquisition or other means) can benefit both the coastal habitats themselves and the species they support, by reducing cumulative effects on stressed populations/habitats.

Injury Statement. [CALL DAVE G.! Consider ryegrass, high fringing salt marshes, erosion, debris, connection to archaeological injuries, habitat values for birds, mammals, carbon source for aquatics, connection to recreational uses and subsistence gathering, etc.] [NEED handle on potential amt of coastline needing attention - absent, can assume ryegrass exists along 25-30% of injured coastline, and was 10-25% (?) injured there; marshes occur along 1% of injured coastline with about 50% of them being injured to a degree; etc ...]

Restoration options

- **BEACH RYEGRASS RESTORATION:** Feasibility: techniques proven in Alaska, rapid coverage, high success rate. Benefit: to erosion, cultural res. site stabilization, recreational res. aspects incl. aesthetics, habitat values for associated species [WHICH?]. Cost: [CALL Stoney W. to get idea of unit cost, incl. logistics support, etc.] Cost-effectiveness: direct, on-site in-kind measure using established technology; assumed highly cost-effective (without addressing "grossly disproportionate" test).

- **ESTUARINE SALT MARSH RESTORATION:** Feasibility: techniques proven elsewhere (fertilization and transplanting), moderate success rates, may require re-work depending on degree of remnant oiling. Benefit: to feeding birds and fish, terrestrial mammals, local water quality, erosion in sheltered embayments. Cost: \$10 million [\$500,000/acre full restoration (adjusted for Alaska based on \$300,000/acre N.J. experience) for 10 acres plus \$5 million total for less intensive restoration work (limited replanting, fertilization, and reapplication, plus monitoring for up to 10 years) on up to 100 acres]. Cost-effectiveness: direct, on-site in-kind measure using established technology; assumed highly cost-effective (without addressing "grossly disproportionate" test).

- **EELGRASS BED RESTORATION/ENHANCEMENT:** Feasibility: techniques established elsewhere, moderate success rates, may require some re-work. Benefit: to feeding and rearing fish and shellfish including juvenile salmonids, crabs, and shrimp; to feeding shorebirds and diving ducks; to ecosystem functions such as nutrient cycling and stabilization from erosion; and to other (mostly non-targeted) resources. Cost: \$___ (___ acres, estimated \$___/acre transplanting, monitoring, and re-planting). Cost-effectiveness: direct, in-kind, on- or off-site measure using established technology; assumed highly cost-effective (without addressing "grossly disproportionate" test).

- **EQUIVALENT RESOURCES:** Enhanced protection of supratidal and intertidal areas can be achieved through management changes on and/or direct acquisition of upland and marine areas immediately adjacent to the shoreline. To be most directly beneficial, lands threatened by potential timber harvest, ^{and associated log transfer, site} subsurface (mineral) ^{or parts} development, or other disturbance-creating activities (such as lodges) should be targeted. (Note that many of these options have benefits to other than coastal habitat resources. Other sections of this document will refer to these options where appropriate to avoid multiple accounting.)

ACQUISITIONS: Potential acquisitions include (see attached map):

What about birds? See attached

re-work - Do you mean "development of regional⁴ or site specific techniques"?

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- Native-selected lands along the shoreline of Kenai Fjords National Park (direct purchase: 77,450 acres, estimated value/acquisition cost \$77.5 million);¹
- Other non-federal lands within Kenai Fjords, excluding mining claims (direct purchase, 20,125 acres, estimated value/acquisition cost \$20 million);
- Mining claims within Kenai Fjords (estimated 800 acres, estimated value/acquisition cost \$___ million);
- Native inholdings, allotments, and applications within Katmai National Park (53,706 acres, estimated value/acquisition cost \$54 million);
- Other non-federal lands within Katmai (128,379 acres, estimated value/acquisition cost \$128 million);
- Inholdings and subsurface interests within Aniakchak National Monument and Preserve (197,817 acres, estimated value/acquisition cost \$198 million);
- Inholdings in the Chugach National Forest within Prince William Sound (surface and subsurface rights to 262,000 acres, estimated acquisition cost \$262 million);²
- Inholdings in Kachemak Bay State Park (surface and subsurface rights to 23,000 acres, estimated acquisition cost \$30 million);³
- Lands on the southwest tip of the Kenai Peninsula (surface and subsurface rights to 111,000 acres, estimated acquisition cost \$111 million);⁴
- Kenai River corridor wetlands/riparian zone (development rights, 9,300 acres, estimated acquisition cost \$82 million);⁵
- [ADD: INHOLDINGS IN NWRs (limited acres)]

Feasibility: feasible to acquire development rights (in perpetuity or for specific periods - i.e., 10 years) in such a manner that title and subsistence use rights are retained by the Native corporations. Benefit: reduction of cumulative effects will provide for enhanced recovery of eagles, peregrine falcons, sea ducks, some Alcids, oystercatchers and other shorebirds, sea otters, sea lions and harbor seals, terrestrial mammals, intertidal organisms, salmonids and other fish, cultural resources, and recreational resources. Acquisition options also provide the only direct benefit for resources not specifically targeted in NRDA studies (including fish and wildlife species that receive limited commercial, recreational, or subsistence use). Cost: up to \$TOTAL (detailed above). Note that other opportunities are available, but would have less direct benefits than the options listed. Cost-benefit: for

¹ Figures for lands associated with National Parks/Monuments based on average cost of \$1,000 per acre, which reflects higher assumed value for these lands than have been paid in recent agreements for purchasing lands & development rights (where little timber/mineral potential was thought to exist) in Alaska. (Incl. the Kijiik agreement that paid approximately \$400/acre for surface and subsurface rights, and the USAF's "backscatter" radar project which purchased title to Interior lands at \$450/acre.)

² Acreage from the Coastal Coalition "Draft Proposal for a Comprehensive Settlement of Natural Resource Damages from the 'Exxon-Valdez' Oil Spill" ("Proposal") dated July 4, 1990. Costs adjusted upward from average of Proposal by approximately 50% (to \$1,000 per acre) to include an estimate for acquisition of subsurface right as well as timber harvest rights, and to include operating (management) costs for a period of 10 years.

³ Legislative purchase proposal of \$20 million, adjusted upward by 50% as in footnote 2, above.

⁴ See footnote 2, above.

⁵ Acreage from Kenai River Management Plan. Cost estimated from ____.

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many species, methods do not exist to undertake direct restoration measures; therefore reducing cumulative effects through acquisition of equivalent resources is the only means of enhancing natural recovery.

MANAGEMENT ALTERNATIVES:

- [ADD: MARINE SANCTUARIES, STATE MARINE PARKS, WILDERNESS AREAS, NRA STATUS?, ETC.]

Feasibility:

Benefit:

Cost:

Cost-benefit:

- [ADD: No Action ("natural recovery")]

Feasibility:

Benefit:

Cost:

Cost-benefit:

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F



U. S. Environmental Protection Agency
Region 10

BRIAN D. ROSS
Oil Spill Restoration Planning
Team Leader

Restoration Planning Office
Suite 301, 437 E. Street
Anchorage, AK 99501

(907) 271-2461
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8-27-90

Received

(Go-Ahead from Susan MacMullin to work on project even if DOI personnel are only part-time. I am not to wait for their availability to work/meet, but should press ahead. I am authorized to work with Nancy Menning and Ruth Yonder, in addition to Paul Gently, Cordell Roy, Carol Gorbics, and Jill Parker (and Susan). However, according to Bill Brighton (DOT-DC) (through Susan) I am not to discuss it with anyone else, including the Management Team or even my boss Al Ewing. (Susan did say that Nancy Jones & La Juana were aware of the project. She agreed to cover me with Al and the regional office. She'd already spoken w/Al.)

I repeatedly expressed the concern that the product be viewed as an EPA effort, esp. given Sandy Rabinowitch's new lack of availability, →

and was told that it was too important not to press ahead anyway. Also, with respect to the perceived (by me) difference between EPA's + Gertler's view as to the quality of the product + the time that should be spent (his staff appear not to think it's that big a deal relative to their ongoing work) - Susan said that from EPA's perspective it is to be the highest quality possible. Susan made her contractor's (Wade, Miller + Assoc) available to me, and as of ~2:00pm she had fax'd their original draft settlement document, along with her notes from conversation w/DAI, to me.

Other points: (A) we are not to be responsible for ^{ANY} C-V approach/consideration - only restoration options. (B) DAI going into talks prior to 9-15, so our internal + external deadlines are now 9-7.

Brian Ross

8-27

- Points to work on from W-M settlement document (draft):

- P.2: ext'd cost for timber rights of \$30-40k/acre seem especially high.

Get independent #'s from USFS /CAC/etc.

(Bid values seem most appropriate, not secondary \$ ~~off~~ to mill, etc.)

Steiner has 300K+
ACRES, NOT 80K

- Mineral rights: what rights are being considered? What areas are at risk?

(Tugidak? Elsewhere?)

- N.J. wetlands ext'n fig. of \$300k/acre may be appropriate @ KN-136 or Tonking, but most other wetlands need lower level

of effort, at best. Unsure if could even I.D. 150 ac. of oiled wetlands (check

Katmai area, though). Wetlands acquisition elsewhere needs to be looked at.

- Cultural: needs significant backing-up - esp. w/ r/ to ongoing vandalism + to irretrievable loss of info. (no capacity for self-regeneration...)



8-29 other points re: W-M report.

- 3 "conditions" - best to go for only 1 scenario for negotiations. Which? other?
- "Proofs" - Need to assume #1, Give some justification for #2, #4 Assume #3 (incl. legal feas.), ~~and~~ + assume #5. We do need to address #6 w/ a/t alts for some damage.

(For assumptions:

- #1 & 5 - from NRDA as categories - we can't speak to degree of injury per category on our own, and \therefore can't index size of rest'n proj. that's justifiable. Can only go further if someone gives us degree. Alternatively, we could give a per unit cost for rest'n, but much more work to do so; not feasible for this 1st cut plan.)

Beyond NRDA categories - need items for "uncovered" resources for monitoring, and for long-term/sublethal/cumulative effects... \rightarrow

8-29

Also, even the Brighton said not to worry about C-V, need to consider non-priced values/resources all the way through. And as Gertler says, don't forget inflation!

Taj Rhoob (703) 524-1858
FAX 524-4453

Res? Cult. Res?

main ranches / parts

(Shorelines?)

Others

Names

Kittiwakes
Expand shellfishing work

Alcids / sea ducks

Orcas

harbor seals

herring

Loons - San Juan / Sal protection
winters alcids Salmon?

Eagles, oystercatchers

Don't forget
inflation

category:
suspected
not doc't
partially fish
Chinook clam?
Other shellfish
(pollut)

pus (chipped)
BPA

Am. mammal

C.V.?

List of potential
actions w/ \$ \$

Acquisition

monitoring / GIS system

Sept 4 for Paul

or Sept 10

Jim M
MEM
245-4373
206-726-6095
3901

Carol 786-3338

Jill - 3377

Jim Maline
(206) 726-1240

Bob Spies
(415) 373-7142

→ establish Nellie Juan wilderness
(see Dalton for study)

Ed Bailey
FWS - Maritime Refugee Off.
Homer

235-6546

235-7783

(fax)

8-29

Now - 120/1000 BT

(GET SYNTHESIS INFO!)

1. Talk to Malins re: injuries (proofs)
2. Talk to Nicoll re: injuries to go for
and strategy
3. Talk to USFS re: costs for NRA + ^{+ RESTRICTIONS} ^{Nellie Juan} Willamette
4. Talk to EPA/FWS re: Willamette ^{NWR} ^(Jill study fairly unrelated)
5. Talk to State re: State Marine Parks (where) ^{costs}
6. Talk to Cordell re: costs on Natl Mar. Sanctuary ^{+ RESTRICTIONS}
7. Talk to Stan re: San Juan Isl. habitat. ^(need Common + yellow bill)
protection for loons
8. Talk to USFS/CAC, KONCOR, etc re: ^{A, BF} lands ^(NOT ACRES)
✓ (OK) threatened by planned timber harvest
9. Check on any planned mineral devel't (DOI)
10. Check w/ Stan re: costs for bird colony
predator removal
11. Check on cult'l resource options/costs
(see Tech'l Whys report)
12. ✓ Check w/ Sandy/Cordell on Kenai HQ for ^{SBout, etc.}
Katmai NP.
13. ✓ Go thru Coastal Co. details - w/ Stan
if Nec.
14. Check w/ DOI re: mineral rights/KFNP.

w/ Carol G., Jill P., Nancy M.

8-29

Ideas for each injured resource: **BIRDS**

- Eagles - protect nesting hab. (timber rights acquisition, esp. w/in PWS. Affognak, too?)

Fish enhancement (indexed, not limiting)

(Check # ^{Phil Schempf} young from NRDA to confirm "not starving")

Impacts from outing, disturbances) (Shifted to outside last year, apparently, as densities outside area were higher)

- Kittiwakes - were doing well inside PWS - not so now. Restructuring fishing practices (stop depletion of food sources) or enhance fish like being.

- Marbled Harleuts - protect nesting habitat

↳ Harlequins - # ^(SAM PATTER) way down in spill area, + few young broods found

- Alcids - Murres - pops down this year + last. Older birds seem to be more affected.

- ^{Introduced} ~~Predator~~ ^{Ed Bailey} removal on nesting islands (alternatives would be equivalent)

- fishing restrictions (drift nets, enforcement etc)

- Oyster Catchers - same restr' as for shore lines

- Loons - San Juan Islands habitat protection -

- Coleville R. Δ lease sales.

8-29

- Peregrines? Glaucous-winged Gulls? Pigeon
- Cormorants, R.B. Mergansers Gulllemots?
- Other bird spp. - up total rest'n value by?
- ? some % to cover them. (but % of others from this)

Need to still do other categories:

but assignments will be:

- Bird, Marine Mammals, Sea Otters (Carol + Jill)
- Coastal Hab, Fish & Shellfish, Rec., Cultural, Ter. Mammals (Nancy + Brian) - (Other resources)
- Background/assumptions - (Brian + Nancy)
- - 1st cut @ Multiresources / Acq. / Recommendations (Brian + Nancy)

Will meet again Tuesday, 10:00 @ CAEI
to combine what's been done.

after Tues - develop costs, monitoring,
& finalize.

8-29-90
3:00 PM -

RPWG Mtg w/ Rick Steins

- Described concept behind his proposal
- Recommends ^{RPWG} subcommittee for:
 - A - working on timber ^{rights} acquisitions (specific)
 - B - mgmt options on public lands
 - NRA for PWS
 - Natl Monument designation (Knight Island)
(Mt St Helix Natl Monument = precedent)
(also areas down coast)
 - Willamena designations
 - College Fjord / Nellie Juana, other areas? (already on sec. DOI's desk: Refuge + Park lands)
 - Alk Land Bank under ANILCA (^{HAVE MARTHA CHECK...})

Acquisition is seen as biggest ~~issue~~ ^{issue}

see Don Button, UAF IMS, re: "Teapene Connection"

IRS "coming down" on corps setting by native corps for NOLs (sold their timber to the new corps)
(corps have also sold to non-native)

Fish Bay - 7/8 anad streams - ~70K chum returning there.

Patten Bay - concern for harvest ^(Timber Trading Co) & for road across Montague to McCloud Bay.

\$20 million
Seldovia + Konca = value for timber & land (some - not all)

byak sale = 270 mil BF wanted \$400/1000 BF
= 27,000,000

(Sheraton's interest only) short term 10-15 yrs
Could structure settlement to have landowners agree not to harvest shortly after receiving

DNR - Richard Thompson

8-29-90

Gonzales timber (much higher qual.) = \$120 / 1000 BF
So \$100 / 1000 BF is good est for PWS area.]

- Recommends that an "Acquisition team" hire a timber economist to really study the diff't scenarios/prosibilities, as well as a timber appraiser to estab fair market value today.

Then - RPWG host a meeting w/ Native Corps + then w/ Timber Co's (Stevens wouldn't host - CAC still hostile)

Re: Kodiak / Afognak - unsure what's worth protecting - should be addressed w/in Acq. team's charter. (Big option could be replanting lands that haven't been done...)
Otherwise Kodiak issues haven't been integrated into the Coastal Coal's proposal.

(Patton Bay is apparently a high value / good quality timber stand)

Re: Mineral rights - Kenai Fjords (Nabe Bay) - but not yet conveyed to CAC.

- MMS had an DCS lease sale planned off Copper R &.
- Being R. area coal + timber devel. potential →
CAC → (TO PORT KATLAH) 250 mm BF

8-29-30

Recommends - laying out a spectrum of mgmt strategies possible, w/ list of restrictions required under each, should be layed out to public in reports / mtgs, etc - this will allow informed comments from public.

He thinks USA will buy-off on proposal, too.

Re: RPN's planning + Public Participation -
put together a 1/2 to 1 hr program +
air it on RATNET.

Call w/ Ed Bailey

- more birds lost to foxes than to Spill last yr.
- requests of "1080" ext'd to cost \$500,000.

Depending on method + size of island. Big islands can't be done.

Can't use "1080" anymore - ~~\$80k~~ ^{\$90k}

Kiska had it done - @ 80,000 ac. - by helicopter. Couldn't do this size area w/ traps.

Isl's under 20k acres at most now. Carlisle isl, 10k acres, budget = \$15k (traps + shooting)

\$50k would allow boat charter, (\$3k (day boat cost))

Shumagin + Aleutians - biggest benefits overall, there.

Ushagat - had already removed yr before.

- Nuka ^{status quo} + some Chugach Isl (2 of)

No red covering for where we set traps (M-44 = no rats)

Trying to re-authorize M-44 (on injectors) (1080 would be best way to get it done, tho - or can't address big islands.)

Katmai + murre with redon off of pt

- Agattu - fox removed in '69. Now over 50 (deaths) (were eliminated) Canada geese, eiders, + sea fur nesting all over.

^{BIG KAWAI} - Phalarope on another isl - 2 thsd in 85. Now 115 in ^{seen} 1 wk. + 5 fold increase in crested auklets in 4 yrs in 10x10 plots

9-4

Went over products to date (+ exchanged them)

@CACI
Sandy R
Carol
Jill
Nancy M.
m.d.

Call Martha re: costs assoc'd w/ fishing restrictions (idea of alts, + what Exxon can be charged for...)

9-4

1:35p Call from Tej Pooles - contractor for Susan MacMullin (703) 524-1888
Will Fax him outline. FAX 524-1453

Will try to get info re: subconfract rights.

9-5

Call w/ Susan MacMullin, Steve Torok, John Armstrong, Martha Fox, Me.

8:30am AST

- Summaries of calls to be in HQ weekly issues.

- Susan's issues: ^{upcoming} Rentin symposium in D.C. ~~in~~

- Aug 28/29 Exxon/Arrestee Data Sharing meeting

- spent time defining "data", mission, etc. Will meet Sept 18/19 in Seattle again.

Problems - Exxon only wants to release WQ data.

- Dianna W. Gled "talked too much" - gave away too much... →

9-5 Conf call, cont → LaJ went, not Nancy.

Susan, cont - WPG met last week, will meet again on 14th. Talked about Data sharing + MDA. Didn't address recordkeeping

- Susan in Arch. Sept 10-14 for MT only

- In Seattle 9-17 → See John A.

9-18/19 Data sharing

OMB Build section

9-21 Request to meet w/ LaJ. on resources.

- OW is reorganizing. Won't affect ARTF itself.

[John asked if Susan's going to routinely cover MT mtgs. Susan said unknown.]

Steve T's Issues

- Council met Friday PM (MT in AM)

- main disc'n was Sr. Scientist. Agreed

to direct Nicoll / McKracken to nego. w/ Spies (w/ \$275K limit for

he + office thru Sept '91). also asked for just'n for req. for ~\$2.2MM for 26 peer reviews (Fed. only).

- OMB auditor (Phil? Caplin) coming out on 9-6, will meet w/ Trustee Council members + go to DPC hearing. 11th w/ Nicoll + M.T. →

STATE NOT INVITED →

9-5 Conf Call cont

Steve T., cont

- Steve will head-up organization of MT briefing for OMB.
- Steve supported Susan's presence @ OMB/MT mtg.

John's Issues

- On Vacation last wk.
- Trying to talk to Ron K. - hasn't gotten to see him - probably won't until Friday.
- Ron was planning to talk to Danne about the Regional Role - "how it should get strengthened or stay the same". Don't know yet if they did talk.
- Been trying to read what people have sent him in last wk. Questions:

- Any new info on NOAA sample backlog status? [Steve - no - just suspicion that they aren't going as promised Susan - talked to Codell + Paul - no better info. Steve will bring it up @ MT.]

John isn't preparing anything w/ QA people, now. →

9-5 Cong Call, cont

John, cont

- Steve said w/ (EPA) "washed our hands" of WOTM data in June, & should leave it that way.
- For Susan - what's schedule for HQ issues? [EPA - Mondays. So weekly will be sent around mid-Mondays]
- For Brian - ~~ask~~ ^{tell} Kirsten that Ketchum doesn't need to know foot sizes

Martha's issues

- Brian's memo re: legal Q's only rec'd ~~on~~ yesterday (Martha's been out). Should be able to talk on Friday. [Linda will call her today re: Natural recovery, etc.]
- Call into Nicol re: HE, Martha, & RPWG meeting @ 9-21 RPWG mtg to discuss legal issues/guidance...

Call ended @ 10:30

9-9

@CACT

Jill, Carol, Gandy, Me

Me - described that our effort has been announced generally to WPG by Brighton, & that the Friday, 9-7, version would be circulated to WPG reps (only).

Gandy - talked to NPS real estate agent.

- Found ^{one recent (a couple years ago)} ~~reprint~~ that may be appropriate to model assumption after:

~~Just~~ ^{NPS} Purchased conveyance easement on 1,200,000 ac ("Keejak" (?) corp. in ALASKA)
Negotiated, agreed value of land fee simple, was \$450/ac. Easement purchase was for 90% of \$450/ac. (surface and subsurface rights) [KIJIK corp.]

- The R.E. agent also valued the 77,080 ac selected lands in Kenai Fjords NP @ 350-450/ac, surface + subsurface, fee-simple purchase (lower than Lk Clark, ^{and} which had lands included in Kijik purchase)

[note: natural corps in past have been unwilling to even talk about less than \$1000/ac.] →

9.5, cont.

- Another example - OTH-B / Alaska.

Land valued @ \$750/ac., USAF offered \$450/ac. for quick agreement. Alaska agreed.

- Re: Kodiak - \$1000/ac. minimum would be expectation.

^(Maritime Refuge)
DOI, owns 2 of Afognak Is.: Dolphin (800 ac)
+ Discoverer (200 ac). - Threatened by logging. May be worth at least \$1000k

Re: fishing permit buy-backs: idea of holding permits off market during a "recovery period", +/or instituting limited entry type programs where none exist now.

Tiglav - Constr. cost, in 1985, = \$5 mil.

Operating costs: \$1 million / yr.

(only run 100 days / yr @ \$3000 / day)

Monitoring - for Friday, use \$35 million / yr

Revised handout from Carol -

9-5 returned

5:40 pm - Call to Tej Phool (home # 703-524-1888)

No ans. - turned out \rightarrow is works #!

9-6 9:25 Call from Tej. -

\$ for artifacts cataloging = \$500-750/artifact
incl.: search. Also, \$1,000 for cataloging
groves disturbed, \neq include site work.

\$ to set up museum = \$5mm initial plus
"several \$100k/yr" operating/maintaining
costs.

\$'s from Sandy re: NPS, ^{inholdings} ~~lands~~ ^{aces} / values.
Aniakchak - 197,817 ac.

Kerai Fjords - 77,450 (Native)

5 (private)

120 (other allotments)

(Guess) \rightarrow 800 (mining claims)

20,000 (State, Naha Is)

RRub
F

WMA

Management Consultants

Wade Miller Associates, Inc.

1911 North Fort Myer Drive
Arlington, Virginia 22209
Telephone: (703) 524-1888
FAX: (703) 524-1453

FACSIMILE TRANSMITTAL INFORMATION SHEET

CONFIDENTIAL

PLEASE DELIVER TO:

NAME: BRIAN ROSS

ORGANIZATION: Oil Spill Restoration Planning Office

ADDRESS: _____

FAX NUMBER: (907) 271-2467

TELEPHONE NUMBER: (907) 271-2461
(In order to confirm transmission)

SPECIAL INSTRUCTIONS: Instructions on how to follow up

① Copy of letter from Philip Thompson to Senator John McCain (3 pages)

② North American Gold Projects (2 pages)

*Please call if you need to
Tej*

FROM: TEJ PHTOOL

WMA FAX NUMBER: (703) 524-1453 DATE: 9/6/90

TOTAL NUMBER OF PAGES, INCLUDING THIS PAGE: SIX

(THIS MESSAGE SENT VIA CANON FAX 410)

If you have any problem receiving, call (703) 524-1888 for assistance.

PROJECT CODE 024

MUSEUM OF NORTHERN ARIZONA



7 June 1990

The Honorable John McCain
United States Senate
210 Hart Senate Office Building
Washington, DC 20510

Dear Senator McCain:

Thank you for the opportunity to speak before the Senate Select Subcommittee on Indian Affairs. It was a most interesting experience for me and, I hope, helpful for the committee as well.

I have reviewed the data necessary to arrive at some answers to the questions you asked of me and the following are my best-effort responses based on those data.

- I. The Museum of Northern Arizona has 1,194 physical remains in its collections. The legal ownership is varied, but it is interesting to note that only 13%, or 158 of the 1,194, "belong" to the Museum. The remaining 87% (1,036 remains) "belong" to the Federal government directly or indirectly. [See attached Agency Summary.]
- II. Any exact estimate of the cost necessary to effect a proper inventory sufficient for identification purposes is inexact at best at this time. I can only offer estimates. These are as follows for the Museum of Northern Arizona:
 - A. Physical Remains - Some will be easily defined but others will require expert consultants and much data-gathering.
1,194 remains @ \$600/ea = \$716,400
 - B. Catalogued Anthropology Collections - Our current, established rate for a per-item inventory is \$30 per specimen.
200,000 catalogued specimens @ \$30/ea = \$6,000,000
 - C. Bulk Storage, Uncatalogued - There are 30,000 cubic feet of bulk anthropological collections. These collections would require much more time since they are not currently catalogued. Current estimate is for four hours per cubic foot, which would result in approximately 30,000 new catalogue entries as well.
30,000 cu ft x 4 hrs @ \$15/hr = \$1,800,000

6027791527 MUSEUM NO. AZ.

- D. Overhead - The Museum's National Science Foundation (NSF) overhead rate is 32%. This covers utilities, equipment, administration, finance office, and contingencies.
\$8,516,400 (direct costs) x 32% = \$2,725,248

Total = \$11,241,648

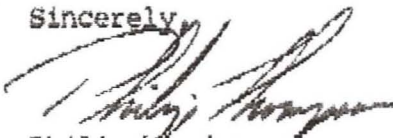
As you can see, this is a substantial number. It appears to me that I was correct when I said in testimony that requiring museums to accomplish an inventory without providing Federal funding would indeed bankrupt many of us. Certainly it would be the case for the Museum of Northern Arizona.

There is one bit of good news in this, however, and that is that the Museum of Northern Arizona has one of the largest holdings in these areas in the country so this will not likely be an average cost for each institution. Additionally, there is always the option of providing funding over a multi-year period - five years?

Finally, I would be remiss if I did not point out that our Anthropology collection - like the human remains - are to a significant degree owned by the Federal government (MNA is an approved Federal repository). Consequently, a last resort option might be for us to simply return the collections to the government. We would hate to do this for a number of reasons: (1) the Federal agencies are not leaders in this field and do not have the physical facilities to assume these collections; (2) Federal holdings would tend to centralize collections away from their original localities thus making access and research more difficult; (3) this would devastate the holdings of many museums for research, education, and exhibition.

I hope this is helpful to you and the committee in your deliberations on this very important subject. I know that I and the museum community would be happy to help resolve this matter. Please let me know if there is anything else that can be done.

Sincerely,



Philip M. Thompson
Director

Attachment

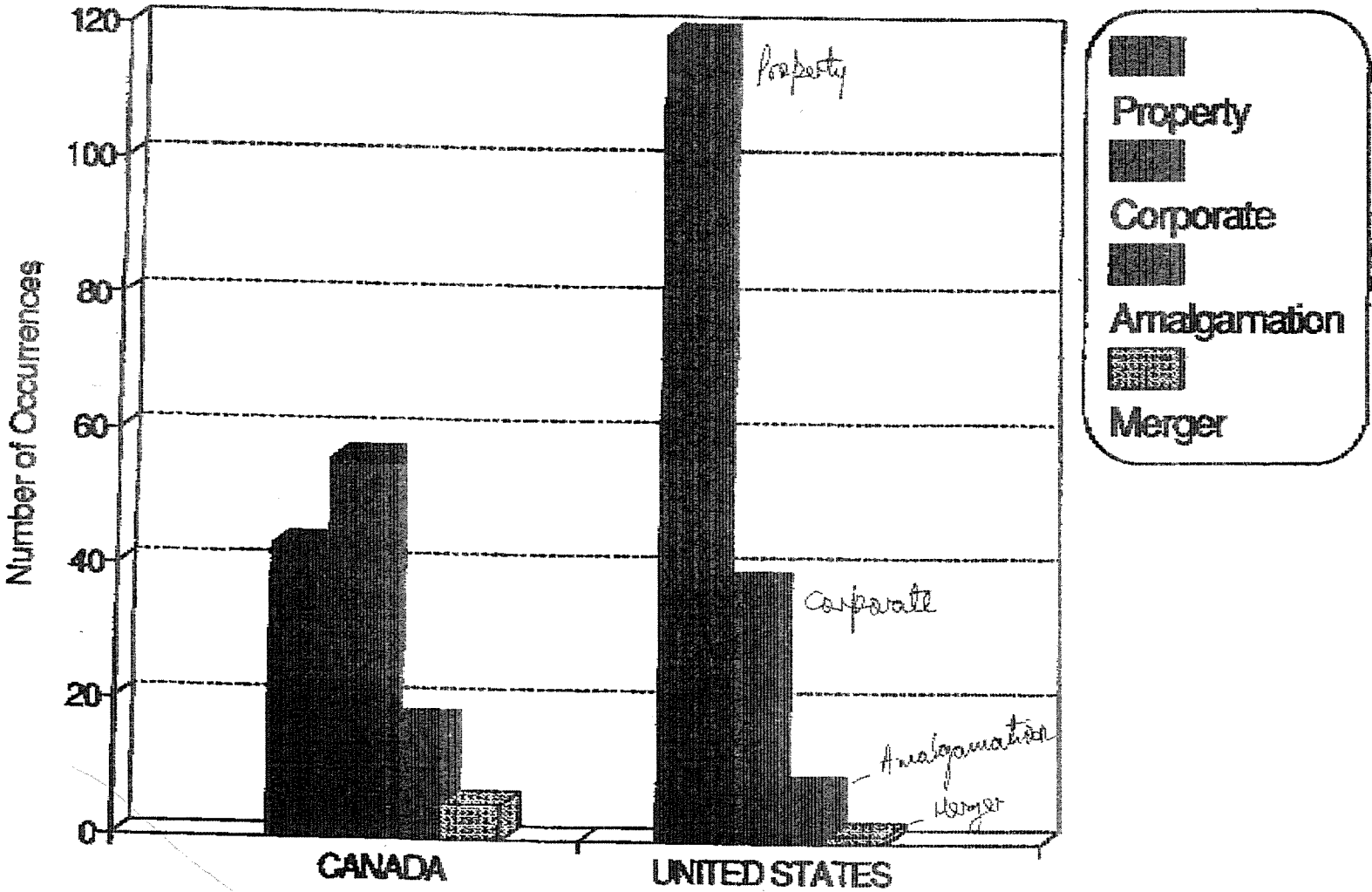
cc:

Senator D. Inouye
E. Eberhard
S. Healey

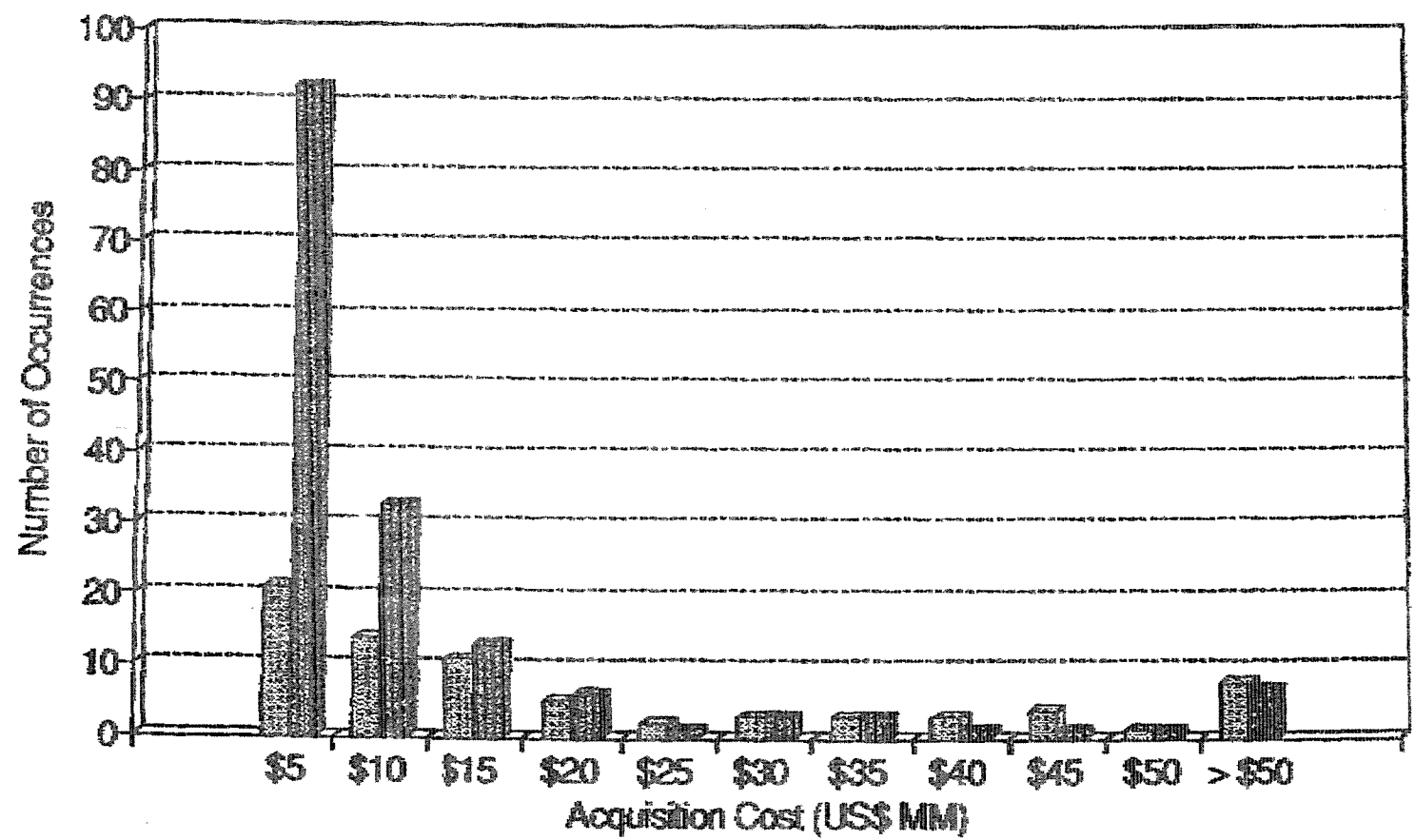
MNA HUMAN REMAINS COLLECTION
AGENCY SUMMARY

| | Sites | Complete Human Burials | Complete Human Bones |
|---|------------|------------------------------|----------------------------|
| Private | 35 | 103 | 22 |
| State of Arizona | 18 | 45 | 12 |
| Yavapai County | 1 | 3 | - |
| City (Williams, Phoenix) | 2 | 5 | 1 |
| National Forest | 72 | 421 | 50 |
| National Parks | 5 | 6 | 2 |
| National Monuments | 13 | 110 | 2 |
| National Recreation Area (Glen Canyon) | 7 | 17 | - |
| National Park Service | 1 | 1 | - |
| Indian Reservations/BIA | 126 | 446 | 63 |
| Bureau of Land Management | 21 | 35 | 27 |
| Unknown | 3 | 2 | 1 |
| Subtotals | | | |
| Indian Reservations/BIA | | 446 (37%) | |
| Direct Federal | | 590 (49%) | |
| Total Federal with Reservations/BIA | | 1,036 (87%) | |
| Museum/Private | | 158 (13%) | |
| TOTALS | 304 | 1194 | 180 |

North American Gold Projects Acquisition Method



North American Gold Projects Distribution of Acquisition Costs



Producers Undeveloped

RRWG
F

WMA

Management Consultants

1911 North Fort Myer Drive
Arlington, Virginia 22209
Telephone: (703) 524-1888
FAX: (703) 524-1453

Wade Miller Associates, Inc.

CONFIDENTIAL

FACSIMILE TRANSMITTAL INFORMATION SHEET

PLEASE DELIVER TO:

NAME: BRIAN ROSS

ORGANIZATION: Oil Spill Restoration Planning Office

ADDRESS: _____

FAX NUMBER: (907) 271-2467

TELEPHONE NUMBER: (907) 271-2461
(In order to confirm transmission)

SPECIAL INSTRUCTIONS:

Here is the information we obtained from the association
"Calish Farmers of America"
Taj

FROM: _____
NAME: TEJ HOOL

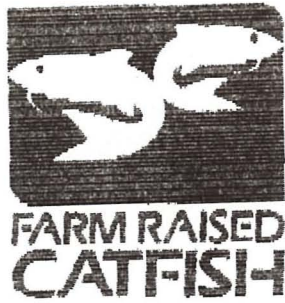
WMA FAX NUMBER: (703) 524-1453 DATE: 9/7/90

TOTAL NUMBER OF PAGES, INCLUDING THIS PAGE: FOUR

(THIS MESSAGE SENT VIA CANON FAX 410)

If you have any problem receiving, call (703) 524-1888 for assistance.

PROJECT CODE 024



CATFISH FARMERS OF AMERICA

DATE: 9-7-90

FROM: Hugh Warren

1100 HWY 82 E SUITE 202 INDIANOLA, MS 38751

FAX (601) 887-4409 TEL. (601) 887-2699

TO: Wade Miller Associates
Attn: Tej Phoo

NUMBER OF PAGES: 2 plus cover

REPLY REQUIRED: _____

INSTRUCTIONS: _____

Fax # 703-524-1453

Long-Term Investment Items
 Level Land Catfish Production
 25 Land Acres - 20 Water Acre Enterprise
 Two 10-Acre Ponds

| <u>Item</u> | <u>Units</u> | <u>Amount</u> | <u>Cost</u> | <u>Your Estimated Cost</u> |
|--------------------------|--------------|---------------|---------------------------|----------------------------|
| LAND | Acres | 25 | \$ 15,000.00 | _____ |
| POND CONSTRUCTION | | | | |
| Earth Moving | Cubic Yards | 42,062* | 21,210.00 | _____ |
| Drainpipe (12") | Feet | 140** | 800.00 | _____ |
| Clay Gravel | Cubic Yards | 389 | 2,394.00 | _____ |
| Grass Cover | Acres | 2.9 | 100.00 | _____ |
| | | | <u>\$ 34,834.00</u> | _____ |
| WATER SUPPLY | | | | |
| Drilling (10") | Feet | 100 | \$ 2,500.00 | _____ |
| Casing (10") | Feet | 60 | 2,000.00 | _____ |
| Screen (10") | Feet | 40 | 1,800.00 | _____ |
| Pump (500 gpm) | Each | 1 | 3,500.00 | _____ |
| | | | <u>\$ 9,800.00</u> | _____ |
| STRUCTURES | | | | |
| Feed Storage (10 ton) | Each | 1 | \$ 3,000.00 | _____ |
| | | | <u>\$ 3,000.00</u> | _____ |
| | | | LONG-TERM SUBTOTAL | _____ |
| | | | \$ 62,434.00 | _____ |

Intermediate-Term Equipment

| <u>Item</u> | <u>Cost</u> | <u>Your Estimated Cost</u> |
|------------------|--|----------------------------|
| Feeder (1/2 ton) | \$ 2,000.00 | _____ |
| Boat (14') | 500.00 | _____ |
| Motor (8 hp) | 1,000.00 | _____ |
| Boat Trailer | 400.00 | _____ |
| Paddle Wheel | 3,000.00 | _____ |
| Oxygen Meter | 600.00 | _____ |
| Chemical Kit | 100.00 | _____ |
| Miscellaneous | 250.00 | _____ |
| | <u>\$ 7,850.00</u> | _____ |
| | INTERMEDIATE SUBTOTAL | _____ |
| | \$ 7,850.00 | _____ |
| | LONG-TERM ITEMS | _____ |
| | \$ 62,434.00 | _____ |
| | INTERMEDIATE-TERM ITEMS | _____ |
| | <u>7,850.00</u> | _____ |
| | TOTAL INVESTMENT | _____ |
| | \$ 70,284.00 | _____ |
| | INVESTMENT COST PER ACRE OF WATER | _____ |
| | \$ 3,514.00 | _____ |

*Two 10 water acre ponds (1320' x 330'). One common 16' levee between ponds, one end levee each pond 16'; other levees 12' top width; 65¢ per cubic yard charge for earth moving. Levees are 6.5' high and have a 4:1 inside slope and a 3:1 outside slope. The end 16' levee requires 9.3 cubic yards of earth per running foot, the common levee requires 10.11 cubic yards per running foot, and the 12' levee requires 8.4 cubic yards per running foot.

**Seventy feet for each pond at \$5 per foot plus one alfalfa valve at \$100.

09/07/90 12:29

703 524 1453
07:24 ID:NEW YORK LIFE

WADE MILLER ASSO
TEL NO: 601 687-4409

#429 P04 004

Catfish Operating Budget One 10-Acre Pond, 3500 Fish Per Acre

| Item | Quantity | Unit Price | Cost | Your Estimated Cost |
|---|----------------|------------|--------------|---------------------|
| FINGERLINGS | 37,100* | \$.09 | \$ 3,339.00 | _____ |
| FEED | 32.4 tons | 250.00 | 8,100.00 | _____ |
| LABOR | 247 hours | 4.80 | 1,185.00 | _____ |
| TRACTOR OPERATING | | | | |
| Feeding | --- | --- | 318.00 | _____ |
| Paddle-wheeling | --- | --- | 342.00 | _____ |
| Levee Maintenance & Repairs | --- | --- | 45.00 | _____ |
| WELL OPERATING | 30 acre-feet** | 20.00 | 600.00 | _____ |
| PICKUP TRUCK USE | 2000 miles | .21 | 420.00 | _____ |
| CHEMICAL TREATMENT | 10 acres | 80.00 | 800.00 | _____ |
| HARVESTING & HAULING | 35,000 pounds | .05 | 1,750.00 | _____ |
| TELEPHONE | --- | --- | 100.00 | _____ |
| SUPPLIES | --- | --- | 350.00 | _____ |
| INSURANCE | --- | --- | 150.00 | _____ |
| INTEREST | 9 months | 11% | 1,444.00 | _____ |
| TOTAL SPECIFIED OPERATING COST FOR 10-ACRE POND | | | \$ 18,943.00 | _____ |
| TOTAL SPECIFIED OPERATING COST FOR TWO 10-ACRE PONDS | | | \$ 37,886.00 | _____ |
| OWNERSHIP COSTS | | | | |
| TAXES | | | \$ 200.00 | _____ |
| DEBT PAYMENT ON LONG-TERM INVESTMENT (20 years at 10%) | | | 7,333.00 | _____ |
| DEBT PAYMENT ON INTERMEDIATE-TERM EQUIPMENT (7 years at 10%) | | | 1,612.00 | _____ |
| TOTAL SPECIFIED OWNERSHIP COST | | | \$ 9,145.00 | _____ |
| TOTAL SPECIFIED OPERATING COST | | | 37,886.00 | _____ |
| TOTAL COST (TWO 10-ACRE PONDS) | | | \$ 47,031.00 | _____ |
| COST PER ACRE | | | \$ 2,351.00 | _____ |
| COST PER POUND | | | \$.67 | _____ |

*A 6 percent death rate is included in stocking rate.
 **Replacing loss from evaporation and seepage.
 Management, risk, or overhead labor charges are not included in this budget.

RRWG
F

437 E Street, Suite 301
Anchorage, Alaska 99501
(907) 271-2461
FAH: (907) 271-2467

Oil Spill Restoration Planning Office

TO: SUSAN MACMULLIN

OFFICE/PHONE: ARTFO / OMEP

FROM: BRIAN D. ROSS, U.S. EPA
Restoration Planning Team Leader

DATE: 9-6-90

PAGES (incl. cover): 6

MESSAGES:

CONFIDENTIAL
RUSH!

437 E Street, Suite 301
Anchorage, Alaska 99501
(907) 271-2461
FAX: (907) 271-2467

Oil Spill Restoration Planning Office

TO: TEJ PHOOL

OFFICE/PHONE: W-M

FROM: BRIAN D. ROSS, U.S. EPA
Restoration Planning Team Leader

DATE: 9-6

PAGES (incl. cover): 6

MESSAGES:

CONFIDENTIAL

CONFIDENTIAL: ATTORNEY-CLIENT PRIVILEGED

9/6/90 Version

INTRODUCTION

PURPOSE

This preliminary draft document has been prepared at the request of the U.S. Department of Justice to help support its preparation for potential negotiations regarding settlement of damages caused by the Exxon-Valdez oil spill. This document is meant only to support potential out-of-court negotiations, where rigorous proofs are not at issue, and should not be used or referenced outside of that narrow context. Also, this document does not present an overall Natural Resource Damage Assessment (NRDA) settlement proposal. Nor does it address uses for additional funds (beyond those necessary for the restoration projects discussed herein) that may become available based on direct injuries and lost use values. Rather, this document supports only one portion of a potential settlement: restoration. It is assumed that direct injuries and use values are being compiled and evaluated separately, and that restoration needs/costs will be integrated with those efforts. Information contained in this document will be updated as results from ongoing NRDA studies become available.

GENERAL APPROACH

The overall philosophy of this document is to help achieve a negotiated settlement of the maximum possible amount. Consistent with its purpose to support negotiations, restoration projects are included that may be in excess of injuries that can be reasonably proven with presently available NRDA data. Therefore, potential restoration measures are evaluated individually so that adjustments to the recommended restoration "package" can be made easily as may be appropriate to the negotiations. At the same time the overall benefits described for the recommended restoration package would still be realized, albeit to a lesser degree.

The recommended measures reflect an ecosystem approach to restoration (with resource-specific components). In particular, where alternatives exist for restoring and injured resource, restoration measures that benefit multiple resources are given preference over actions that would benefit individual species. This not only helps to address ecosystem components not directly targeted by NRDA studies, but in most cases also advances the goal of maximizing the (requested) settlement amount in that pooling many slightly injured resources can help justify larger "equivalent resource" acquisitions than could be the case if smaller-scale direct restoration measures were proposed. In addition, this approach reflects the realization that few direct restoration measures will even remain viable if negotiations (or litigation) were to become protracted.

Potential restoration measures have been identified with both technical and public input obtained by the Restoration Planning Work Group, as documented in its three reports.^{1,2,3/} All options are based on the definition of "restoration" contained in the draft Memorandum of Agreement (MOA) between the Trustee agencies and EPA: [QUOTE MOA]. The MOA definition itself is based on the definition in the Department of the Interior (DOI) NRDA regulations [cite].

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SPECIFIC APPROACH/ASSUMPTIONS

Each potential restoration project is evaluated in terms of the "6 Burdens" that are expected to be relevant should the NRDA settlement go to litigation, as outlined by the Department of Justice. (This document does not attempt to satisfy these burdens to the degree that would be required for litigation.) The "6 Burdens" are:

1. Relationship to (proof of) injury
2. Natural recovery is "inadequate"
3. Restoration measure is technically feasible
4. Restoration measure would have a net environmental benefit
5. Cost of implementing the restoration measure would not be "grossly disproportionate" to the values of the resource
6. Restoration measure is cost-effective relative to alternative methods for resaturing the resource

With respect to these points, this document assumes that #1 (proof of injury) exists for all of the resources addressed. It is assumed that the necessary proofs are being compiled and will be presented elsewhere. The "injury statements" given in this document for each resource represent independent assumptions about injuries that could reasonably be expected from the spill (and in some cases preliminary information from discussions with NRDA principal investigators), and are presented only for the purposes of preparation for negotiation. These injury statements should not be referenced outside of that context.

Similarly, #2 (natural recovery is inadequate) is assumed to be the case for the resource addressed. The primary justification for this assumption relates to the overall "ecosystem approach" to this restoration proposal. Different ecosystem components (individuals, populations, communities, and the ecosystem as a whole) will exhibit different rates of natural recovery. For example, it is to be expected that barnacles will be among the most resilient intertidal organisms in terms of recolonization rates. However, other intertidal species (including certain crustaceans and molluscs) will be much slower to recover to pre-spill conditions. The time necessary for "full recovery" of intertidal communities will in turn be dictated by the recovery rates of the slowest species in that community. At the same time, recovery of higher trophic level species that use intertidal areas as habitat - such as those that feed extensively in the intertidal zone (e.g., sea otters, oystercatchers, some sea ducks) - will be linked to the recovery rates of the species on which they feed (not necessarily the fastest recolonizers). Therefore, this document takes the approach that restoration of the ecosystem as a whole is inextricably tied to the recovery of all its major components. In this sense, relatively rapid recovery of individual species or habitats is "inadequate" until all the other uses of those species or habitats have also been restored.

Burdens 3, 4, and 6 are evaluated directly for each resource.

Burden #5 ("grossly disproportionate" test) is not evaluated for the resources addressed in this document. First, we have no information at this time about the degree of injury that DOJ will present (for negotiating purposes or otherwise). Therefore, the application of this test is currently outside the scope of this document. In addition, the Ohio case [CITE] is vague about what could be considered as "grossly disproportionate," and it would be inappropriate for this document to make any independent assumption in

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this regard. Finally, consistent with the philosophy of supporting negotiations by maximizing the absolute size of the proposed settlement, it is suggested that the "grossly disproportionate" test be applied to the recommended settlement package (i.e., the mix of ultimately recommended restoration measures) rather than to each of the potential restoration options outlined. This is also consistent with the overall "ecosystem" approach, where resources (such as intertidal habitats, discussed above) are recognized as having ecological values (uses) beyond their individual values.

In addition to the considerations described above this document makes numerous other assumptions, particularly with respect to estimating costs. For example, although it is recognized that some resources may require longer periods of attention while others may require less, 10 years is routinely used for calculating operating costs, monitoring periods, etc. The pertinent resource-specific assumptions are presented along with the discussions for the individual resources.

DESCRIPTION OF RESTORATION PROJECTS

COASTAL HABITATS

This category includes those areas most directly injured by the oil spill and subsequent clean-up activities. Virtually all of the oil that did not evaporate or was not quickly recovered ended up in these habitats. These areas include the "supratidal" (splash zone and immediately adjacent uplands including beach ryegrass zones), intertidal, and nearshore subtidal areas. These areas represent important and in some cases critical habitats for a variety of plant, vertebrate, and invertebrate species that were also directly injured by the spill.

Some direct restoration measures are available to address some of the injuries to coastal habitats. However, for most species feasible techniques do not exist to accelerate natural recovery. Another major consideration in identifying restoration projects that would benefit coastal habitats is the fact that all Alaska tidelands (intertidal) and submerged lands are already in public ownership. Therefore, direct acquisition of unoiled tidelands and submerged lands to replace damaged areas is not possible. However, changes in management practices/use restrictions on public lands, and enhanced protection of adjacent upland and marine areas (through acquisition or other means) can benefit both the coastal habitats themselves and the species they support, by reducing cumulative effects on stressed populations/habitats.

Supratidal

(Key interface area for upland species, incl. mammals and birds. Estuarine/salt marshes spanning supratidal to intertidal comprise small % of spill area, but are important habitats for feeding birds, fish)

Injury Statement. [CALL DAVE G! Consider ryegrass, high fringing salt marshes, erosion, debris, connection to archaeological injuries, habitat values for birds, mammals, carbon source for aquatics, connection to recreational uses and subsistence

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gathering, etc.] [NEED handle on potential amt of coastline needing attention - absent, can assume ryegrass exists along 25-30% of injured coastline, and was 10-25% (?) injured there; marshes occur along 1% of injured coastline with about 50% of them being injured to a degree; etc ...]

Restoration options

- **BEACH RYEGRASS RESTORATION: Feasibility:** techniques proven in Alaska, rapid coverage, high success rate. **Benefit:** to erosion, cultural res. site stabilization, recreational res. aspects incl. aesthetics, habitat values for associated species [WHICH?]. **Cost:** [CALL Stoney W. to get idea of unit cost, incl. logistics support, etc. Come up with a total!]

Cost-effectiveness: Direct, on-site in-kind measure using established technology; assumed highly cost-effective (without addressing "grossly disproportionate" test).

- **ESTUARINE SALT MARSH RESTORATION: Feasibility:** techniques proven elsewhere (fertilization and transplanting), moderate success rates, may require re-work depending on degree of remnant oiling. **Benefit:** to feeding birds and fish, terrestrial mammals, local water quality, erosion in sheltered embayments. **Cost:** \$10 million [\$500,000/acre full restoration (adjusted for Alaska based on \$300,000/acre N.J. experience) for 10 acres plus \$5 million total for less intensive restoration work (limited replanting, fertilization, and reapplication, plus monitoring for up to 10 years) on up to 100 acres].

Cost-effectiveness: Direct, on-site in-kind measure using established technology; assumed highly cost-effective (without addressing "grossly disproportionate" test).

- **EQUIVALENT RESOURCES:** Enhanced protection of supratidal and intertidal areas can be achieved through management changes on and/or direct acquisition of upland and marine areas immediately adjacent to the shoreline. To be most directly beneficial, lands threatened by potential timber harvest, subsurface (mineral) development, or other disturbance-creating activities (such as lodges) should be targeted.

ACQUISITIONS: Potential acquisitions include (see attached map):

- Native-selected lands along the shoreline of Kenai Fjords National Park (direct purchase: 77,450 acres, estimated value/acquisition cost \$77.5 million);¹
- Other non-federal lands within Kenai Fjords, excluding mining claims (direct purchase, 20,125 acres, estimated value/acquisition cost \$20 million);
- Mining claims within Kenai Fjords (estimated 800 acres, estimated value/acquisition cost \$___ million);
- Native inholdings, allotments, and applications within Katmai National Park (53,706 acres, estimated value/acquisition cost \$54 million);
- Other non-federal lands within Katmai (128,379 acres, estimated value/acquisition cost \$128 million);
- Inholdings and subsurface interests within Aniakchak National Monument and Preserve (197,817 acres, estimated value/acquisition cost \$198 million);

¹ Figures for lands associated with National Parks/Monuments based on average cost of \$1,000 per acre, which reflects higher assumed value for these lands than have been paid in recent agreements for purchasing lands & development rights (where little timber/mineral potential was thought to exist) in Alaska. (Incl. the Kijiik agreement that paid approximately \$400/acre for surface and subsurface rights, and the USAF's "backscatter" radar project which purchased title to Interior lands at \$450/acre.)

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9/6/90 Version

- Inholdings in the Chugach National Forest within Prince William Sound (surface and subsurface rights to 262,000 acres, estimated acquisition cost \$262 million);²
- Inholdings in Kachemak Bay State Park (surface and subsurface rights to 23,000 acres, estimated acquisition cost \$30 million);³
- Lands on the southwest tip of the Kenai Peninsula (surface and subsurface rights to 111,000 acres, estimated acquisition cost \$111 million);⁴
- Kenai River corridor wetlands/riparian zone (development rights, 9,300 acres, estimated acquisition cost \$82 million);⁵
- [ADD: INHOLDINGS IN NWRs (limited acres)]

Feasibility: feasible to acquire development rights (in perpetuity or for specific periods - i.e., 10 years) in such a manner that title and subsistence use rights are retained by the Native corporations. **Benefit:** reduction of cumulative effects will provide for enhanced recovery of eagles, peregrine falcons, sea ducks, some Alcids, oystercatchers and other shorebirds, sea otters, sea lions and harbor seals, terrestrial mammals, intertidal organisms, salmonids and other fish, cultural resources, and recreational resources. **Cost:** up to \$TOTAL (detailed above). **Cost-benefit:** for many species, methods do not exist to undertake direct restoration measures; therefore reducing cumulative effects through acquisition of equivalent resources is the only means of enhancing natural recovery.

MANAGEMENT ALTERNATIVES:

- [ADD: MARINE SANCTUARIES, STATE MARINE PARKS, WILDERNESS AREAS, NRA STATUS?, ETC.]

Feasibility:

Benefit:

Cost:

Cost-benefit:

- [ADD: No Action ("natural recovery")]

Feasibility:

Benefit:

Cost:

Cost-benefit:

² Acreage from the Coastal Coalition "Draft Proposal for a Comprehensive Settlement of Natural Resource Damages from the 'Exxon-Valdez' Oil Spill" ("Proposal") dated July 4, 1990. Costs adjusted upward from average of Proposal by approximately 50% (to \$1,000 per acre) to include an estimate for acquisition of subsurface right as well as timber harvest rights, and to include operating (management) costs for a period of 10 years.

³ Legislative purchase proposal of \$20 million, adjusted upward by 50% as in footnote 2, above.

⁴ See footnote 2, above.

⁵ Acreage from Kenai River Management Plan. Cost estimated from ____.

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Comments
Sandy
9/6/90

INTRODUCTION

PURPOSE

This preliminary draft document has been prepared at the request of the U.S. Department of Justice to help support its preparation for potential negotiations regarding settlement of damages caused by the Exxon-Valdez oil spill. This document is meant only to support potential out-of-court negotiations, where rigorous proofs are not at issue, and should not be used or referenced outside of that narrow context. Also, this document does not present an overall Natural Resource Damage Assessment (NRDA) settlement proposal. Nor does it address uses for additional funds (beyond those necessary for the restoration projects discussed herein) that may become available based on direct injuries and lost use values. Rather, this document supports only one portion of a potential settlement: restoration. It is assumed that direct injuries and use values are being compiled and evaluated separately, and that restoration needs/costs will be integrated with those efforts. Information contained in this document will be updated as results from ongoing NRDA studies become available.

GENERAL APPROACH

The overall philosophy of this document is to help achieve a negotiated settlement of the maximum possible amount. Consistent with its purpose to support negotiations, restoration projects are included that may be in excess of injuries that can be reasonably proven with presently available NRDA data. Therefore, potential restoration measures are evaluated individually so that adjustments to the recommended restoration "package" can be made easily as may be appropriate to the negotiations. At the same time the overall benefits described for the recommended restoration package would still be realized, albeit to a lesser degree. (In other words, the recommended package is not a "house of cards" but would retain its validity and benefits even if not fully implemented.)

] not helpful

The recommended measures reflect an ecosystem approach to restoration (with resource-specific components). In particular, where alternatives exist for restoring and injured resource, restoration measures that benefit multiple resources are given preference over actions that would benefit individual species. This not only helps to address ecosystem components not directly targeted by NRDA studies, but in most cases also advances the goal of maximizing the (requested) settlement amount in that pooling many slightly injured resources can help justify larger "equivalent resource" acquisitions than could be the case if smaller-scale direct restoration measures were proposed. In addition, this approach reflects the realization that few direct restoration measures will even remain viable if negotiations (or litigation) were to become protracted.

Potential restoration measures have been identified with both technical and public input obtained by the Restoration Planning Work Group, as documented in its three reports.^{1,2,3/} All options are based on the definition of "restoration" contained in the draft Memorandum of Agreement (MOA) between the Trustee agencies and EPA:

[QUOTE MOA]. The MOA definition itself is based on the definition in the Department of the Interior (DOI) NRDA regulations [regs. cite].

SPECIFIC APPROACH/ASSUMPTIONS

BURDENS

Each potential restoration project is evaluated in terms of the "6 Burdens" that are expected to be relevant should the NRDA settlement go to litigation, as outlined by the Department of Justice. (This document does not attempt to satisfy these burdens to the degree that would be required for litigation.) The "6 Burdens" are:

1. Relationship to (proof of) injury
2. Natural recovery is "inadequate" *time required for*
3. Restoration measure is technically feasible
4. Restoration measure would have a net environmental benefit
5. Cost of implementing the restoration measure would not be "grossly disproportionate" to the values of the resource
6. Restoration measure is cost-effective relative to other *alternative methods for restoration* potential options for the resource

ASSUMPTIONS

With respect to these points, this document assumes that #1 (proof of injury) exists for all of the resources addressed. It is assumed that the necessary proofs are being compiled and will be presented elsewhere. The "injury statements" given in this document for each resource represent independent assumptions about injuries that could reasonably be expected from the spill (and in some cases preliminary information from discussions with NRDA principal investigators), and are presented in the absence of more detailed NRDA results only for the purposes of preparation for negotiation. These injury statements should not be referenced outside of that context.

Similarly, #2 (*time periods are* natural recovery is inadequate) is assumed to be the case for the resource addressed. The primary justification for this assumption relates to the overall "ecosystem approach" to this restoration proposal. *entire ecol. levels concept -* Different species and habitats will exhibit different rates of natural recovery. *recover only periods of time* For example, it is to be expected that certain intertidal organisms such as barnacles will be *likely* among the most resilient populations in terms of recolonization rates. However, other intertidal species (including certain crustaceans and molluscs) will be much slower to recover to pre-spill conditions. *Important point* The time necessary for "full recovery" of various intertidal communities will in turn be dictated by the recovery rates of the slowest species in that community. At the same time, recovery of higher trophic level species that use intertidal areas as habitat - such as those that feed extensively in the intertidal zone (e.g., sea otters, oystercatchers, some sea ducks) - will be linked to the recovery rates of the species on which they feed (not necessarily the fastest recolonizers). Therefore, this document takes the approach that restoration of the ecosystem as a whole is inextricably tied to the recovery of all its major components. In this sense, relatively rapid recovery of individual species or habitats is "inadequate" *because* until all the other uses of those species or habitats have also been restored.

Burdens 3, 4, and 6 are evaluated directly for each resource.

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Burden #5 ("grossly disproportionate" test) is not evaluated for the resources addressed in this document. First, we have no information at this time about the degree of injury that DOJ will present (for negotiating purposes or otherwise). Therefore, the application of this test is currently outside the scope of this document. In addition, the Ohio case [CITE] is vague about what could be considered as "grossly disproportionate," and it would be inappropriate for this document to make any independent assumption in this regard. Finally, consistent with the philosophy of supporting negotiations by maximizing the absolute size of the proposed settlement, it is suggested that the "grossly disproportionate" test be applied to the recommended settlement package (i.e., the mix of ultimately recommended restoration measures) rather than to each of the potential restoration options outlined. This is also consistent with the overall "ecosystem" approach, wherein resources (such as intertidal habitats, discussed above) are recognized as having ecological values (uses) beyond their individual values.

In addition to the considerations described above this document makes numerous other assumptions, particularly with respect to estimating costs. For example, although it is recognized that some resources may require longer periods of attention while others may require less, 10 years is routinely used for calculating operating costs, monitoring periods, etc. The pertinent resource-specific assumptions are presented along with the discussions for the individual resources.

DESCRIPTION OF RESTORATION PROJECTS

COASTAL HABITATS

This category includes those areas most directly injured by the oil spill and subsequent clean-up activities. Virtually all of the oil that did not evaporate or was not quickly recovered ended up in these habitats. These areas include the "supratidal" (splash zone and immediately adjacent uplands including beach ryegrass zones), intertidal, and nearshore subtidal areas. These areas represent important and in some cases critical habitats for a variety of plant, vertebrate, and invertebrate species that were also directly injured by the spill.

Some direct restoration measures are available to address some of the injuries to coastal habitats. However, for most species feasible techniques do not exist to accelerate natural recovery. Another major consideration in identifying restoration projects ~~that would benefit coastal habitats~~ is the fact that ⁱⁿ Alaska, ~~all~~ ^{all} tidelands (intertidal) and submerged lands are already in public ownership. Therefore, direct acquisition of unoiled tidelands and submerged lands to replace damaged areas is not possible. However, changes in ^{public} management practices/^{use} restrictions, and enhanced protection of adjacent upland and marine areas (through acquisition or other means) can benefit both the coastal habitats themselves and the species they support, by reducing cumulative effects on stressed populations/habitats.

Supratidal

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(Key interface area for upland species, incl. mammals and birds. Estuarine/salt marshes spanning supratidal to intertidal comprise small % of spill area, but are important habitats for feeding birds, fish)

Injury Statement. [CALL DAVE G.! Consider ryegrass, high fringing salt marshes, erosion debris, connection to archaeological injuries, habitat values for birds, mammals, carbon source for aquatics, connection to recreational uses and subsistence gathering, etc.] [NEED handle on potential amt of coastline needing attention - absent, can assume ryegrass exists along 25-30% of injured coastline, and was 10-25% (?) injured there; marshes occur along 1% of injured coastline with about 50% of them being injured to a degree; etc ...]

Restoration options

- **BEACH RYEGRASS RESTORATION:** **Feasibility:** techniques proven in Alaska, rapid coverage, high success rate. **Benefit:** to erosion, cultural res. site stabilization, recreational res. aspects incl. aesthetics, habitat values for associated species [WHICH?]. **Cost:** [CALL Stoney W. to get idea of unit cost, incl. logistics support, etc. Come up with a total!] **Cost-effectiveness:** Direct, on-site in-kind measure using established technology; assumed highly cost-effective (without addressing "grossly disproportionate" test).

- **ESTUARINE SALT MARSH RESTORATION:** **Feasibility:** techniques proven elsewhere (fertilization and transplanting), moderate success rates, may require re-work depending on degree of remnant oiling. **Benefit:** to feeding birds and fish, terrestrial mammals, local water quality, erosion in sheltered embayments. **Cost:** \$10 million [\$500,000/acre full restoration (adjusted for Alaska based on \$300,000/acre N.J. experience) for 10 acres plus \$5 million total for less intensive restoration work (limited replanting, fertilization, and reapplication, plus monitoring for up to 10 years) on up to 100 acres]. **Cost-effectiveness:** Direct, on-site in-kind measure using established technology; assumed highly cost-effective (without addressing "grossly disproportionate" test).

- **ACQUISITION OF EQUIVALENT RESOURCES:** Enhanced protection of supratidal and intertidal areas can be achieved through management changes on and/or direct acquisition of upland and marine areas immediately adjacent to the shoreline. To be most directly beneficial, lands threatened by potential timber harvest, subsurface (mineral) development, or other disturbance-creating activities (such as lodges) should be targeted. Potential acquisitions include (see attached map):

- Native-selected lands along the shoreline of Kenai Fjords National Park (direct purchase 77,000 acres, estimated value/acquisition cost \$__million);¹ *Kalmei N.P., Aniakchak NM: P.*
- Inholding in the Chugach National Forest within Prince William Sound (surface and subsurface rights to 262,000 acres, estimated acquisition cost \$255.5 million);²
- *Ardiat, Alaska Maritime + Becharof N.W.R.*

¹ Cost estimate from National Park Service.

² Acreage from the Coastal Coalition "Draft Proposal for a Comprehensive Settlement of Natural Resource Damages from the 'Exxon-Valdez' Oil Spill" ("Proposal") dated July 4, 1990. Costs adjusted upward from those in Proposal by 50% to include an estimate for acquisition of subsurface right as well as timber harvest rights, and to include operating (management) costs for a period of 10 years.

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- Inholdings in Kachemak Bay State Park (surface and subsurface rights to 23,000 acres, estimated acquisition cost \$30 million);³
- Lands on the southwest tip of the Kenai Peninsula (surface and subsurface rights to 111,000 acres, estimated acquisition cost \$108 million);⁴
- Kenai River corridor wetlands/riparian zone (development rights, ___ acres, estimated acquisition cost \$___);⁵
- [ADD: MARINE SANCTUARIES, STATE MARINE PARKS, WILDERNESS AREAS, NRA STATUS?, ETC.] *aspect of federal lands only - discuss*
- [ADD: No Action ("natural recovery")]

Mgt. Action

Feasibility: feasible to acquire development rights (in perpetuity or for specific periods - i.e., 10 years) in such a manner that title and subsistence use rights are retained by the Native corporations. **Benefit:** reduction of cumulative effects will provide for enhanced recovery of eagles, peregrine falcons, sea ducks, some Alcids, oystercatchers and other shorebirds, sea otters, sea lions and harbor seals, terrestrial mammals, intertidal organisms, salmonids and other fish, cultural resources, and recreational resources. **Cost:** up to \$TOTAL (detailed above). **Cost-benefit:** for many species, methods do not exist to undertake direct restoration measures; therefore reducing cumulative effects through acquisition of equivalent resources is the only means of enhancing natural recovery.

³ Legislative purchase proposal of \$20 million, adjusted upward by 50% as in footnote 2, above.

⁴ See footnote 2, above.

⁵ Acreage from Kenai River Management Plan. Cost estimated from ____.

REPORT OUTLINE

I. INTRODUCTION

Purpose of Document:

- Support to maximize size of claim/negotiating position
- Supporting portion of claim, for restoration to pre-spill conditions only
- **Not** addressing how to spend additional \$\$ for direct injuries, L.U.V., or C-V

General Approach:

- Definition of Restoration (MOA)
- Ecosystem emphasis (w/ resource-x-resource components)
- Designed to provide beneficial plan at various (negotiated) levels

Specific Approach:

- Based on "6 Burdens"
- Assumption relating to each "Burden" (esp. degree of injury)
- Qualifications to/assumptions of approach:
 - "Adequacy" of natural recovery (overall, incl. # years to assume costs, etc.)
 - "Grossly disproportionate" test
 - Application of cost-effectiveness test

II. DESCRIPTION OF RESTORATION PROJECTS (by category)

Overview:

- what's in this section (by resource and ecosystem, plus monitoring)
- what if a listed resource was not injured
- why individual costs are not totalled here, etc.

Coastal Habitats:

- Category intro: any specific assumptions, etc.
- Resource-specific presentations:
 - Injury statement (or assumption)
 - Statement on adequacy of natural recovery
 - Restoration Options (for each, list):
 - Feasibility statement
 - Environmental benefit statement
 - Cost, and cost-effectiveness discussion
- Other (non-NRDA-targeted) resources (discussion)

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Coastal Habitats, cont.

- Resource list for Coastal Habitats (tentative):
 - Shoreline communities/populations
 - Supratidal
 - Intertidal
 - Estuarine/Salt Marshes
 - Subtidal
 - Eelgrass and Kelp
 - Air and Water
 - Connection to shoreline uses (human, and by individual species)

Fish and Shellfish:

- Category intro: any specific assumptions, etc.
- Species-specific presentations:
 - Injury statement (or assumption)
 - Statement on adequacy of natural recovery
 - Restoration Options (for each, list):
 - Feasibility statement
 - Environmental benefit statement
 - Cost, and cost-effectiveness discussion
- Other (non-NRDA-targeted) resources (discussion)
- Resource list for Fish and Shellfish (tentative):
 - Sport fish harvest and effort
 - Salmon spawning areas
 - Egg/preemergent fry
 - Early marine, salmon
 - Adult salmon returns (coded-wire tags)
 - Sockeye overescapement
 - Dolly Varden
 - Herring
 - Larval fish
 - Rockfish
 - Groundfish (trawl survey)
 - Clams
 - Spot shrimp
 - Crabs
 - Sea urchins

Birds:

(SAME FORMAT)

- Resource list for Birds (tentative):
 - Bald eagles
 - Peregrines
 - Sea Ducks (Harlequins, etc.)

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Birds, cont.

- Passerines
- Seabird colonies
- Loons
- Common Murres
- Marbled Murrelets
- Pigeon Guillemots
- Other Alcids
- Black-legged Kittiwakes
- Glaucous-winged Gulls
- Oystercatchers
- Cormorants
- Mergansers
- Other bird species

Mammals:

(SAME FORMAT)

- Resource list for Mammals (tentative):
 - Humpback whales
 - Orcas
 - Sea lions
 - Harbor seals
 - Sea otters
 - Black-tail deer
 - Black bear
 - Brown bear
 - River otter and mink
 - Small mammals

Recreational Uses and Intrinsic Values:

(SAME FORMAT)

- Resource list for Recreational Uses and Intrinsic Values (tentative):
 - Kayaks and canoes
 - Other pleasure boats
 - Charters, tour boats, etc.
 - Marine sport fishing
 - Freshwater sport fishing
 - Shellfishing
 - Trapping
 - Hunting, terrestrial mammals
 - Hunting, waterfowl
 - Public-use cabins/sites
 - Low-impact camping
 - Hiking and climbing
 - Berry picking, picnicking, etc.

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Recreation, cont.

- Photography
- Nature study
- Other recreation uses
- Aesthetic values
- "In-absentia" values (including option, existence, and bequest values)

Cultural and Subsistence Resources:

(SAME FORMAT)

- Resource list for Cultural and Subsistence Resources (tentative):
 - Archaeological/historical sites and artifacts
 - Subsistence lifestyle and values
 - Subsistence hunting
 - Subsistence fishing
 - Public trust (in subsistence resources and in government)
 - Other

Monitoring:

- Approach (incl. MOA)
- Basis (Puget Sound, Chesapeake)

Research:

- Approach/Basis (incl. MOA)
- Additional restoration benefit (connection to cultural/social restoration, etc.)

Outline continues ...

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SYNTHESIS DISCUSSION

Re. acquisitions:

- Ecosystem benefitted acquisitions, incl.:
 - avoidance often = surest
 - addresses non-targeted resources, as well
 - addresses cultural/social/political aspects of restoration, as well
- Justifications for combining restoration options common to multiple resources
- Ability to reduce (negotiated) magnitude of acquisition while retaining overall benefits
- Application of cost-effectiveness/"grossly disproportionate" tests to combined options
- Brief discussion of restoration projects not recommended
- (Note relation to Coastal Coalition proposal vis a' vis acceptability)

RECOMMENDED RESTORATION PROJECTS

- List suggested restoration plan elements (projects), direct and indirect
- Note injured resources addressed by each
- Reminder re. degree-of-injury assumptions
- Reminder that we can't address "grossly d."
- Total cost presented for recommended restoration projects

DESCRIPTION OF RESTORATION PROJECTS

COASTAL HABITATS

Intro

This category includes those areas most directly injured by the oil spill and subsequent clean-up activities. Virtually all of the oil that did not evaporate or was not quickly recovered ended up in these habitats. These areas include the "supratidal" (splash zone and immediately adjacent uplands including beach ryegrass zones), intertidal, and nearshore subtidal areas. These areas represent important and in some cases critical habitats for a variety of plant, vertebrate, and invertebrate species that were also directly injured by the spill.

Some direct restoration measures are available to address some of the injuries to coastal habitats. However, for most species feasible techniques do not exist to accelerate natural recovery. Another major consideration in identifying restoration projects that would benefit coastal habitats is the fact that in Alaska, all tidelands (intertidal) and submerged lands are already in public ownership. Therefore, direct acquisition of unoiled tidelands and submerged lands to replace damaged areas is not possible. However, changes in management practices/restrictions, and enhanced protection of adjacent upland and marine areas (through acquisition or other means) can benefit both the coastal habitats themselves and the species they support, by reducing cumulative effects on stressed populations/habitats.

Supratidal

(Key interface area for upland species, incl. mammals and birds. Estuarine/salt marshes spanning supratidal to intertidal comprise small % of spill area, but are important habitats for feeding birds, fish)

Injury Statement. [CALL DAVE G.! Consider ryegrass, high fringing salt marshes, erosion, debris, connection to archaeological injuries, habitat values for birds, mammals, carbon source for aquatics, connection to recreational uses and subsistence gathering, etc.] [NEED handle on potential amt of coastline needing attention - absent, can assume ryegrass exists along 25-30% of injured coastline, and was 10-25% (?) injured there; marshes occur along 1% of injured coastline with about 50% of them being injured to a degree; etc ...]

Restoration options

- BEACH RYEGRASS RESTORATION: **Feasibility:** techniques proven in Alaska, rapid coverage, high success rate. **Benefit:** to erosion, cultural res. site stabilization, recreational res. aspects incl. aesthetics, habitat values for associated species [WHICH?]. **Cost:** [CALL Stoney W. to get idea of unit cost, incl. logistics support, etc. Come up with a total!]

Cost-effectiveness: Direct, on-site in-kind measure using established technology; assumed highly cost-effective (without addressing "grossly disproportionate" test).

- ESTUARINE SALT MARSH RESTORATION: **Feasibility:** techniques proven elsewhere (fertilization and transplanting), moderate success rates, may require re-

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work depending on degree of remnant oiling. **Benefit:** to feeding birds and fish, terrestrial mammals, local water quality, erosion in sheltered embayments. **Cost:** \$10 million [\$500,000/acre full restoration (adjusted for Alaska based on \$300,000/acre N.J. experience) for 10 acres plus \$5 million total for less intensive restoration work (limited replanting, fertilization, and reapplication, plus monitoring for up to 10 years) on up to 100 acres].

Cost-effectiveness: Direct, on-site in-kind measure using established technology; assumed highly cost-effective (without addressing "grossly disproportionate" test).

- **ACQUISITION OF EQUIVALENT RESOURCES:** Enhanced protection of supratidal and intertidal areas can be achieved through management changes on and/or direct acquisition of upland and marine areas immediately adjacent to the shoreline. To be most directly beneficial, lands threatened by potential timber harvest, subsurface (mineral) development, or other disturbance-creating activities (such as lodges) should be targeted. Potential acquisitions include (see attached map):

- Native-selected lands along the shoreline of Kenai Fjords National Park (direct purchase: 77,000 acres, estimated value/acquisition cost \$___million);¹
 - Inholding in the Chugach National Forest within Prince William Sound (surface and subsurface rights to 262,000 acres, estimated acquisition cost \$255.5 million);²
 - Inholdings in Kachemak Bay State Park (surface and subsurface rights to 23,000 acres, estimated acquisition cost \$30 million);³
 - Lands on the southwest tip of the Kenai Peninsula (surface and subsurface rights to 111,000 acres, estimated acquisition cost \$108 million);⁴
 - Kenai River corridor wetlands/riparian zone (development rights, ___ acres, estimated acquisition cost \$___);⁵
- [ADD: MARINE SANCTUARIES, STATE MARINE PARKS, WILDERNESS AREAS, NRA STATUS?, ETC.]
- [ADD: No Action ("natural recovery")]

Feasibility: feasible to acquire development rights (in perpetuity or for specific periods - i.e., 10 years) in such a manner that title and subsistence use rights are retained by the Native corporations. **Benefit:** reduction of cumulative effects will provide for enhanced recovery of eagles, peregrine falcons, sea ducks, some Alcids, oystercatchers and other shorebirds, sea otters, sea lions and harbor seals, terrestrial mammals, intertidal organisms, salmonids and other fish, cultural resources, and recreational resources. **Cost:** up to \$TOTAL (detailed above). **Cost-benefit:** for many species, methods do not exist to undertake direct restoration measures; therefore reducing cumulative effects through acquisition of equivalent resources is the only means of enhancing natural recovery.

¹ Cost estimate from National Park Service.

² Acreage from the Coastal Coalition "Draft Proposal for a Comprehensive Settlement of Natural Resource Damages from the 'Exxon-Valdez' Oil Spill" ("Proposal") dated July 4, 1990. Costs adjusted upward from those in Proposal by 50% to include an estimate for acquisition of subsurface right as well as timber harvest rights, and to include operating (management) costs for a period of 10 years.

³ Legislative purchase proposal of \$20 million, adjusted upward by 50% as in footnote 2, above.

⁴ See footnote 2, above.

⁵ Acreage from Kenai River Management Plan. Cost estimated from ____.

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Recreational Uses and Intrinsic Values

Intro and Assumptions

Human use of ecological resources for recreation is an important category of services which must be addressed by the restoration process.

Biological and physical restoration of ecological resources is fundamental to the restoration of recreational uses; however, such biophysical restoration is not sufficient to address certain wilderness values, aesthetic values, and other "in-absentia" values such as option, existence, and bequest values.

To the extent that restoration of recreational uses is partially accomplished by biophysical restoration, it is assumed that those actions are discussed under the appropriate biological resource. This section includes recreation-specific restoration actions.

All recreational uses are not equal; to the extent possible, the same type and quality of recreational experience must be restored.

Injury to recreational resources must be evaluated in terms of changes in both actual use and perceptions. (Perception is at least as important as reality.)

Measures of use levels are inadequate because they do not capture important changes in the type and quality of experience.

Increased use numbers are not necessarily desirable.

Impacts may be higher on some groups than on others. For example, beach-dependent activities (e.g., kayak camps) will be more impacted than off-shore activities (e.g., cruise ship tourism).

Given the large acreage of public lands in Alaska, providing relatively small public access sites will restore more value than acquisition or designation of additional wilderness acreage.

Little injury assessment information is available; some use level data is available for Kenai Fjords National Park, but necessary data on quality of experience and user perceptions is lacking. Data available for Kenai Fjords National Park follows:

- Approximately 30 percent of the 400 miles of coastline within Kenai Fjords National Park received some degree of oiling: 50 miles experienced very light impact, 50 miles light impact, 5 miles moderate impact, and 0.31 miles heavy impact.
- Visitation of park has increased approximately 10-13% per year since establishment in 1980.

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- Between 1988 and 1989 overall visitation increased 30% from 59,000 to 77,000 visitors. Note that a decrease in some types of recreational use requiring early reservations (such as cruise ship packages) would not be expected to suffer a decline in visitation immediately following a spill. A decrease in Kenai Fjords National Park visitation by other groups (kayakers and anglers) was observed in 1989.

Resource-specific Presentations

Public-use cabins/sites:

Injury statement -

Adequacy of natural recovery -

Restoration Strategies

- Provide alternative destinations.
- Minimize further cumulative impacts.
- Manage changes in recreational use patterns.
- No action / natural recovery.

Low-impact camping:

Injury statement -

Adequacy of natural recovery -

Restoration Strategies

- Provide alternative destinations.
- No action / natural recovery.

Kayaks and canoes:

Injury statement - Kenai Fjords National Park experienced a decline in kayaker use in 1989. Kayakers and canoeists are strongly impacted by visible oiling of beach sediments at sites where they camp or rest. In most areas, solitude is an important component of the paddling experience; therefore, these users have been and will continue to be impacted by clean-up activities, monitoring and research activities, development activities visible (or audible) from the water and adjacent shoreline, and by increased tourism which may result from increased public awareness of the oil-impacted area.

Adequacy of natural recovery - How long will surface and shallow subsurface oil rub off on tent bottoms? How long will stain last on protected beaches?

Restoration Strategies

- Restore prime shoreline use sites.
- Manage changes in recreational use patterns.
- Education / interpretation.
- No action / natural recovery.

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Charter, tour boats, etc.:

Injury statement - The NRDA process does not address losses to commercial charter and tour boat operators; however, it should address and restore injuries to the visitor's experience due to natural resource injury. Many of these impacts will be perceptual and can be addressed through education or interpretation.

Adequacy of natural recovery -

Restoration Strategies

- Education / interpretation.
- No action / natural recovery.

Other pleasure boats:

Injury statement - Other pleasure boats includes sailboats, inflatables, skiffs, etc. These users will be affected perceptually in the manner similar to that of passengers on charters and tour boats. In addition, to the extent that they use shorelines and beaches, they will suffer direct use impacts similar to those affecting kayakers and canoeists.

Adequacy of natural recovery -

Restoration Strategies

- Restore prime shoreline use sites.
- Manage changes in recreational use patterns.
- Education / interpretation.
- No action / natural recovery.

Marine sport fishing:

Injury statement -

Adequacy of natural recovery -

Restoration Strategies

- Education / interpretation.
- No action / natural recovery.

Freshwater sport fishing:

Injury statement -

Adequacy of natural recovery -

Restoration Strategies

- No action / natural recovery.

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Shellfishing:

Injury statement -

Adequacy of natural recovery -

Restoration Strategies

- No action / natural recovery.

Hunting, terrestrial mammals:

Injury statement -

Adequacy of natural recovery -

Restoration Strategies

- No action / natural recovery.

Hunting, waterfowl:

Injury statement -

Adequacy of natural recovery -

Restoration Strategies

- No action / natural recovery.

Trapping:

Injury statement -

Adequacy of natural recovery -

Restoration Strategies

- No action / natural recovery.

Hiking and climbing:

Injury statement -

Adequacy of natural recovery -

Restoration Strategies

- No action / natural recovery.

Berry picking, picnicking, etc.:

Injury statement -

Adequacy of natural recovery -

Restoration Strategies

- No action / natural recovery.

Nature study:

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Injury statement -

Adequacy of natural recovery -

Restoration Strategies

- No action / natural recovery.

Photography:

Injury statement -

Adequacy of natural recovery -

Restoration Strategies

- No action / natural recovery.

Aesthetic values:

Injury statement -

Adequacy of natural recovery -

Restoration Strategies

- Acquire equivalent resources.
- Minimize further development.
- Education / interpretation.
- No action / natural recovery.

"In-absentia" values (including option, existence, and bequest values):

Injury statement -

Adequacy of natural recovery -

Restoration Strategies

- Acquire equivalent resources.
- Minimize further development.
- Education / interpretation.
- No action / natural recovery.

Other Recreational Uses and Intrinsic Values

Restoration Options

Strategy: Restore prime shoreline use sites.

- Additional cleanup of prime shoreline use sites.

Feasibility:

Environmental benefit: On a site-by-site basis, additional cleaning of prime shoreline use sites may be justifiable even

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if it sets back natural, biological recovery. Additional restoration measures (e.g., transplanting) may be considered to address some of these impacts on biological resources.
Cost and cost-effectiveness:

Strategy: Provide alternative destinations.

- Provide alternative destinations for shoreline use where previous sites have been irreversibly damaged.

Feasibility:

Environmental benefit:

Cost and cost-effectiveness:

Strategy: Manage changes in recreational use patterns.

- Add field personnel and/or revise regulations in response to increased awareness of recreational opportunities following oil spill publicity and clean up.

Feasibility:

Environmental benefit:

Cost and cost-effectiveness:

- Discourage use of new sites as well as continued use of oiled sites where such use would slow natural recovery.

Feasibility:

Environmental benefit:

Cost and cost-effectiveness:

Strategy: Minimize further cumulative impacts.

- Revise public-lands management plans to minimize further degradation of recreational resources.

Feasibility:

Environmental benefit:

Cost and cost-effectiveness:

Strategy: Minimize further development.

- Purchase private inholdings within public lands.

Feasibility:

Environmental benefit:

Cost and cost-effectiveness:

- Minimize development through tax incentives for not logging or developing private lands and by obtaining development rights, easements, etc. (less-than-fee-simple title) on private lands.

Feasibility:

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Environmental benefit:
Cost and cost-effectiveness:

Strategy: Acquire equivalent resources.

- Acquire key public access sites within privately-owned lands and along coasts and rivers.
Feasibility:
Environmental benefit:
Cost and cost-effectiveness:
- Designate Prince William Sound as a national recreation area or national monument.
Feasibility:
Environmental benefit:
Cost and cost-effectiveness:
- Establish new parks, refuges, and other protected areas.
Feasibility:
Environmental benefit:
Cost and cost-effectiveness:
- Acquire or otherwise protect "threatened" wilderness or recreation areas within and outside of Alaska
Feasibility:
Environmental benefit:
Cost and cost-effectiveness:

Strategy: Education / interpretation.

- Publish brochure to educate recreational boaters about environmental protection.
Feasibility:
Environmental benefit:
Cost and cost-effectiveness:
- Develop unified agency-private tourism and public information program
Feasibility:
Environmental benefit:
Cost and cost-effectiveness:
- Construct and/or maintain public interpretive facilities in oil-spill communities, perhaps associated with state or federal conservation units
Feasibility:
Environmental benefit:
Cost and cost-effectiveness:

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Strategy: No action / natural recovery.

REPORT OUTLINE

INTRODUCTION

Purpose of Document:

- Support to maximize size of claim/negotiating position
- Supporting portion of claim, for restoration to pre-spill conditions only
- **Not** addressing how to spend additional \$\$ for direct injuries, L.U.V., or C-V

General Approach:

- Definition of Restoration (MOA)
- Ecosystem emphasis (w/ resource-x-resource components)
- Designed to provide beneficial plan at various (negotiated) levels

Specific Approach:

- Based on "6 Burdens"
- Assumption relating to each "Burden" (esp. degree of injury)
- Qualifications to/assumptions of approach:
 - "Adequacy" of natural recovery (overall, incl. # years to assume costs, etc.)
 - "Grossly disproportionate" test
 - Application of cost-effectiveness test

DESCRIPTION OF RESTORATION PROJECTS (by category)

Overview:

- what's in this section (by resource and ecosystem, plus monitoring)
- what if a listed resource was not injured
- why individual costs are not totalled here, etc.

Coastal Habitats: *Call Dave/Carol*

- Category intro: any specific assumptions, etc.
- Resource-specific presentations:
 - Injury statement (or assumption) —
 - Statement on adequacy of natural recovery
 - Restoration Options (for each, list):
 - Feasibility statement
 - Environmental benefit statement
 - Cost, and cost-effectiveness discussion
- Other (non-NRDA-targeted) resources (discussion)

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Coastal Habitats, cont. ✓

-Resource list for Coastal Habitats:

- Shoreline communities/populations
- Supratidal
- Intertidal
- Estuarine/Salt Marshes
- Subtidal
- Eelgrass and Kelp
- Air and Water
- Connection to shoreline uses (human, and by individual species)

Fish and Shellfish:

Call check M.

- Category intro: any specific assumptions, etc.
- Species-specific presentations:
 - Injury statement (or assumption)
 - Statement on adequacy of natural recovery
 - Restoration Options (for each, list):
 - Feasibility statement
 - Environmental benefit statement
 - Cost, and cost-effectiveness discussion
- Other (non-NRDA-targeted) resources (discussion)
- Resource list for Fish and Shellfish:
 - Sport fish harvest and effort
 - Salmon spawning areas
 - Egg/preemergent fry
 - Early marine, salmon
 - Adult salmon returns (coded-wire tags)
 - Sockeye overescapement
 - Dolly Varden
 - Herring
 - Larval fish
 - Rockfish
 - Groundfish (trawl survey)
 - Clams
 - Spot shrimp
 - Crabs
 - Sea urchins

Birds:

from Stan Karol/Jill

(SAME FORMAT)

- Resource list for Birds:
 - Bald eagles
 - Peregrines
 - Sea Ducks (Harlequins)

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- Passerines
- Seabird colonies
- Loons
- Common Murres
- Marbled Murrelets
- Pigeon Guillemots
- Other Alcids
- Black-legged Kittiwakes
- Glaucous-winged Gulls
- Oystercatchers
- Cormorants
- Mergansers
- Other bird species

Mammals:

Call Roy N.

(SAME FORMAT)

- Resource list for Mammals:

- Humpback whales
- Orcas
- Sea lions
- Harbor seals
- Sea otters
- Black-tail deer
- Black bear
- Brown bear
- River otter and mink
- Small mammals

from Carol

Roy

Recreational Uses and Intrinsic Values:

Nancy

(SAME FORMAT)

- Resource list for Recreational Uses and Intrinsic Values:

- Kayaks and canoes
- Other pleasure boats
- Charters, tour boats, etc.
- Marine sport fishing
- Freshwater sport fishing
- Shellfishing
- Trapping
- Hunting, terrestrial mammals
- Hunting, waterfowl
- Public-use cabins/sites
- Low-impact camping
- Hiking and climbing
- Berry picking, picnicking, etc.
- Photography

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- Nature study
- Other recreation uses
- Aesthetic values
- "In-absentia" values (including option, existence, and bequest values)

Cultural and Subsistence Resources: - *David + Brian*
(SAME FORMAT)

- Resource list for Cultural and Subsistence Resources:
 - Archaeological/historical sites and artifacts
 - Subsistence lifestyle and values
 - Subsistence hunting
 - Subsistence fishing
 - Public trust (in subsistence resources and in government)
 - Other

Monitoring: - *Brian*

- Approach (incl. MOA)
- Basis (Puget Sound, Chesapeake)

Research: - *Brian*

- Approach/Basis (incl. MOA)
- Additional restoration benefit (connection to cultural/social restoration, etc.)

Continued →

SYNTHESIS DISCUSSION

Re. acquisitions:

- Ecosystem benefitted acquisitions, incl.:
 - avoidance often = surest
 - addresses non-targeted resources, as well
 - addresses cultural/social/political aspects of restoration, as well
- Justifications for combining restoration options common to multiple resources
- Ability to reduce (negotiated) magnitude of acquisition while retaining overall benefits
- Application of cost-effectiveness/"grossly disproportionate" tests to combined options
- Brief discussion of restoration projects not recommended
- (Note relation to Coastal Coalition proposal w/r/t/ acceptability)

RECOMMENDED RESTORATION PROJECTS

- List suggested restoration plan elements (projects), direct and indirect
- Note injured resources addressed by each
- Reminder re. degree-of-injury assumptions
- Reminder that we can't address "grossly d."
- Total cost presented for recommended restoration projects

DESCRIPTION OF RESTORATION PROJECTS

COASTAL HABITATS

Intro

This category includes those areas most directly injured by the oil spill and subsequent clean-up activities. Virtually all of the oil that did not evaporate or was not quickly recovered ended up in these habitats. These areas include the "supratidal" (splash zone and immediately adjacent uplands including beach ryegrass zones), intertidal, and nearshore subtidal areas. These areas represent important and in some cases critical habitats for a variety of plant, vertebrate, and invertebrate species that were also directly injured by the spill.

Some direct restoration measures are available to address some of the injuries to coastal habitats. However, for most species feasible techniques do not exist to accelerate natural recovery. Another major consideration in identifying restoration projects that would benefit coastal habitats is the fact that in Alaska, all tidelands (intertidal) and submerged lands are already in public ownership. Therefore, direct acquisition of unoiled tidelands and submerged lands to replace damaged areas is not possible. However, changes in management practices/restrictions, and enhanced protection of adjacent upland and marine areas (through acquisition or other means) can benefit both the coastal habitats themselves and the species they support, by reducing cumulative effects on stressed populations/habitats.

Supratidal

(Key interface area for upland species, incl. mammals and birds. Estuarine/salt marshes spanning supratidal to intertidal comprise small % of spill area, but are important habitats for feeding birds, fish)

*GET
Chugach Forest Plan
from USFS*

↓ Rick Thompson, DNR

Injury Statement. [CALL DAVE G.! Consider ryegrass, high fringing salt marshes, erosion, debris, connection to archaeological injuries, habitat values for birds, mammals, carbon source for aquatics, connection to recreational uses and subsistence gathering, etc.] [NEED handle on potential amt of coastline needing attention - absent, can assume ryegrass exists along 25-30% of injured coastline, and was 10-25% (?) injured there; marshes occur along 1% of injured coastline with about 50% of them being injured to a degree; etc ...]

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[\$500,000/acre full restoration (adjusted for Alaska based on \$300,000/acre N.J. experience) for 10 acres plus \$5 million total for less intensive restoration work (limited replanting, fertilization, and reapplication, plus monitoring for up to 10 years) on up to 100 acres].

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- [ADD: MARINE SANCTUARIES, STATE MARINE PARKS, WILDERNESS AREAS, NRA STATUS?, ETC.]

- [ADD: No Action ("natural recovery")] (INCL. ^{REF. TO} MONITORING)

Feasibility: feasible to acquire development rights (in perpetuity or for specific periods - i.e., 10 years) in such a manner that title and subsistence use rights are retained by the Native corporations. **Benefit:** reduction of cumulative effects will provide for enhanced recovery of eagles, peregrine falcons, sea ducks, some Alcids, oystercatchers and other shorebirds, sea otters, sea lions and harbor seals, terrestrial mammals, intertidal organisms, salmonids and other fish, cultural resources, and recreational resources. **Cost:** up to \$TOTAL (detailed above). **Cost-benefit:** for many species, methods do not exist to undertake direct restoration measures; therefore reducing cumulative effects through acquisition of equivalent resources is the only means of enhancing natural recovery.

1 Cost estimate from National Park Service.

2 Acreage from the Coastal Coalition "Draft Proposal for a Comprehensive Settlement of Natural Resource Damages from the 'Exxon-Valdez' Oil Spill" ("Proposal") dated July 4, 1990. Costs adjusted upward from those in Proposal by 50% to include an estimate for acquisition of subsurface right as well as timber harvest rights, and to include operating (management) costs for a period of 10 years.

3 Legislative purchase proposal of \$20 million, adjusted upward by 50% as in footnote 2, above.

4 See footnote 2, above.

5 Acreage from Kenai River Management Plan. Cost estimated from ____.

ADD other?
Parks inholding?
Aforesaid
purchase or replanting?
[Call Dave G.]

PLUS - MINING
CLAIMS (ACRES
PLUS \$)

- Prog Rpt
- SOB/14B
- Glenn's list of coats



RFWG
F

start w/ own Definition of Rests in MOA

THIS FOR LAWYERS - FACT SHEET TO EXPO!

Approach ^{PURPOSE incl.} Overall - Someone else doing Injury Damages (+ degree) Lost-Use values, C-V (50 well not whole #)

By Res.
 Overall Ecogystem

- "Proofs" / Burdens
- Assumption Re: each.
- Other qualifications

↳ structure of settlements (flexibility, public choice/acceptability, also, assuming injury)

IDEA THAT, IF NEED TO NEGOT. TOTAL, CAN SIMPLY PURCHASE LESS LAND, ETC, WHILE STILL BENEFITTING ALL THE RES. LISTED... (GIVE A FLOOR, THO)

- "Adequacy of Dam. Recovery"
- "Cost effectiveness" (start)
- "Proportionality" (start)

also, that will develop a "plan" for state part of claim (rests to pd. 2 pill) - not get extra \$ from Injury Damages. other that could be used for rests beyond pd. 2 pill.

Per Category
 Rev. A

- Intro; specific assumptions, acceptability, etc. (what if not injured)
- Injury amt (or assumption)
- "Adequacy" of Dam. Recovery
- Options (Feasibility, amt forecast)
- Envril benefit (amt)
- Cost effective

Others → %? other approach?

ecosystem Community → what factor? < SAVE... (determine 500 @ 2nd)

Monitoring (PB program plus bats, etc) → Char. Prog Coats → x of 2. (NO TOTALLING)

SYNTHESIS

Text

Recommended Plan

→ totals! Apply "Growth" here (THEM)

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WMA

Wade Miller Associates, Inc.

Management Consultants

1011 North Fort Myer Drive
Arlington, Virginia 22209
Telephone: (703) 524-1888
FAX: (703) 524-1453

FACSIMILE TRANSMITTAL INFORMATION SHEET

PLEASE DELIVER TO:

NAME: BRIAN ROSS

ORGANIZATION: EPA REGION X

ADDRESS: _____

FAX NUMBER: 907-271-2467

TELEPHONE NUMBER: 907-271-2461
(In order to confirm transmission)

SPECIAL INSTRUCTIONS: This is the reading list I mentioned
look forward to working with you - at least over the
next few days
Tey

FROM: TEJ PHOOL

WMA FAX NUMBER: (703) 524-1453 DATE: 9/4/90

TOTAL NUMBER OF PAGES, INCLUDING THIS PAGE: SIX

(THIS MESSAGE SENT VIA CANON FAX 410)

If you have any problem receiving, call (703) 524-1888 for assistance.

PROJECT CODE 024

WMA

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Management Consultants

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Arlington, Virginia 22209
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PROJECT CODE 026

March 19, 1990

Hann, R.W., Jr.; Rice, L.; Trujillo, M-C.; Young, H.N., Jr. (1978)

Oil spill cleanup activities

Texas A and M Univ., College Station, TX, USA

In: The Amoco Cadiz oil spill - A preliminary scientific report.

Hann, W.N., ed.

Publisher(s): NOAA Environmental Research Labs, Boulder, CO (USA), Environmental Protection Agency, Narragansett, RI (USA)

NOAA/EPA Special report.

Report Number: p 229-275

ABSTRACT

The oil spill from the supertanker Amoco Cadiz off the Brittany Coast of France overshadows by far any other spill into the marine environment. In terms of oil reaching the shore, it was on the order of four times the amount of the Torrey Canyon spill in the same general geographic area or the Metula spill in the Straits of Magellan. As a result, the spill and the subsequent activities to clean up the oil and mitigate damage provided a fascinating laboratory for those interested in institutional structure, planning, resource requirements, technology, and training to deal with disasters of this magnitude. The physical properties, behavior, and movement of the oil and its ultimate deposition on the beaches is discussed in detail. The organizational structure established to deal with the spill and the strategy of control that appears to have been followed are presented and evaluated with regard to their utility in other spills. In addition the processes and unit operations used on the beaches are discussed. Estimates of the manpower and equipment used at different times throughout the spill are based on extensive reviews of newspaper reports and daily pollution reports issued by the Department of Equipment. The final section discusses what has been learned from this experience.

*Preliminary Draft
March 19, 1990*

Brown, W.J.; Denham, F.R. (December, 1980)

An Economic Evaluation of a Mobile Rotary Kiln Designed For the Cleanup of Oil Contaminated Beaches

Stevenson & Kellogg, Ltd., Toronto

Env Canada Report, (131). The original document is available from Bowker.

ABSTRACT

A rotary kiln has been proposed as a method for restoring oil-polluted beaches by burning the oil out of the sand. This kiln would overcome many of the handicaps encountered in utilizing other cleaning methods. The kiln can handle a wide range of oil types, oil concentrations, and particle sizes. Kiln operating methods are described; the resulting variable operating costs are shown to be lower than those of the major alternative method, dumping the polluted sand in landfills. A probabilistic model, constructed to estimate the utilization of the kiln, showed it to be sufficient to recover the capital cost as compared with the dumping option. (7 diagrams, 4 graphs, 3 maps, 28 references, 32 tables)

Anderson, R.C. (1983)

Economic perspectives on oil spill damage assessment

Am. Pet. Inst., WA, USA

Oil Petrochem. Pollut., Vol. 1, No. 2, pp. 79-84

ABSTRACT

Oil and petrochemical spills frequently result in damage to publicly-owned natural resources such as birds, fish, and beaches. Presently over half of the American States and the Federal Government have provisions in law that permit recovery from the polluter for such damages to natural resources. The objectives of these statutes are two-fold: (1) to provide compensation to the victims for their losses, and (2) to provide incentives for greater care on the part of those who transport petroleum products. The measurement of natural resource damages in economic terms is a difficult and controversial task. This paper provides insights into the strengths and limitations of several techniques of valuation that have been proposed or are currently being used. Additionally, the paper provides several research suggestions to specialists in the biological and physical science communities regarding where their further efforts are most likely to be helpful in bridging the gaps that now exist in conducting accurate assessments of natural resource damages resulting from oil spills.

Fonseca, M.S.; Kenworthy, W.; Phillips, R.C. (1982)

A cost-evaluation technique for restoration of seagrass and other plant communities

Natl. Oceanic Atmos. Admin., Natl. Mar. Fish. Serv., Southeast Fish. Cent., Beaufort Lab., Beaufort, NC 28516, USA

Environ. Conserv., Vol. 9, No. 3, pp. 237-242.

ABSTRACT

Coastal habitat loss must be reduced either through conservation or mitigative efforts. Implementation of mitigation depends largely on accurate cost-assessment of the projects that are involved. The authors center our discussion here on seagrass transplanting as an exemplary mitigative tool. The technology of restoring seagrass communities has received increasing attention in recent years. However, the methods used have had varying degrees of success, a largely unknown factor being the cost of the technique that is used. In this paper is presented a universal format that includes consideration of the essential factors in our cost-analysis, such as planning, planting, and monitoring activities, geographic location, tidal influence, labor, and materials (both expendable and non-expendable). Cost per (successfully established) shoot or seed or fruit is recommended as the best indicator of cost effectiveness for a given technique. Incorporation and presentation of this information is urged in future projects to motivate wider application of seagrass and other essential plant-community restoration.

Armstrong, N.E. (1982)

Spill cleanup

Dept. Civil Eng., Univ. Texas, Austin, TX, USA

Part 3, Biological measures. In: Hazardous Materials Spills Handbook

McGraw-Hill Book Co., NY

ABSTRACT

The National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR 1510) delineates five classes of actions that comprise the elements of spill control. The actions are Phase I-discovery and notification; Phase II-evaluation and initiation of action; Phase III-containment and countermeasures; Phase IV-cleanup, mitigation, and disposal; Phase V-documentation and cost recovery. The time to implement any of these phases will depend on the location of the spill, the material spilled, the magnitude of the spill, and so forth. Employment of a biological countermeasure imposes special constraints on the activities in Phases III and IV and requires that its use be carefully considered in Phase II. To understand these special constraints, the requirements of a general countermeasure and the information needed to judge the suitability of a biological countermeasure must be discussed.

Schulze, R.H. (1981)

A Cost Effectiveness Approach to Oil Spill Response

Arctec, Inc., MD

Presented at EPA/API/USCC 1981 Oil Spill Conf, Atlanta, Mar 2-5, 81, P495 (6). The original document is available from Bowker.

ABSTRACT

Although large sums of money are spent on responding to oil spills, it is often difficult to assess the effectiveness of the spill response effort. A portion of an analysis performed by epa that evaluates the response effort in terms of the change of spill impact and the cost of producing this change is summarized. Using this method of analysis, it is demonstrated that in a typical inland spill situation the minimum acceptable level of response may be the most cost effective, and an intensive effort to recover the last traces of oil may have an adverse environmental impact. (2 graphs, 1 reference, 1 table)

Majumdar, S.K.; Miller, E.W. (ed.) (1984)

USA Solid and Liquid Wastes Management Methods and Socioeconomic Considerations

Publication of the Pennsylvania Academy of Science, Easton, PA, USA. XXIII+412 pp.

Dept. Biology, Lafayette College, Easton, PA 18042

ILLUS. MAPS.

Report Number: ISBN 0-9606670-3-2. 0 (0), CODEN: 19408

ABSTRACT

This text is comprised of papers written by leading authorities in the field of solid and liquid waste management. The text is divided into 5 main sections. Section 1 discusses the sources and management of waste types, including classification and properties of solid and liquid wastes, solid waste handling in hospitals, and the management of wastes in India. The 2nd section discusses treatment technology and includes wastewater treatment, microbial destruction and solid waste land treatment systems. The 3rd section is on the environmental and health impacts, including organic compounds in the terrestrial environment, cadmium and other trace elements, and oil pollution in the ocean. The next section includes disposal, recycling and energy recovery, and the concluding section discusses laws, regulations and socioeconomic considerations. An appendix on acid rain research is reprinted from the EPRI Journal. Maps, tables, graphs and an index supplement this text.

Jernelov, A. (1976)

The St. Peter Oil Spill: An Ecological and Socioeconomic Study of Effects

EPA Intl Env Document Report 04209A-Columbia, Oct 76 (38)

ABSTRACT

A team from the Swedish water and air pollution research laboratory was assigned to: assess the damage caused by an oil spill in the mangrove swamps in Colombia; advise on possible reclamation; and recommend action in similar cases in the future. Biological studies of the oil-contaminated mangroves showed that organisms had returned in abundance and sizes that made contaminated areas indistinguishable from unaffected localities. This suggests that the mechanism for recovery is migration from unaffected parts of the mangrove rather than through multiplication of surviving individuals. Severe though short-term primary effects on marine fauna resulted in a sharp reduction of income for persons engaged in fishing or fish marketing.

Abstracts
Preliminary Draft
March 19, 1990

Straube, M. (1989)

Is Full Compensation Possible for the Damages Resulting from the Exxon Valdez Oil Spill?

Env Law Reporter, Aug 89, V19, N8, P10338(13). The original document is available from Bowker.

ABSTRACT

The March 1989 Exxon Valdez oil spill in Prince William Sound, AK, exposed the deficiencies in the array of federal and state laws that establish liability for environmental and economic damages caused by oil spills. This spill is used as an example in analyzing whether full compensation for all parties damaged by tanker oil spills is available under the existing statutory scheme. The potential for full compensation is examined at the various stages of response to such a spill, including mandatory relief to force cleanup, recovery of government response costs, and compensation for natural resource damages and economic loss. The availability of full compensation is unclear. While full compensation is potentially available for response, resource, and economic costs, the federal sector's ability to force oil companies to conduct a proper cleanup may be limited. (137 references)

Nulty, P. (1989)

The Future of Big Oil

Fortune, May 8, 89, V119, N10, P46(4). The original document is available from Bowker.

ABSTRACT

The Valdez, Alaska, Exxon oil tanker spill of 1989 is notable not just for its extensive damage to Alaska's pristine coastline, but also for the political and economic impact it could have. Congress postponed action on a bill to open up the Arctic Natl Wildlife Refuge to oil exploration as a result of the Valdez spill. If American oil resources are withheld, reliance on foreign sources could soar. However, actual effect of the Valdez spill could be minimal and toxic effects flushed out in two years. Alaskans interviewed still support the presence of oil companies, which provide 85% of the state's revenues. The accident at Valdez may ensure better preparation for future spill cleanups. (3 graphs, 1 map, 4 photos)

Nichols, A.B. (1989)

Alaskan Oil Spill Shocks the Nation

WPCF J, Jul 89, V61, N7, P1174(12). The original document is available from Bowker.

ABSTRACT

Nearly 11 million gal of oil escaped from the tanker, Exxon Valdez, into Alaska's Prince William Sound on March 24, 1989, despite massive efforts to contain the spill. Spill teams employed by Exxon have used various means, including fire hosing the oil stained beaches using heated seawater to remove the effects of the spill along the shoreline. Total cost of the cleanup could exceed \$1 billion, and authorities predict that it could take as long as ten years before the effects of the spill disappear from the shores of the sound.

Jennings, A.L. (1972)

Spill Damage Restoration

Natl Conf Hazardous Material Spill Houston Mar 21-23, 1972, P221 (3). The original document is available from Bowker.

Abstracts
Preliminary Draft
March 19, 1990

Artificial reefs (1986)

Technology, Vol. 8, No. 6

Publisher(s): PCARRD, Los Banos (Philippines), 16 pp.

Received July 1989.

Report Number: ISSN 0115-7787

ABSTRACT

Discarded tires and bamboos have been used for constructing artificial reefs. These materials may be dropped at the bottom of the sea to form a jumbled mass or assembled into geometric forms. Tires last longer than bamboos, which stay intact for about 3 years. From a 10-tire reef which costs P2,483.94, a fisherman earns a net income of P10,500 and P1,300 in the fourth and fifth year of operations in addition to the income derived from his fishing activities outside the artificial reef. If he uses a 10-bamboo reef with a production cost of P1,702.64, he obtains a net profit of P8,600 and P10,300 in the second and third year of operations.

10. J. KRUTILLA & A. FISHER, *THE ECONOMICS OF NATURAL ENVIRONMENTS: STUDIES IN THE VALUATION OF SCENICITY AND AMENITY RESOURCES* (1975).

16. See Westman, *How Much Are Nature's Services Worth*, 197 *SCIENCE* 960 (1977).

SCIENCE 960 (1977)

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Recreational Uses and Intrinsic Values

Intro and Assumptions

Human use of ecological resources for recreation is an important category of services provided by those resources which must be addressed by the restoration process.

Biological and physical restoration of ecological resources is fundamental to the restoration of recreational uses; however, such biophysical restoration is not sufficient to address certain wilderness values, aesthetic values, and other "in-absentia" values such as option, existence, and bequest values.

To the extent that restoration of recreational uses is partially accomplished by biophysical restoration, it is assumed that those actions are discussed under the appropriate biological resource. This section includes recreation-specific restoration actions.

All recreational uses are not equal; to the extent possible, the same type and quality of recreational experience must be restored.

Injury to recreational resources must be evaluated in terms of changes in both actual use and perceptions. (Perception is at least as important as reality.)

Measures of use levels are inadequate because they do not capture important changes in the type and quality of experience.

Increased use numbers are not necessarily desirable.

Impacts may be higher on some groups than on others. For example, beach-dependent activities (e.g., kayak camps) will be more impacted than off-shore activities (e.g., cruise ship tourism).

Given the large acreage of public lands in Alaska, providing relatively small public access sites will restore more value than acquisition or designation of additional wilderness acreage.

Little injury assessment information is available; some use level data is available for Kenai Fjords National Park, but necessary data on quality of experience and user perceptions is lacking. Data available for Kenai Fjords National Park follows:

- Approximately 30 percent of the 400 miles of coastline within Kenai Fjords National Park received some degree of oiling: 50 miles experienced very light impact, 50

miles light impact, 5 miles moderate impact, and 0.31 miles heavy impact.

- Visitation of park has increased approximately 10-13% per year since establishment in 1980.
- Between 1988 and 1989 overall visitation increased 30% from 59,000 to 77,000 visitors. Note that a decrease in some types of recreational use requiring early reservations (such as cruise ship packages) would not be expected to suffer a decline in visitation immediately following a spill. A decrease in Kenai Fjords National Park visitation by other groups (kayakers and anglers) was observed in 1989.

Resource-specific Presentations

Public-use cabins/sites:

Injury statement -

Adequacy of natural recovery -

Restoration Strategies

- Provide alternative destinations.
- Minimize further cumulative impacts.
- Manage changes in recreational use patterns.
- No action / natural recovery.

Low-impact camping:

Injury statement -

Adequacy of natural recovery -

Restoration Strategies

- Provide alternative destinations.
- No action / natural recovery.

Kayaks and canoes:

Injury statement - Kenai Fjords National Park experienced a decline in kayaker use in 1989. Kayakers and canoeists are strongly impacted by visible oiling of beach sediments at sites where they camp or rest. In most areas, solitude is an important component of the paddling experience; therefore, these users have been and will continue to be impacted by clean-up activities, monitoring and research activities, development activities visible (or audible) from the water and adjacent shoreline, and by increased tourism which may result from increased public awareness of the oil-impacted area.

Adequacy of natural recovery - How long will surface and shallow subsurface oil rub off on tent bottoms? How long will stain last on protected beaches?

Restoration Strategies

- Restore prime shoreline use sites.
- Manage changes in recreational use patterns.
- Education / interpretation.
- No action / natural recovery.

Charter, tour boats, etc.:

Injury statement - The NRDA process does not address losses to commercial charter and tour boat operators; however, it should address and restore injuries to the visitor's experience due to natural resource injury. Many of these impacts will be perceptual and can be addressed through education or interpretation.

Adequacy of natural recovery -

Restoration Strategies

- Education / interpretation.
- No action / natural recovery.

Other pleasure boats:

Injury statement - Other pleasure boats includes sailboats, inflatables, skiffs, etc. These users will be affected perceptually in the manner similar to that of passengers on charters and tour boats. In addition, to the extent that they use shorelines and beaches, they will suffer direct use impacts similar to those affecting kayakers and canoeists.

Adequacy of natural recovery -

Restoration Strategies

- Restore prime shoreline use sites.
- Manage changes in recreational use patterns.
- Education / interpretation.
- No action / natural recovery.

Marine sport fishing:

Injury statement -

Adequacy of natural recovery -

Restoration Strategies

- Education / interpretation.
- No action / natural recovery.

Freshwater sport fishing:

Injury statement -

Adequacy of natural recovery -

Restoration Strategies

- No action / natural recovery.

Shellfishing:

Injury statement -

Adequacy of natural recovery -

Restoration Strategies

- No action / natural recovery.

Hunting, terrestrial mammals:

Injury statement -

Adequacy of natural recovery -

Restoration Strategies

- No action / natural recovery.

Hunting, waterfowl:

Injury statement -

Adequacy of natural recovery -

Restoration Strategies

- No action / natural recovery.

Trapping:

Injury statement -

Adequacy of natural recovery -

Restoration Strategies

- No action / natural recovery.

Hiking and climbing:

Injury statement -

Adequacy of natural recovery -

Restoration Strategies

- No action / natural recovery.

Berry picking, picnicking, etc.:

Injury statement -

Adequacy of natural recovery -

Restoration Strategies

- No action / natural recovery.

Nature study:

Injury statement -

Adequacy of natural recovery -

Restoration Strategies

- No action / natural recovery.

Photography:

Injury statement -

Adequacy of natural recovery -

Restoration Strategies

- No action / natural recovery.

Aesthetic values:

Injury statement -

Adequacy of natural recovery -

Restoration Strategies

- Acquire equivalent resources.
- Minimize further development.
- Education / interpretation.
- No action / natural recovery.

"In-absentia" values (including option, existence, and bequest values):

Injury statement -

Adequacy of natural recovery -

Restoration Strategies

- Acquire equivalent resources.
- Minimize further development.
- Education / interpretation.
- No action / natural recovery.

Other Recreational Uses and Intrinsic Values

Restoration Options

Strategy: Restore prime shoreline use sites.

- Additional cleanup of prime shoreline use sites.
Feasibility:
Environmental benefit: On a site-by-site basis, additional cleaning of prime shoreline use sites may be justifiable even if it sets back natural, biological recovery. Additional restoration measures (e.g., transplanting) may be considered to address some of these impacts on biological resources.
Cost and cost-effectiveness:

Strategy: Provide alternative destinations.

- Provide alternative destinations for shoreline use where previous sites have been irreversibly damaged.
Feasibility:
Environmental benefit:
Cost and cost-effectiveness:

Strategy: Manage changes in recreational use patterns.

- Add field personnel and/or revise regulations in response to increased awareness of recreational opportunities following oil spill publicity and clean up.
Feasibility:
Environmental benefit:
Cost and cost-effectiveness:
- Discourage use of new sites as well as continued use of oiled sites where such use would slow natural recovery.
Feasibility:
Environmental benefit:
Cost and cost-effectiveness:

Strategy: Minimize further cumulative impacts.

- Revise public-lands management plans to minimize further degradation of recreational resources.
Feasibility:
Environmental benefit:
Cost and cost-effectiveness:

Strategy: Minimize further development.

- Purchase private inholdings within public lands.

Feasibility:
Environmental benefit:
Cost and cost-effectiveness:

- Minimize development through tax incentives for not logging or developing private lands and by obtaining development rights, easements, etc. (less-than-fee-simple title) on private lands.

Feasibility:
Environmental benefit:
Cost and cost-effectiveness:

Strategy: Acquire equivalent resources.

- Acquire key public access sites within privately-owned lands and along coasts and rivers.

Feasibility:
Environmental benefit:
Cost and cost-effectiveness:

- Designate Prince William Sound as a national recreation area or national monument.

Feasibility:
Environmental benefit:
Cost and cost-effectiveness:

- Establish new parks, refuges, and other protected areas.

Feasibility:
Environmental benefit:
Cost and cost-effectiveness:

- Acquire or otherwise protect "threatened" wilderness or recreation areas within and outside of Alaska

Feasibility:
Environmental benefit:
Cost and cost-effectiveness:

Strategy: Education / interpretation.

- Publish brochure to educate recreational boaters about environmental protection.

Feasibility:
Environmental benefit:
Cost and cost-effectiveness:

- Develop unified agency-private tourism and public information program

Feasibility:
Environmental benefit:

Cost and cost-effectiveness:

• Construct and/or maintain public interpretive facilities in oil-spill communities, perhaps associated with state or federal conservation units

Feasibility:

Environmental benefit:

Cost and cost-effectiveness:

Strategy: No action / natural recovery.

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August 30, 1990 Version

REPORT OUTLINE

INTRODUCTION

Purpose of Document:

- Support to maximize size of claim/negotiating position
- Supporting portion of claim, for restoration to pre-spill conditions only
- **Not** addressing how to spend additional \$\$ for direct injuries, L.U.V., or C-V

General Approach:

- Definition of Restoration (MOA)
- Ecosystem emphasis (w/ resource-x-resource components)
- Designed to provide beneficial plan at various (negotiated) levels

Specific Approach:

- Based on "6 Burdens"
- Assumption relating to each "Burden" (esp. degree of injury)
- Qualifications to/assumptions of approach:
 - "Adequacy" of natural recovery (overall, incl. # years to assume costs, etc.)
 - "Grossly disproportionate" test
 - Application of cost-effectiveness test

DESCRIPTION OF RESTORATION PROJECTS (by category)

Overview:

- what's in this section (by resource and ecosystem, plus monitoring)
- what if a listed resource was not injured
- why individual costs are not totalled here, etc.

Coastal Habitats:

- Category intro: any specific assumptions, etc.
- Resource-specific presentations:
 - Injury statement (or assumption)
 - Statement on adequacy of natural recovery
 - Restoration Options (for each, list):
 - Feasibility statement
 - Environmental benefit statement
 - Cost, and cost-effectiveness discussion
- Other (non-NRDA-targeted) resources (discussion)

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Fish and Shellfish:

- Category intro: any specific assumptions, etc.
- Species-specific presentations:
 - Injury statement (or assumption)
 - Statement on adequacy of natural recovery
 - Restoration Options (for each, list):
 - Feasibility statement
 - Environmental benefit statement
 - Cost, and cost-effectiveness discussion
- Other (non-NRDA-targeted) resources (discussion)

Birds:

(SAME FORMAT)

Mammals:

(SAME FORMAT)

Recreational Resources:

(SAME FORMAT)

Cultural Resources:

(SAME FORMAT)

Monitoring:

- Approach (incl. MOA)
- Basis (Puget Sound, Chesapeake)

Research:

- Approach/Basis (incl. MOA)
- Additional restoration benefit (connection to cultural/social restoration, etc.)

SYNTHESIS DISCUSSION

Re. acquisitions:

- Ecosystem benefitted acquisitions, incl.:
 - avoidance often = surest
 - addresses non-targeted resources, as well
 - addresses cultural/social/political aspects of restoration, as well

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- Justifications for combining restoration options common to multiple resources
- Ability to reduce (negotiated) magnitude of acquisition while retaining overall benefits
- Application of cost-effectiveness/"grossly disproportionate" tests to combined options
- Brief discussion of restoration projects not recommended
- (Note relation to Coastal Coalition proposal w/r/t/ acceptability)

RECOMMENDED RESTORATION PROJECTS

- List suggested restoration plan elements (projects), direct and indirect
- Note injured resources addressed by each
- Reminder re. degree-of-injury assumptions
- Reminder that we can't address "grossly d."
- Total cost presented for recommended restoration projects

STEVE COWPER
GOVERNOR



STATE OF ALASKA
OFFICE OF THE GOVERNOR
JUNEAU

COM. GOVERNOR'S OFFICE
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JUN 1 1990
DEPARTMENT OF FISH AND GAME
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May 31, 1990

Mr. John C. Dillow, III
9308 Cherry Hill Road, 706
College Park, MD 20740

Dear Mr. Dillow:

Thank you for your May 1 letter and your replenishing plan for Prince William Sound, "A Proposal for a Mariculture System in Alaska."

I have forwarded a copy of your letter and proposal to Commissioner Don Collinsworth, Department of Fish and Game, for his information.

Again, thanks for sharing your plan with me.

Sincerely,

S/S Steve Cowper

Steve Cowper
Governor

cc/enc: Commissioner Don Collinsworth

Pls. circulate
Sandy Enly
Frankie ✓
Brian —
Return to Steve

A PROPOSAL FOR A
MARICULTURE SYSTEM
IN ALASKA

RECEIVED

MAY 18 1990

GOVERNOR'S OFFICE

Prepared for
The Governor and State Legislature
of Alaska

by
John C. Dillow III
Marine Biology Student

May 1, 1990

John C. Dillow III
9308 Cherry Hill Rd. 706
College Park, Maryland 20740

May 1, 1990

Steve Cowper, Governor of Alaska
Office of the Governor
State Capitol
Juneau, Alaska 99811-0101

Dear Governor:

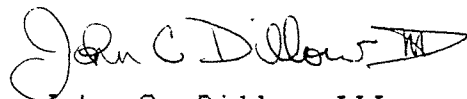
I'm sure over the past year you have been hounded about the problems that were created after the Exxon Valdez spill. I feel that it is time to look for a positive solution to the problems that have arisen since then.

I have spent the last three months researching and constructing a plan that would replenish the environment, the economy and the confidence of the people in the oil industry.

Just as with any proposal there is a cost to this plan, but the benefits that will come from this far out weigh the costs. After a review of this plan I'm sure that you will see that it is something that is not out of the reach of the government.

Some type of plan needs to be initiated for the recovery of the Prince William Sound before there is nothing left for us to salvage. I hope that you give this proposal some serious consideration and pass the idea on to your colleagues.

Respectfully,



John C. Dillow III
Marine Biology Student

CONTENTS

| | Page |
|--|------|
| LETTER OF TRANSMITTAL | ii |
| ABSTRACT | iv |
| INTRODUCTION | 1 |
| Subject and Purpose | 1 |
| Statement of Problem | 1 |
| Need | 1 |
| Scope | 1 |
| PROPOSED PLAN | 2 |
| Methods | 2 |
| Cleanup and liability | 2 |
| Location of system | 2 |
| Establishment of a Polyculture System. | 2 |
| Nutrients | 2 |
| Selection of species | 3 |
| Construction | 3 |
| Cautions | 3 |
| Projected Costs. | 3 |
| Personnel. | 5 |
| Feasibility | 5 |
| CONCLUSION | 5 |
| APPENDIX. | 7 |
| WORK CITED | 9 |

ABSTRACT

After the oil spill in the Prince William Sound the World started to realize the actual environmental devastation that had occurred. Through research that I have conducted I have not seen a plan that has approached the question of replenishing the environment. It is not too early to start thinking about this issue, even though the cleanup efforts are not finished.

The cost analysis associated with this project calls for an initial investment of \$1.2 million. This is not an absurd figure for the rewards that will benefit the investor. They will receive monetary rewards from crop production, the environment will be replenished and there will be research conducted simultaneously without any further cost to the investor.

This proposal lays out all the parts needed to start such a system. It has a multipurpose functionality that can not be compared to any other ecosystem of its kind.

INTRODUCTION

Subject and Purpose

After the recent oil spill in the Prince William Sound the community and the world were faced with a devastated ecological system. The system appeared to have a bleak future. The proposal that is being introduced plans to recreate the ecosystem that was lost and also to rejuvenate the economy.

Statement of Problem

Since the spill the Prince William Sound area has been depleted of marine life and surrounding wildlife. There is now a real need for some type of replenishing plan.

The people of the Sound who once had depended upon its resources for their livelihood are now going to have to do without unless something is done.

The Federal and State governments in past have been to slow to act, because they do not know where the responsibility lies. In a congressional brief prepared by Martin R. Lee on liability and compensation legislation, he referred to the current conventions as "hodgepodge" (CRS2-3). This needs to change so that replenishing programs can get started with no delay.

Need

Now that the marine resources have been depleted and the fisherman could lose sizeable amounts of revenue a mariculture system is possible solution.

This system will allow the avenues to be opened for research programs on marine life that has been infected by a major oil spill. This kind of research is not easily accessible and any opportunity for such studies to be performed should not go to waste.

Scope

The plan that will be proposed comprises:

1. location of the mariculture system which discusses the role of cleanup
2. the steps that will be needed to achieve a mariculture system as a functioning plant
3. a detailed cost sheet will be presented for the construction and setup of the plant
4. a look into the personnel that will be needed to maintain this plant and where they may come from
5. an examination of the feasibility by means of a cost/

PROPOSED PLAN

This Plan was designed to replenish the resources that were lost, regenerate money into the fishing industry and to give the possibilities of long-term research in a recovering environment.

Methods

The mariculture system that was proposed can be established by the following steps:

Cleanup and Liability

In this proposal we are going to assume that a proper plan for the cleanup has already been put into effect.

Liability appears to be a burning question in all of us right now. However if we refer to the Trans-Alaska Pipeline Authorization Act (TAPAA) it states that the owner or operator is responsible for the first \$14 million and the Trans-Alaska Pipeline Liability Fund (TAPLF) is to cover the remaining amounts up to a total expenditure of \$100 million (Exxon Valdez Brief CRS-4). This seems to show that it is a cooperative cost/effort between the Exxon co. and the Federal government.

Location of System

The first item to look at is what type of toxins are still present in the water column or you can just ask yourself "How clean is this area?". The toxicity of the water must be the first and foremost thought when searching the site out.

Another part to consider during the search for the appropriate site is the presence of wind and/or wave action. This is an important aspect for two reasons: (1) if you have winds and/or waves that are too forceful they may prove to be destructive to the physical structures (2) if there is no wind and/or wave action there will be no horizontal circulation of the seas' surface and the water will become stagnant.

A small but not necessarily typical characteristic to look for are naturally occurring flotation devices. These could appear as islands, peninsulas and natural atolls which are just slightly submerged islands. The presences of these could help in cutting down the cost of construction of the plant.

Establishment of a Polyculture System

Nutrients

The necessity and availability of nutrients is extremely important to the survival of the system. The nutrient requirements that will be demanded will change from species to species and it also depends on the

developmental stage of the species.

However a technique known as upwelling is found to be very successful. Upwelling can be either natural or it can be forced. This is when the nutrient rich waters of the deep (approx. 1000m) are pumped up to the surface.

Some direct feeding will probably be needed, but an excessive diet direct feeding is not good for any species. Direct feeding tends to place limitations on the species.

Selection of Species

When deciding on what should be cultured the first point of interest should be its market value (e.i.- Salmon). The species chosen should have a high market value. That way when it is produced there will be an existing market for your product.

Availability of juveniles is another characteristic that needs to be considered. Juveniles need to be available at any time so that it will insure annual production of the species. They also need to be available in large quantities which is necessary for a good yield

It is also helpful and less expensive if the species is a native to the area. A good example of this is the Giant Kelps (Macrocystis pyrifera) of the Alaskan Bay. This species is an excellent choose for the system for several reasons:

- it produces food and shelter
- it can be used to produce potash, Acetone and Algin
- it is very easily transplanted

Construction

Actual construction of buildings, tanks, holding nets, etc. can be performed by professional carpenters, but all of this work should be closely monitored by several Biologist and experts on the species that have been selected for culturing. This will help to prevent some of the risks that may hinder the species growth.

Cautions

In choosing the proper species an analysis of that species specific sensitivity should be done. For instance, in the case of some bivalves they do not filter out the hydrocarbons that are present in waters that have been contaminated from an oil spill. This could possibly lead to destruction of the species and contamination of any products made from these bivalves.

Projected Costs

- + the survey for an appropriate site should be considered as part of the cleanup costs

Construction of 3 buildings for working space & storage

* labor included in hourly figure
 3-bldgs. 50' x 100' <5000 sq.ft.>
 15000 sq.ft. x \$42/sq.ft. = \$ 630,000.00

Construction of 2 Spawning Tanks

4"x4'x4'x20'; solid concrete
 19 yds. con. x \$40/yd. = \$ 760.00
 Pumps: 4 x \$1240 = \$ 4960.00
 \$ 5720.00

Construction of 3 Floating Nets (see fig. 10.1)

● Flotation devices, anchors and anchor lines provided by Exxon
 * itemized for 1 net <25'x25'x12'>
 300' of 2"x4" x \$.16/ft. = \$ 48.00
 6 shts. of .75"x4'x8' marine plywood
 6 x \$16/ sheet = \$ 96.00
 1825 sq.ft. of predator net
 1825 x \$8/sq.ft. = \$ 14,600.00
 1045 sq.ft. of fine mesh net
 1045 x \$13/sq.ft. = \$ 13,585.00
 Pumps: 2 x \$124 = \$ 248.00
 28,577.00
 x 3
 85,731.00

Construction of 4 bivalve cloisters <4'x40'x6'>
 (see fig. 10.5)

* these are optional due to the sensitivity of bivalves available.
 ● flotation devices provided by Exxon
 1800' of 2"x4" x \$.16/ft. = \$ 288.00
 9 shts. of .75"x4'x8' marine plywood
 9 x \$16/ sheet = \$ 144.00
 \$ 432.00
 x 4
 \$ 1,728.00

Transplant of Kelp <100 hours>

Work Boats(4): 100 hrs. x \$600/hr. \$ 60,000.00
 Divers (5): 100 hrs. x \$375/hr. \$ 37,500.00
 \$ 97,500.00

Equipment <Cole-Parmer Instrument Co.>

Turbidimeter & accessories \$ 584.50
 Water Test Kits
 5) Chlorine Kits \$ 243.75
 5) Dissolved Oxygen kits \$ 243.75
 5) pH (wide range) kits \$ 217.50
 5) Ammonia, Nitrogen \$ 243.75

| | | | | |
|--|---|----|--------------|-------------------------|
| | | | \$ | 1,533.25 |
| Labor | | | | |
| Tanks: 40 hours x \$80/hr. | = | \$ | 3,200.00 | |
| Nets: 20 hours x \$30/hr. | = | \$ | 600.00 | |
| Crane \$3000/day | = | \$ | 3,000.00 | |
| Cloisters: 40 hrs. x \$40/hr. | = | \$ | 1,600.00 | |
| | | \$ | 8,400.00 | |
| Budget for purchases of species | = | \$ | 150,000.00 | |
| *this is possible to change due to affability of the species | | | | |
| Subtotal | = | \$ | 980,612.25 | |
| Overrun costs <20% of subtotal> | = | \$ | 196,122.45 | |
| | | | TOTAL | = \$1,176,734.70 |
| * these figures may vary due to transport of supplies to Alaska. | | | | |

Personnel

The personnel will come from the surroundings areas. The work boats needed for construction purposes and harvesting can come from the unemployed fisherman whose boats have been used for cleanup vessels. Other general personnel can come from the Alaskans of the Sound.

Feasibility

The feasibility of this proposal can not be expressed on the basis of the initial investment alone. The benefits that will come from this must also be examined.

It is not at all incomprehensible for the Federal government and the Exxon co. to produce a sum of money approximately equal to \$1.2 million. This is only a small price to pay to try to put something back into the environment.

Systems such as these have already produced profitable returns for the Chinese, Koreans and Japanese. A mariculture system in the U.S. needs to happen. It is an expanding field that has many things yet to be discovered.

CONCLUSION

This system would give back to the investors more they could ever put in. They will replenish the environment, create revenue and produce much needed data for similar crisis that may occur.

This is a better investment than our present day agriculture that are society is so accustomed to. Mariculture cost per unit drops as the time progresses whereas agriculture increases (see fig. 2.1). There is no reason why this system can not succeed without the proper attention and investment.

APPENDIX

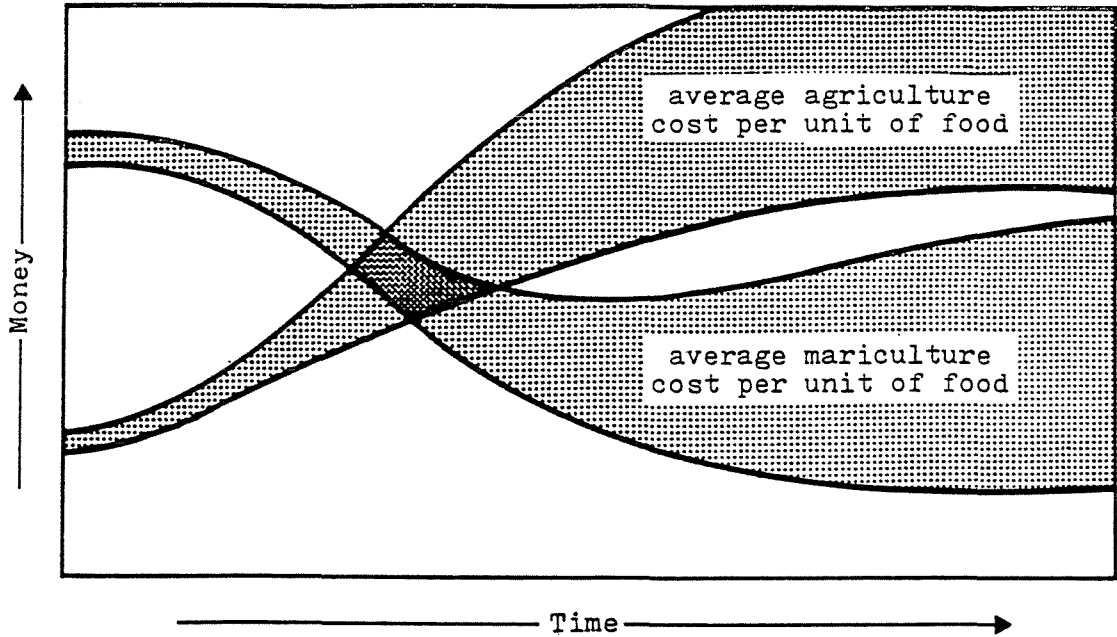


FIGURE 2.1 *Postulated dynamics of agriculture and mariculture costs. It is suggested that the costs of food derived from agriculture will continue to rise as land available for agriculture decreases with expanding populations and increasing industrialization, and as fossil-fuel power becomes more precious. If population levels off, costs of agriculturally derived food will still rise as a result of approaching fossil-fuel exhaustion and the accompanying necessity to convert to other, less economical, energy sources, sources of fertilizers, and means of pest control. It is also suggested that because of the arable space available mariculture costs, by comparison, can decline markedly if capital is directed toward developing the necessary technology—particularly with respect to utilization of conservative energy sources and waste recycling. Mariculture costs might rise subsequently with general inflation. But they might also continue to decline with technological refinements. The expanding width of the curves, of course, represents increasing uncertainty with time. Note that this graph is conceptual rather than quantitative and that its spatial relationships have been selected to illustrate the concept rather than to predict quantitative relationships.*

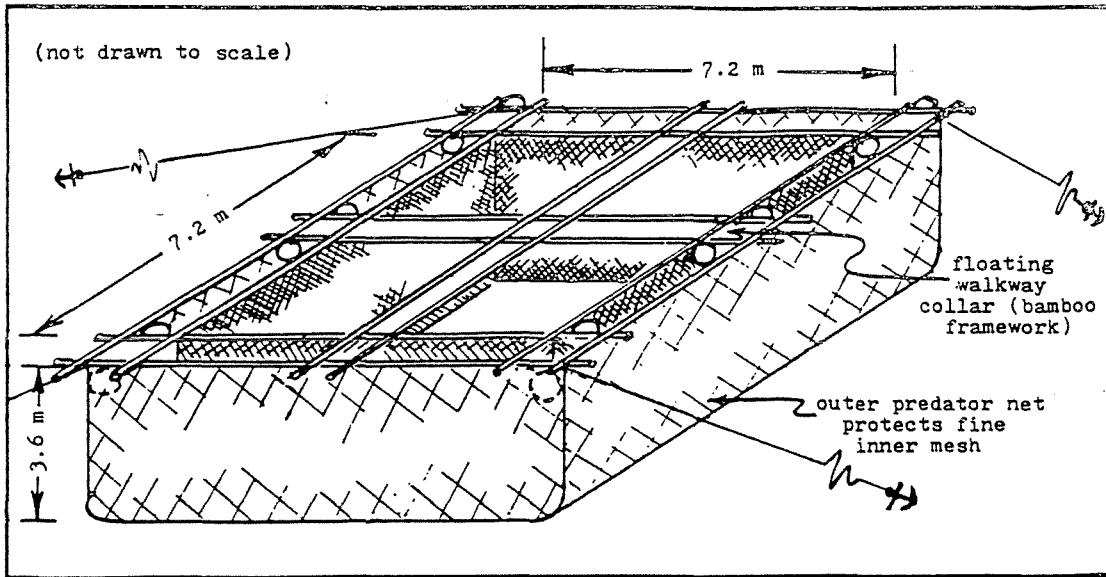


FIGURE 10.1 Double-layer net cage for unprotected waters. (Adapted from Milne [4].)

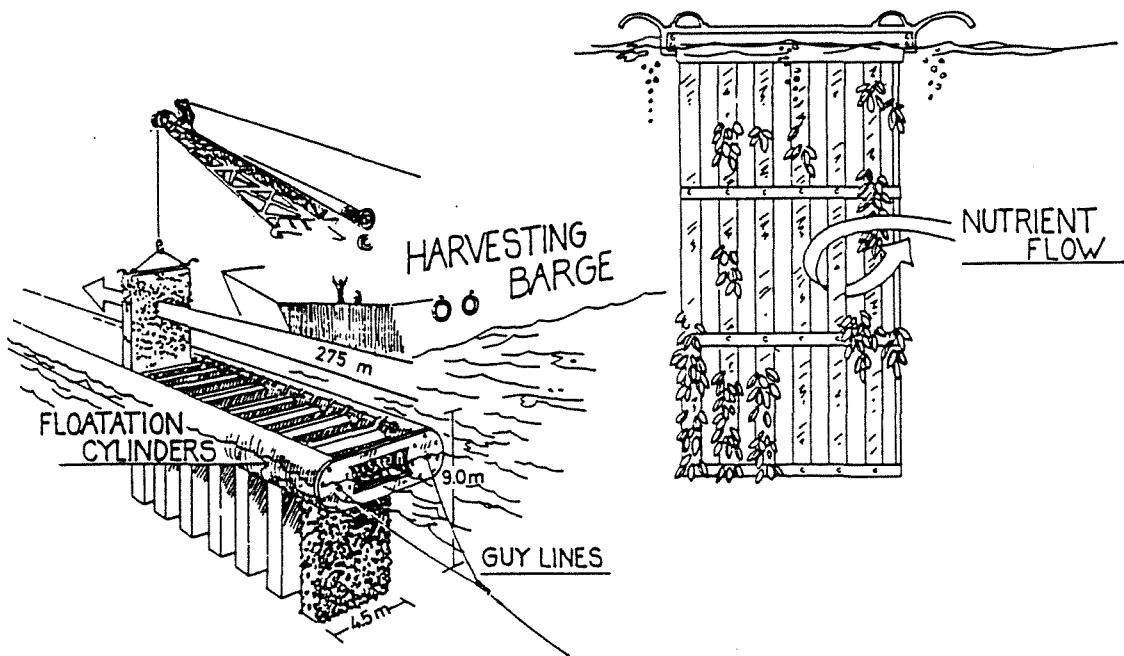


FIGURE 10.5 Conceptual drawing of an open sea oyster cloister.

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EDUCATION University of Maryland, College Park, Maryland
1986 - Obtaining a Bachelors of Science degree in Marine
Present Biology. College expenses have been covered by
scholarships and a part time job (25-30 hours
weekly).
1982-1986 Cardinal Gibbons High School, Baltimore, Maryland

EMPLOYMENT

1989-1990 Chi Chi's Restaurante, Cook, Greenbelt, Maryland
1989-1989 UPS, Trailer Mechanic, Landover, Maryland
1987-1989 Mullikin Trucking, Driver & Diver, Pasadena, Maryland
1985-1987 Wade Construction, Carpentry Foreman, Pasadena, Maryland

HONORS AND AWARDS National Honors Society Member 1986
Senatorial Scholarship Recipient 1986-1990
General State Scholarship recipient 1988-1990
Medal Winner - National Teachers
Association of Spanish and Portuguese 1984-1985
National Football Hall of Fame Scholar
Athlete 1986

OTHER Language- Fluent Spanish
Certified Diver- Openwater I and Openwater II
NAUI Certification Experienced Wreck
& Night Diver

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Dian RFWG
F

THIS FACSIMILE IS BEING SENT FROM:

The Coastal Coalition

Box 2424, Cordova, Alaska 99574
907-424-5509 FAX 907-424-5246

TO: Stan Semner

FROM: Rick Steiner

DATE: 8/6 TIME: _____

FACSIMILE PHONE DESTINATION: _____

PAGE 1 OF _____ PAGES

Stan - the proposal + some
letters -

I look forward to discussing
this with the Working Group -

Thanks for passing this
around to the rest of
the Working Group -

Talk to you soon.

Rick
SIGNATURE OF SENDER

The Coastal Coalition

Box 2424, Cordova, Alaska 99574
907-424-5509 FAX 907-424-5246

Dear Friends,

July 4, 1990

Enclosed is a "Draft Proposal for a Comprehensive Settlement of Natural Resource Damages from the 'Exxon-Valdez' Oil Spill" and an attached discussion paper on the "Acquisition of Timber Harvesting Rights for Restoration".

This document was developed in response to requests from commercial fishermen, Alaska Natives, environmental groups, tour operators, recreationalists, and biologists that we now join together to formulate a constructive resolution to this disaster. It is intended to serve as a catalyst for settling natural resource damages in a fair and expeditious manner. As such, it is being circulated for review to the private and public plaintiffs and the defendants in the case.

It is hoped that a consensus will emerge among the parties involved to proceed in negotiating and finalizing such a settlement this year.

The Coastal Coalition is an informal network of concerned citizens that formed in response to the spill in order to provide a constructive focus for citizen input. Presently, our goal is to help formulate a comprehensive settlement for natural resource damages that is agreeable to all parties. Such a settlement would side-step years of costly litigation, provide for environmental restoration, and allow all of us to get on with life.

Our intent with this inquiry is to plant the seed and get some indication of your interest in having such settlement negotiations proceed. Please let us hear from you as soon as possible concerning any comments you might have on the enclosed document, and whether or not you agree to it in principle. Your thoughts are very important to this process. It is our intent that any final agreement should be molded to accommodate the most broadly based constituency possible.

We will be in touch with you regarding a meeting with other public and private plaintiff's representatives to discuss all of this, probably sometime in early August.

Let's join together to put this thing behind us.

Sincerely,



Rick Steiner, The Coastal Coalition

DRAFT PROPOSAL

for a

COMPREHENSIVE SETTLEMENT OF NATURAL RESOURCE DAMAGES FROM THE "EXXON-VALDEZ" OIL SPILL

TO: State/Federal Trustees for Natural Resources Damages

FROM: THE COASTAL COALITION
July 1990

It has become evident that all parties, both plaintiffs and defendants, involved in litigation for natural resource damages arising from the Exxon-Valdez oil spill would be best served by reaching a comprehensive settlement as soon as possible. This realization is predicated upon several considerations.

First, even after years of exhaustive impact assessment research, it would remain difficult to arrive at any consensus concerning how to quantify the extent of damage or how to value the damaged resources (i.e., how much to collect in damages).

Secondly, research should be driven by fundamental scientific interest in the behavior and response of this ecosystem to such a perturbation—not by the need to collect evidence for litigation.

Thirdly, restoration of the impacted environment can and should commence immediately. In addition to direct restoration efforts, there is an immediate opportunity to protect, through acquisition, threatened habitat within the region.

And, finally, expensive, drawn-out litigation would only prolong and exacerbate the degree of psychological, social, and political impact of the spill. A settlement will provide a sense of resolution and relief from an otherwise quite protracted and tense process.

In light of such considerations, it is proposed that the Natural Resource Trustees seek immediate settlement of all natural resource damages. Such settlement should extinguish all criminal liability (i.e., the Federal indictments) and all civil liability for natural resource damages. This settlement should be carefully structured so as not to influence the case for compensatory damages.

We respectfully suggest that a comprehensive disposition of this case should collect \$2 billion to endow an Alaska Restoration Fund.

The Alaska Restoration Fund should be managed by a non-profit corporation governed by a court-approved Board of Directors, so that people from the impacted region can be directly involved in the management of the Fund, and thus their own future.

The Fund should support the following principle elements:

1. Direct Restoration

The Fund should be used to support direct, on-site efforts to restore or replace damaged resources to their pre-spill condition. This would include such things as supplementing injured salmon runs, reinnoculating areas with herring, breeding and release programs for damaged bird populations, reestablishing plants in injured salt marshes, and improving or protecting the habitat of other spill-impacted species.

2. Acquisition of Equivalent Resources

The Fund should purchase or otherwise protect resources that are similar or related to the injured resource in terms of ecological value, functions, or services provided. Priority should be given to the acquisition of certain development rights (e.g., timber, minerals, oil, etc.) in order to protect threatened habitat. An example of such acquisitions is presented in more detail in the attached discussion paper.

3. Research

The Fund should support a broad array of scientific research projects that address critical resource issues and fundamental scientific pursuits within the region. A comprehensive program of baseline and monitoring studies should be initiated with which to more precisely understand the effects of future such events on this ecosystem.

4. Education

A variety of natural resource education initiatives should be supported by the Fund. Particularly, a scholarship Fund should be established to support the education of residents from the region in natural resource science, management, economics, and conservation.

5. Sustainable Economic Development

The final goal of the Fund should be to design and implement economic development projects within the region that are compatible with the natural and cultural environment, and that are sustainable over the long-term. Inherent in this is a larger economic theme--that Restoration should, in some sense, assist the region in attaining long-term economic stability through sustainability. An important component of this should be the establishment of an Alaska Native Employment Fund.

Valuing the Case

It will always be difficult to establish the value of natural resource damages with precision in cases such as this. We suggest that the amount of \$2 billion would represent a fair and equitable disposition of natural resource damages in this case for several reasons.

First, this amount represents a workable approximation of what damages would come to if calculated as the average of damages derived by three principle economic valuation methodologies—Contingent Valuation, value of charismatic species, and public use value.

Secondly, \$2 billion is approximately the amount of money that will be needed to accomplish the various objectives of the Fund. It is envisioned that of the total amount collected, a portion would be expended immediately for acquisitions. The remaining balance would be maintained as a permanent endowment whose inflation-proofed interest income would support the other elements of the Fund. Such an endowment, providing substantial annual interest dividends, would provide stable support in perpetuity for these other restoration, research, education, and sustainable economic development initiatives.

Thirdly, the severity of impact adds considerable support for a settlement of this magnitude. For instance, it is theoretically possible that this ecosystem will never return to its pre-spill condition. Even small perturbations in natural systems are known to produce large, unpredictable and long-lasting consequences. It is possible that the impacted system will stabilize at an entirely different equilibrium than that existing before the spill. Additionally, it is probable that the population structure of certain long-lived, less fecund species will take several decades to return to pre-spill conditions.

And lastly, this amount of money is entirely proportionate to the value that could be assigned to the permanent loss of the pristine quality of this ecosystem. That the area is an aesthetic resource of global significance is attested to by the extraordinary amount of public attention paid to this spill throughout the world. In the same way that a rape victim can not be "un-raped," the lost pristine character of this region is, unfortunately, irreplaceable.

Thus, this settlement will afford the impacted environment a sufficient amount of care and protection; it will give science a better understanding of ecosystem dynamics; and it will provide the impacted communities more economic and educational opportunity as well as a sense of certainty in looking toward the future. It is, quite simply, the right thing to do.

ACQUISITION OF TIMBER HARVESTING RIGHTS FOR RESTORATION

- A Prerequisite for Recovery -

- I. Introduction
- II. Biological Characteristics of the Forest within the Region
- III. Justifications for Acquisition
 - A. Biological
 - B. Economic
 - C. Psychological
 - D. Socio-Political
- IV. Timber Ownership
 - A. Prince William Sound
 - B. Lower Kenai Peninsula
- V. Additional Considerations

by
Rick Steiner

THE COASTAL COALITION

P.O. Box 2424
Cordova, Alaska 99574

I. INTRODUCTION

As the clean-up of the Exxon-Valdez oil spill progresses toward completion, we must now decide what more can be done to aid the recovery of the impacted environment.

In the context of the Clean Water Act and the more extensive damage provisions of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as the Superfund, Federal law clearly directs that funds be collected from responsible parties to be used "to restore, replace, or acquire equivalent resources."

In the case of the Exxon-Valdez, in addition to what can be done in the way of direct restoration and replacement of damaged resources, the most practicable mechanism to compensate for natural resource damages is to offset this loss with a substantial "acquisition of equivalent resources." This entails purchasing or otherwise protecting resources that are similar or related to the injured resource in terms of ecological value, functions, or services provided.

The several hundred thousand acres of old growth forest along the coastline of the spill-impacted region, having been scheduled before the spill for logging, now represent an ideal opportunity to exercise this Restoration option. The following is an overview of the concept of acquisition and retirement of timber harvesting rights to protect the impacted ecosystem from any further deterioration. This discussion is meant to provide a basis for further development of the idea, and to serve as an example of how other such acquisitions might work.

Conceptually, before trying to treat anything that has been injured, we must first protect it from any further injury. In the spill-impacted zone, marine, freshwater, and terrestrial systems are tightly connected through biogeochemical cycles into a functionally interlocking ecosystem. Perturbations (i.e. injuries) in one component usually produce significant secondary effects in the others. What's more, compound injuries often operate synergistically—that is, their combined effect is much more than the sum of the two injuries occurring independently. And regardless of how carefully it is carried out, the planned removal of old-growth forests from several hundred thousand acres of the region's coastline cannot help but to have a profound effect on the ecosystem as a whole. The clearcutting proposed for the region would represent an ecological alteration unmatched since the glacial retreat at the end of the Pleistocene. It is widely felt that the scars from logging will be even more persistent than those of the oil spill. This sort of massive perturbation, superimposed upon the deleterious effects of the spill, is likely to produce significant biological, economic, psychological, and socio-political effects far beyond what either one might have caused alone. A consensus is now emerging among many fishermen, biologists, tour operators and other local residents that, while this ecosystem might have been able to recover from either one of these rather large impacts in isolation, their combination could so seriously weaken the health and integrity of the system that its ability to recover would be severely compromised.

CLEARLY, THE FIRST STEP TOWARD FULL RESTORATION AND RECOVERY IS TO PROTECT THE ENTIRE SYSTEM AS COMPLETELY AS POSSIBLE FROM ANY FURTHER SIGNIFICANT HUMAN-INDUCED DISTURBANCE. And, aside from the

threat of additional oil spills in the area, the most immediate threat to the integrity of this ecosystem appears to be the planned removal of over one billion board feet of old-growth timber throughout the coming decade. The acquisition of timber to protect undamaged but threatened wildlife habitat in the impacted region is considered by many to be the single highest priority for Restoration.

Biologically, timber acquisition would protect the terrestrial, freshwater, intertidal, and nearshore habitat of many populations impacted by the spill (e.g., sea otters, diving birds, salmon, herring, eagles, bear, deer, etc.). It would also prevent the diminution of the hydrocarbon metabolizing marine bacterial flora that depends upon natural hydrocarbons washing into nearshore waters from coastal forests. Economically, timber acquisition would maximize profits and minimize risk for timber owners, protect existing commercial and subsistence economies, protect the future of tourism and recreation in the region, and preserve other in-absentia values of the region. The acquisitions would also go a long way toward relieving an overwhelming sense of despair in the region's residents, and would clearly help mitigate other socio-political impacts of the spill.

It should be emphasized that before the spill, timber development represented a legitimate economic opportunity for the region. However, we must now reassess all prior development plans in terms of what is in the best interest of the impacted ecosystem.

Restoration without full protection would be as futile as applying band-aids on a victim with one hand while continuing to inflict serious wounds with the other. And, in a larger sense, Prince William Sound has come to symbolize a violated relationship between humanity and nature. The only way to regain this relationship is to protect the area as completely as possible. This is the least, and perhaps the most that we can now do. Without such protection, full recovery—biological, economic, psychological, and socio-political—will be impossible.

II. BIOLOGICAL CHARACTERISTICS OF THE FORESTS WITHIN THE REGION

These old-growth forests are stable biological communities that have developed over several centuries essentially free from catastrophic (including human) disturbance. They support a rich diversity of highly specialized and adapted organisms such as cavity nesting birds, canopy-dwelling animals, understory saprophytic plants, and epiphytic lichens. These undisturbed forests support two or three generations of dominant tree species, forming a highly partitioned, broken, multi-layered canopy. They are highly retentive of nutrients, both in living and dead organic matter, giving rise to significant detritus-based food webs. For example, small to medium sized streams depend almost entirely upon decaying forest litter as an energy base.

In addition to live spruce and hemlock, these forests are characterized by standing dead snags, and fallen logs on land and in streams. As such, they form a rather unique habitat for a large number of bird, mammal, fish and invertebrate species. With so much production high in their canopy, they provide ideal habitat for flying and climbing consumers, such as foliage-consuming insects, and insectivorous birds. Large snags are valuable as habitat for a variety of vertebrates (e.g. bald eagles) and invertebrates. Logs and bark slabs on the forest floor are important for small mammals that disperse seeds and fungi, for nitrogen-fixing bacteria, and as seed beds for trees and shrubs.

Fallen logs are also critical to the maintenance of the physical and biological stability of headwater streams. Debris dams, for instance, create stepped stream profiles that effectively dissipate energy that would otherwise go into transporting sediment, downcutting of stream channels and washouts. The associated pools and gravel beds provide a range of habitat requirements--temperature, shade, cover, current velocity, and oxygen - for a wide array of aquatic organisms.

The forests in the spill-impacted region are generally confined by steep mountain slopes to a relatively narrow band along shorelines. Three primary forest plant associations are found in the region:

1. The Sitka spruce series--occupies beachfront terraces and alluvial bottomlands. Common understory plants are blueberry, devil's club, skunk cabbage, lady fern, oak fern, and shield fern. Alder are dominant along streams.
2. The mountain hemlock series--found on lowland rolling hills, raised knolls in muskeg, and steep side slopes. Principal understory species on lowland hills are blueberry and devil's club; on raised knolls are copperbush, crowberry, bog blueberry, and deer cabbage; and on steep sideslopes are marten's cassiope, luetkea, shield fern, lady fern.
3. The western hemlock series--occupies some beachfront terraces and lowland rolling hills. It's understory consists of blueberry, rusty menziesii, devil's club, bunchberry, five-leaf bramble, and twisted stalk.

It is important to remember that the coastal forests of south central Alaska are rich, complex systems that produce more than just wood. They are important habitat for about one hundred species of birds, over 30 species of mammals, and several hundred species of invertebrates and plants.

III. JUSTIFICATIONS FOR ACQUISITION

A. Biological

There are seven principle biological arguments for using Restoration funds to retire timber harvesting rights in the region:

1. Protection of forest habitat for several spill-impacted species

Several of the bird and mammal species that depend to some extent on the old-growth forests in the region are known to have been impacted by the oil spill; (e.g. eagles, loons, murrelets, deer, bear, etc.). Removal of large tracts of this habitat through logging will only make it more difficult for these species to recover. (See #3 below)

2. Hydrological characteristics of watersheds

Regardless of how well buffer requirements are adhered to, the clearcutting planned for many steep sideslopes in the area would seriously alter the erosion, runoff, and sedimentation characteristics of entire watersheds. Watersheds disturbed by logging have dramatically altered hydrological characteristics. The removal of such large amounts of plant biomass, and

compaction of soils causes a dramatic reduction in the water-holding capacity of the area. This can affect the size and even timing of peak flows in nearby streams. This is evident where recent logging in Two Moon Bay has increased the frequency and magnitude of flooding, mudslides, soil erosion, and sediment loading in nearshore waters. Again, regardless of adherence to buffer requirements, percolation can still increase storm flow in streams, and the loss of forest shading will accelerate both the magnitude and timing of spring meltwater runoff. High storm flow can have devastating effects on salmon eggs and fry in streambed gravel.

Increased sedimentation of the intertidal and nearshore environments can be expected if upland forests are clearcut. These nearshore areas are critical habitat for outmigrant salmon smolts, herring spawning, clam and mussel production, and sea otter and bird feeding—all of which were impacted by the spill. Increased sedimentation of this environment could seriously reduce its biological productivity and habitability. Herring eggs and larvae, for instance, are very susceptible to reduced oxygen availability caused by increased sedimentation. Likewise, salmon fry migration and feeding can be affected by increased turbidity of nearshore waters. Also, any reduction in clam, mussel, or other invertebrate populations due to increased sedimentation from logging could have significant negative consequences for the recovery of sea otters, especially weanlings, and diving birds from oil spill impacts.

3. Habitat fragmentation

Logging causes a significant reduction in the most accessible, highest density timber stands, and as such, increases the fragmentation of old-growth habitat. Such habitat fragmentation is known to be a significant cause of reduced genetic variability within individual species. The theory of island biogeography substantiates the concern for reduced biodiversity caused by such habitat fragmentation. Because of their isolation from each other and resultant interruption in gene flow, habitat islands have been found to decline both in number of species present and genetic diversity. A reduction in genetic variability within certain populations of mammals, bird, and plant species would reduce the stability of that particular population, and the ecosystem as a whole. This means that the system would be much less capable of recovering from other perturbations such as insect pests, disease, earthquakes, etc.

It's important to realize that habitat fragmentation is a much more significant threat to the ecological stability of old-growth forests in this particular region because here, these forests constitute a smaller, patchier component of the entire ecosystem than do the forests in the Tongass, British Columbia, and the Pacific Northwest. Additionally, the high noise levels generated by logging operations expand the edge of habitat impacts far beyond the boundaries of the clearcut. Many mammals and birds will attempt to avoid such acoustic disturbance, and in so doing, be pushed further away from their preferred ranges and confined to progressively smaller refugia. Several forest species, such as deer, find it difficult to cross clearcuts, particularly during periods of heavy snow.

Wade

4. Regeneration

Because these forests are at the northernmost edge of their range, regeneration of critical habitat structure, composition, and functions in second growth forests is extremely slow. Such slow regeneration rates are due to short growing seasons, low solar irradiance, and soils with low fertility and poor structure due to comparatively recent glaciation. Soil fertility is further reduced by leaching of nutrients after logging. And, although there are a few isolated examples of clearcuts in the Sound that have regrown relatively densely within 50 years or so, these dense second-growth stands have been found to provide unsuitable habitat for many of the original bird, mammal, and plant species that inhabited the area before logging. With no snags, fallen logs, large live trees, or canopy heterogeneity for habitat, these second-growth areas are generally poor in species diversity.

5. Global significance

The forests in this region are unique globally in that they constitute the highest latitude temperate rain forests anywhere in the world. Temperate rain forests worldwide are rare and severely threatened ecosystems. In their original extent, they were distributed in 10 regions in the world covering an area of approximately 70 million acres; only 2-3% of the area of tropical rain forests. Four of the original areas in which they existed historically-- western Scotland, Ireland, a small area in the French Alps, and the southwest coast of Norway have been eliminated entirely.

In addition to the forest system extending from Kodiak to central Oregon, the only other significant stands left are found along the coasts of southern Chile, southern Australia, Tasmania, New Zealand, and Japan. It has been estimated that 60-80% of temperate rainforests worldwide have been logged in recent history.

For this reason alone, the forest in the spill zone should be conserved as a precious representative of disappearing temperate rainforest ecosystems worldwide.

6. The forest/marine bacteria/oil-spill connection

Oceanographers now believe that the large populations of hydrocarbon metabolizing bacteria that have been so important in degrading oil from man-made sources in the region (e.g., the Exxon-Valdez spill and the effluent from the ballast water treatment facility at the Alyeska Terminal) flourish precisely because of the continuous input of biogenic hydrocarbons from the coastal forest. Measurements of the hydrocarbon terpene dissolved in the canopy drip from spruce trees and in nearshore waters suggests that this is the primary energy source for naturally occurring hydrocarbon-oxidizing marine bacteria in the region. In this sense, the coniferous forest actually "immunizes" or prepares this marine system for oil spills. Removal of large tracts of these forests would, theoretically, reduce terpene input and thus the bacterial populations depending upon this

Citation - ?

input, causing the waters in the region to become less capable of self-cleansing or bioremediation.

7. Cumulative impact

And finally, all these biological effects need to be understood in the broader long-term ecosystem context. Many local residents and biologists have observed a gradual but continuous reduction of certain wildlife populations associated with increased human use of the region over the past 30 years. Superimposed upon this gradual deterioration in the environment of PWS, the Exxon-Valdez oil spill in 1989 threw the system into a profound state of disequilibrium. Shocking the system with yet one more massive human-induced perturbation--the destruction of vast areas of old-growth forest habitat--would likely produce such a destabilizing effect that the resiliency of the entire ecosystem will be depressed for many decades. Also, it must be remembered that despite how well we think we might understand a particular biological system, even small perturbations can have large and unpredictable consequences (i.e. Chaos Theory). Beyond any doubt, the health and vitality of this coastal ecosystem would be best served by preserving its existing flora and fauna intact, in full interaction.

B. Economic

The economic advantages of the acquisition of timber for Restoration purposes are quite straightforward:

1. Profit Maximization

The timber owners would simply make more money by selling their trees for Restoration purposes than by harvesting them. By having money from such a sale up front, the corporations and shareholders could enjoy perhaps 50% more profit over 10 years from reinvestment income. To begin realizing significant dividends from logging, they would probably have to wait several years. Such a windfall of profits would open up many other personal and corporate economic development options. Also, the owners would not incur the expense and risk of operation, and Native Corporations would not have to begin paying taxes on these tracts as developed lands.

2. Market risk minimization

Timber markets are extremely volatile. Though they are now relatively strong, they are subject to at least the same magnitude of reduction that they experienced in the mid 1980s. Purchasing this timber now will allow timber owners to avoid the substantial risk of softening markets in the future.

3. Protection of existing economy

Any potentially negative effect that logging might have on either commercial fisheries or on local subsistence economies would be avoided.

*how about
job loss?*

4. Recreation and tourism development

It is widely agreed that the development of recreational and tourism economic opportunities in this region would be seriously impeded by timber harvesting. The scenic/aesthetic value of the area would be reduced in proportion to the number of vistas containing at least one noticeable clearcut. And, because areas planned for logging are relatively steep, virtually all can be seen from afar. It is widely felt that, in addition to commercial fishing, the recreation and tourism industry offers the PWS/Kenai Peninsula area its best opportunity for sustainable economic development that is compatible with the local environment. What is already a multi-million dollar industry probably has, in the absence of timber development, the potential to triple in size over the next decade. Recreation and tourism would also provide more local jobs on a sustainable basis than would a short-lived timber industry.

5. Timber price support

weak
Because this acquisition would take a substantial amount of timber off the market, it is reasonable to expect timber prices elsewhere in the State to be enhanced somewhat.

6. Noncommercial economic value

And lastly, in the context of current economic theory (i.e., "Contingent Valuation") the actual economic value of a resource like the old-growth forests in this region is much more extensive than just its immediate commercial value. In addition to the commercial value of on-site recreation and timber harvesting, these forests offer many off-site, or "in-absentia" user values, including option, existence, and bequest value. Option value is essentially what people would pay to insure the availability of the forest system for future recreational opportunities. Existence value is the benefit derived from simply knowing that the forest exists. And bequest value is the willingness to pay for the economic benefits of saving forest resources for future generations. Timber harvesting could conflict with all nontimber values of these forests—subsistence, sport fishing and hunting, commercial fisheries, recreation, tourism, option, bequest, and existence value. And because the Restoration process should satisfy timber owners financially, it is clear that from a strict economic standpoint, it is in the highest public interest to preserve these forests. This acquisition would ensure a maximum flow of benefits to the greatest number of people.

C. Psychological

The psychological impact of the oil spill, has been, and will continue to be enormous. The pristine natural environment of the region comprises a powerful aspect of local residents' sense of identity, place, and purpose. Most of the people who make the region their home live here just because of its natural bounty, beauty, and wilderness quality. Native culture evolved within the fabric of forest and marine biological systems in the region. The area is, for many people, a sacred place.

Citation 7

The oil spill caused this sense of identity in local residents to rapidly disintegrate. Initial studies have clearly documented widespread perceptions of uncertainty about the future, deteriorating family relations, and Post Traumatic Stress Disorders in impacted communities. Even now, residents still feel a great deal of anger, remorse, and loss for what the spill did to their home. We must now allow these wounds to heal.

The most we can probably do to restore the psychological sense of well-being among local residents is to afford the impacted area as much protection as possible from further human insult. The psychological impact of clearcutting, superimposed upon that of the oil spill, would be devastating.

Prince William Sound has, in a very real sense, come to epitomize the plight of the Global environment. The phenomenal worldwide media attention given the area during the spill attests to the high degree of sympathetic identification felt by people throughout the world for such a spectacular pristine natural area essentially "lost" through corporate and governmental ineptitude. Many people, locally and elsewhere, express a sense of disbelief, indignation and even outrage that now, after perhaps the single greatest environmental disaster in our nation's history, humanity seems poised to inflict yet more environmental damage to the very same area through timber extraction, almost as if nothing had ever happened.

It is important to acknowledge that these are very real emotions and as such they must be addressed by the Restoration process. It should be a priority of the Restoration program to minimize any activity that might detract from an already damaged sense of psychological well-being throughout the region and the world. Another compelling reason, then, to retire timber harvesting rights in the region is to help restore the sense of solace and well-being that is so essential to the quality of life.

This acquisition would allow people to look forward with certainty to the full recovery of the natural environment, rather than despair over its continued degradation. This acquisition is absolutely essential for psychological recovery--without it, full recovery will be impossible.

D. Socio-Political

The oil spill has caused an overwhelming loss of faith in the institutions that manage our society.

The socio-political fallout from the spill has been characterized by bitterness and divisiveness within and between communities, anger toward the oil industry in Alaska and elsewhere, lack of confidence in government, and skepticism regarding economic development in general.

The social challenge for Restoration then, is to restore the cohesiveness within and between communities. Peoples within the impacted region now need a sense of solidarity, of being on the same side of an issue and of belonging to a joint enterprise together. It is now imperative to protect residents in the region from other highly divisive issues, such as logging.

The political impacts of this spill will undoubtedly reverberate through the halls of Juneau and Washington D.C., oil company board rooms, and the minds of voters for quite some time. If something powerful and persuasive isn't done to make amends for this environmental disaster, its dark shadow will continue to loom over such major public policy issues as ANWR, offshore oil leasing, and other important development proposals.

The public wants a clear sign that industry and government will make every effort to "right-their-wrongs." A positive outcome with the acquisitions set forth in this proposal would send a loud and clear message to people everywhere that corporate and political institutions can and do act responsibly--that they do indeed care about the natural environment. The public relations value of such an initiative would benefit the timber industry, Native corporations, government, and the oil industry.

?
evidence

It is increasingly evident that these acquisitions would be enormously popular throughout the nation, and would renew public confidence in our governmental and corporate institutions. Underlying such sentiment is the growing body of public opinion that old-growth rainforests worldwide are a precious, highly-threatened resource that deserve protection, and a greater sensitivity toward the environment in general, (e.g., "Earth Day, 1990").

In a very real sense then, this acquisition for Restoration has, for many, become the "canary in the mine shaft" concerning mankind's commitment to the environment. It's really quite simple--either we do care, or we don't. This will be the legacy we leave for future generations and should be pursued accordingly.

IV. TIMBER OWNERSHIP

The primary land owners in the region are the Federal government, Alaska Native Corporations, and, to a lesser extent, the State of Alaska. All own valuable tracts of old-growth forest. A decision to not allow timber harvesting on these public lands can be obtained simply through an administrative decision on the part of the U.S. Forest Service and the State of Alaska Department of Natural Resources. At this time, the Forest Service has no plans to sell or harvest any of the timber within the Chugach National Forest. The ADNR is considering classifying several of its isolated land parcels within the region for timber harvesting. The Trustees should seek a Memorandum of Understanding or other legally binding agreement from these two agencies that, in the interest of Restoration, they will not permit any timber harvest on their lands in and around the spill zone.

The more important challenge for Restoration will be to retire the timber harvesting rights on the several hundred thousand acres of lands owned by Alaska Native Corporations in the region. Timber on these private lands is considered to be a valuable financial asset and thus timber owners will have to be sufficiently compensated in exchange for an agreement to extinguish any and all harvesting rights. The approach here should be to make it financially advantageous for the timber owners/land owners to enter into such an agreement, by providing them as much money as they would have earned in profits by harvesting their timber. The two principle areas of concern for acquisition purposes are Prince William Sound and the lower Kenai Peninsula.

Prince William Sound

The Native Corporations with land holdings in Prince William Sound itself are as follows:

| | |
|---|---|
| Eyak Corporation PO Box 340 Cordova AK 99574 Phone: 424-7161 | 64,000 acres (Note: acreages here are approximate) |
| Tatitlek Corporation PO Box 650 Cordova AK 99574 Phone: 424-3777 | 65,000 acres |
| Chenega Corporation General Delivery Cordova AK 99574 Phone: 573-5118 | 76,000 acres |
| Chugach Alaska Corporation 3000 A Street, Suite 400 Anchorage AK 99503 Phone: 563-8866 | 57,000 acres in S.W. PWS |

*170,300,000
x 1.5

255,450,000*

Approximate total area proposed for timber acquisition
in Prince William Sound = 262,000 acres

Most of the timber on these lands has been sold, in connection with Net Operating Loss Sale provisions of federal tax laws, and is now owned by the following companies:

| | |
|---|--|
| Sherstone, Inc. PO Box 828 Cordova AK 99574 Phone: (907) 424-5524 | Owens timber on Eyak lands |
| Citifor, Inc. 7171 Columbia Center 701 Fifth Ave. Seattle WA 98104-7090 Phone: (206) 622-3770 | Owens some of the timber on Tatitlek lands between Fidalgo & Gravina |
| <i>Chugach subsidiary</i> Koncor Forest Products, Inc. 3501 Denali Anchorage AK 99503 Phone: (907) 562-3335 | (Timber Trading Company) owns timber on Chugach Corp. lands on Montague & Knight Islands and on Chenega lands |

Tatitlek Corporation still retains title to some of their timber, and Chugach Alaska Corporation has purchased timber on Tatitlek lands at Fish Bay in Pt. Fidalgo.

Lower Kenai Peninsula

Beyond PWS itself, three village corporations on the Kenai Peninsula have considerable land holdings with timber that should be considered for acquisition:

English Bay Corp.
PO Box 8058
English Bay via Homer
Homer AK 99603
Phone: (907) 281-2220

45,000 acres at southern tip of Kenai Peninsula and 22,000 acres within the Kenai Fjords National Park

$$\begin{array}{r}
 46,000 \text{ AC} = 111,000 \\
 = 72,150,000 \\
 \times 1.5 \\
 \hline
 108,225,000
 \end{array}$$

Port Graham Corp.
PO Box PGM
Pt. Graham AK 99603
Phone: (907) 284-2227

66,000 acres at southern tip of the Kenai and 55,000 acres also within the Kenai Fjords National Park

$$\begin{array}{r}
 +22,000 \text{ AC} = 77,000 \\
 = 50,050,000 \\
 \times 1.5 \\
 \hline
 75,075,000
 \end{array}$$

Seldovia Native Ass'n.
PO Box 185
Seldovia AK 99663
Phone: (907) 234-7625

23,000 acres within Kachemak Bay State Park across from Homer and 423 acres on Island Peninsula

$$\begin{array}{r}
 14,950,000 \\
 \times 1.5 \\
 \hline
 22,425,000
 \end{array}$$

Approximate total area proposed for timber acquisition on Lower Kenai Peninsula = 221,000 acres

211,000

$$\begin{array}{r}
 137,150,000 \\
 \times 1.5 \\
 \hline
 205,725,000
 \end{array}$$

These corporations have sold much of their timber, as in Prince William Sound, to the following companies.

Koncor Forest Products, Inc.
3501 Denali
Anchorage AK 99503
Phone: (907) 562-3335

(Timber Trading Company) owns the timber on Seldovia Native Ass'n. land holdings within Kachemak Bay State Park

Chugach Alaska Corporation
3000 A Street, Ste. 400
Anchorage AK 99503
Phone: (907) 563-8866

owns the timber at Windy Bay, on Pt. Graham lands

Kolon California, Inc.
c/o Ceretech International
515-16th Ave., Ste. 155
Bellevue WA 98004
Phone: (206) 455-4850

owns the timber on English Bay lands

This would also be the appropriate forum to consider purchasing timber and possibly certain other development rights from Native Corporations with lands along the coastline of the Kenai Fjords National Park. Together, the Port Graham and English Bay Village Corporations have selected approximately 77,000 acres of waterfront land surrounded by the Park. The Chugach Alaska Corporation will receive the subsurface rights. These selections are yet to be conveyed, pending negotiations with the U.S. Bureau of Land Management. The development of timber and minerals on these lands would seriously conflict with the quality of the area as a National Park. Thus, it should be a high priority for Restoration purposes to acquire at least the timber, and perhaps the mineral rights on these lands.

V. ADDITIONAL CONSIDERATIONS

1. Cost of Acquisitions

While it is difficult to estimate, the timber acquisitions outlined above would probably cost on the order of \$200-\$300 million. An independent timber appraisal should be conducted to determine fair market value of timber assets in the region. ✓

2. Urgency

Timber harvesting has already begun on three parcels within the region: one near Cordova, at Two Moon Bay near Tatitlek, and at Windy Bay on the lower Kenai. Several more areas are scheduled to begin cutting within a year.

Additionally, foreign timber buyers, who might be less sympathetic to selling timber assets for Restoration purposes, are reportedly very interested in purchases within the region.

If the Trustees decide to pursue timber acquisition, it should be done soon. ✓

3. Short Term Contracts

The timber owners generally have rights to the timber only over short-term (10-15 year) contracts. After these contracts expire, the timber rights revert to the land owners. Thus, in negotiating to retire timber harvesting rights in perpetuity, the land owners will also have to enter into any agreement between current timber owners and the Trustees. ✓

4. Lands selected but not conveyed

An additional aspect that has to be considered is Native Corporation lands in Prince William Sound that have been selected but not yet conveyed. Some of these contain timber that should be purchased in the context of Restoration. ✓

5. Individual Allotments

Funds should also be made available to Native shareholders with individual land allotments who might wish to sell their timber assets for Restoration purposes. ✓

6. Displaced jobs

A very legitimate concern exists over the jobs, particularly of Native shareholders, that would be displaced by this acquisition for Restoration. This concern is addressed by the Sustainable Economic Development section of the proposed comprehensive settlement. An "Alaska Native Employment Fund" should be established to provide on the order of \$5 million annually to be used to employ shareholders in jobs that, as determined by themselves, are sustainable and compatible with their cultural heritage and local environment.

7. Seward Sawmill

Withdrawing these forests from timber production will reduce the flow of raw logs to the newly constructed Chugach sawmill in Seward. Clearly, the Chugach Corporation deserves compensation for this loss. Either a genuine offer should be made for an outright purchase of the mill, or some other subsidy/settlement must be offered.

8. Protection of Native Sovereignty

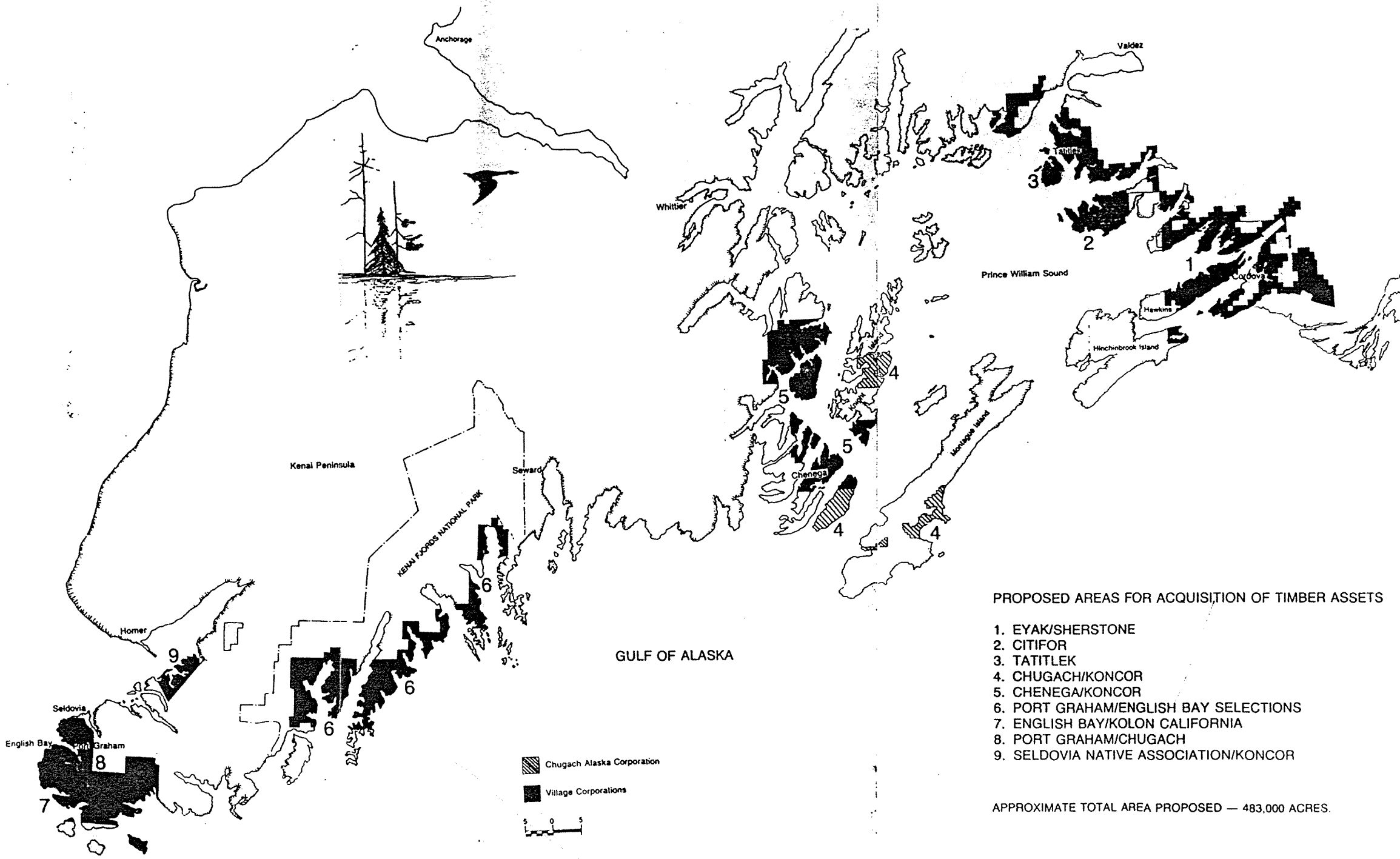
One of the most important considerations for this initiative is to protect the right to self-determination of local Native people. As the principle private land owners in the region, they have the most at stake relative to this issue. It is essential that all the shareholders of each Native corporation in the region be fully informed concerning their options here, and that they come to some agreement among themselves as to what is in their own long-term interest. Presently, some shareholders support timber acquisition for Restoration, others oppose it.

It is incumbent upon the Restoration planning process to provide the corporations and their shareholders with an objective assessment of the implications of supporting or opposing such acquisitions.

IT IS ESSENTIAL THAT THE TRUSTEES REMAIN SENSITIVE TO THE DESIRES OF NATIVE SHAREHOLDERS ON THIS ISSUE, AND PURSUE ACQUISITIONS ONLY WITH THOSE CORPORATIONS THAT SUPPORT THE CONCEPT.

It should be recognized that, before the spill, timber development plans represented sincere and genuine commitment on the part of corporation managers to provide economic opportunity for their shareholders. Acquisitions for Restoration should be presented as a unique opportunity to redirect such development plans in light of the spill.

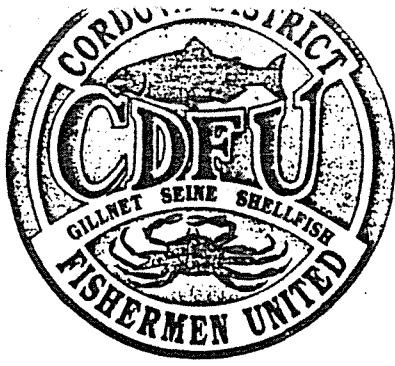
what does this mean?



PROPOSED AREAS FOR ACQUISITION OF TIMBER ASSETS

- 1. EYAK/SHERSTONE
- 2. CITIFOR
- 3. TATITLEK
- 4. CHUGACH/KONCOR
- 5. CHENEGA/KONCOR
- 6. PORT GRAHAM/ENGLISH BAY SELECTIONS
- 7. ENGLISH BAY/KOLON CALIFORNIA
- 8. PORT GRAHAM/CHUGACH
- 9. SELDOVIA NATIVE ASSOCIATION/KONCOR

APPROXIMATE TOTAL AREA PROPOSED — 483,000 ACRES.



CORDOVA DISTRICT FISHERMEN UNITED

P.O. Box 939

Cordova, Alaska 99574

(907) 424-3447

July 23, 1990

Don Collinsworth, Commissioner
Department of Fish and Game
P.O. Box 20792
Juneau, AK 99802

Dear Commissioner Collinsworth:

CDFU is an organization with a membership of 500, which consists of Commercial Fishermen, tendermen, crewmen and supporting businesses.

Prince William Sound has gone through a great deal of devastation after the Exxon Valdez Oil Spill and Exxon is still cleaning beaches to this day. After all this human disturbance, we are finally done with everything that man can do. At this point in time PWS needs a much earned rest to regain its natural beauty and bountiful environment.

We strongly urge you to negotiate an immediate settlement of natural resources damages from the Exxon Valdez Oil Spill, as suggested by the Coastal Coalition proposal. CDFU believes that it is essential to settle this sooner rather than later.

For now, the exact amount of dollars to resolve these damages should be left aside, and all parties should agree initially to sit down and begin formulating a settlement.

It is, of course, very important that this Natural Resource settlement not influence the compensatory claims of our fishermen for loss of income, etc. This should be very easy to structure into the settlement.

We also believe strongly that the highest priority use of restoration funds is to protect this ecosystem as completely as possible from any further damage.

Money should be made available immediately to acquire timber harvesting rights in and around the entire spill impacted zone. This is essential to protect PWS for not only its resource users, the commercial fishermen, but for all people that have not yet seen or experienced PWS's beauty and wonders.

Sincerely,

Gerald McCune, Board President

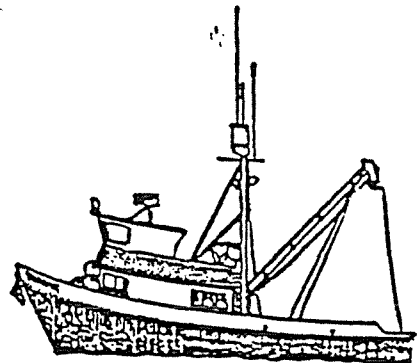
CC: The Coastal Coalition
Box 2424
Cordova, AK 99574

Prince William Sound Seiners Association

P.O. Box 458
Cordova, Alaska 99574
(907)424-5777

Floyd Hutchens, President

FAX (907)424-5837



June 12, 1990

Don Collinsworth, Commissioner
Alaska Department on Fish & Game
P.O. Box 3-2000
Juneau, AK 99802-2000

Dear Commissioner,

The PWSSA represents over 100 commercial fishermen in PWS. As such, we have a vital interest in the restoration of PWS in the wake of the Exxon Valdez. We are writing to you today with regard to your position on the Trustees' Council. We fully support the Coastal Coalition position that there can be no higher use of restoration funds for PWS than to purchase back timber rights to private land in PWS and prevent the wholesale clearcutting of our shorelines.

Most of our members have spent the last year helping in the cleanup of the oil spill, in one way or another, and know first-hand the devastation PWS has suffered. We also know, from experience, the futility of attempting to set right this great wrong. The best we can do is to make sure that nature be allowed to heal the wound without further interference. Large scale logging operations will further weaken the already overstressed ecosystems of PWS. Clearly, the best means we have to restore PWS is to halt any further destruction of this fragile environment.

We urge you to give the Coastal Coalition your active support in attempting to halt the massive clearcutting of PWS.

Sincerely,

A handwritten signature in cursive script that reads "Floyd J. Hutchens Jr." The signature is fluid and somewhat stylized, with the first letters of each word being capitalized and prominent.

Floyd J. Hutchens Jr., Pres.

cc: Oil Spill Restoration Planning Office

SELDOVIA NATIVE ASSOCIATION, INC.

P.O. DRAWER L

SELDOVIA, ALASKA 99663

(907) 234-7625 • 234-7890

July 6, 1990

Rick Steiner
The Coastal Coalition
Box 2424
Cordova, Ak 99574

Dear Rick:

Thank you for your fax this date .It was good to talk to you on the phone personally.

The Seldovia Native Association is one of the Alaska villages affected by the Exxon Oil Spill. As is such we are always interested in ideas, that will help alieviate these damages. I believe the concept of the industry, acquiring timber and land for public purposes may be one of the better plans that I have heard of. We do agree that if this happens, the costs of such a plan should be deducted from any litigation between the Corporation and Exxon.

I will be gone for the next few weeks and plan to be in this office the first week of August.

Sincerely,



Fred H. Elvsaas, President
SELDOVIA NATIVE ASSOCIATION, INC.

FHE/db

Timber Trading Company

July 20, 1990

Mr. Rick Steiner
The Coastal Coalition
Box 2424
Cordova, Alaska 99574

Dear Mr. Steiner:

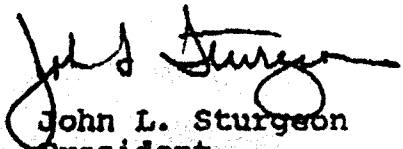
Timber Trading Company has purchased the private timber on Montague and Knight Islands. We have secured the needed permits and are in the process of starting up our harvesting operations. The actual harvesting is scheduled to begin next year.

Timber Trading Company would be interested in entertaining a bid to purchase this timber at fair market value. We are currently involved in negotiations to sell or trade other timber holdings that are considered by the government to be environmentally sensitive. These efforts have been very lengthy and frustrating. The timber has great value now since markets are the best they have ever been. This has given the timber a high price tag which they have been reluctant to accept. With the high frustration level we are currently experiencing with these trades we are less than enthusiastic about becoming involved in yet another.

I would suggest that when you have a firm offer in hand we set up a meeting to discuss. Securing an offer would involve the contracting of a forestry consultant to both cruise and appraise the timber. We would assist you with the base information the consultant would need, such as the timber sale boundaries and harvesting conditions.

I wish you the best in your efforts.

Sincerely,



John L. Sturgeon
President
Timber Trading Company

JLS/jes

Main Office: 3501 Denali, Suite 202
Anchorage, Alaska 99503
(907) 562-3335 FAX (907) 562-0599

Marketing Div.: Transpacific Trade Center, Suite 410
3700 Pacific Highway East
Tacoma, Washington 98424
(206) 922-5510 FAX (206) 922-8044



P.O. Box 1297
Valdez, AK 99686
(907) 835-4731
1-800-478-1297 (in Alaska only)
FAX: (907) 835-3765

Marketing Office:
1100 W. Barnette St
Suite 206
Fairbanks, AK 99701
(907) 456-3459
FAX: (907) 452-3156

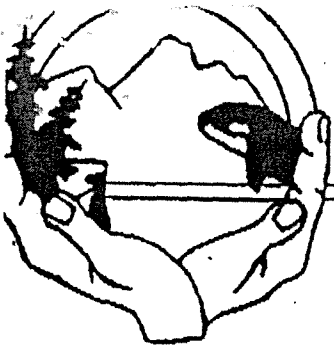
Dear Rich;

Just a quick note:

Your proposal did an excellent job of putting together a solution that would save a lot of time and money and still allow us to protect the Sound.

I support your position, I think it could quickly settle and relieve us of fighting for years. We need to get on with reclamation, get rid of the Coast Guard and Exxon and take charge of our own destiny in the Sound. Exxon can never pay us for the damage done but this proposal is a solution that will help us to get on with the job. Thanks for being there and continue the good work.

Stan



Oil Reform Alliance



To: State/Federal Trustees for Natural Resources Damages

From: Riki Ott, President
Oil Reform Alliance

Date: July 27, 1990

Re: Coastal Coalition Proposal for Comprehensive
Settlement of Natural Resource Damages from
the Exxon Valdez Oil Spill

The Oil Reform Alliance (ORA) formed after the Exxon Valdez spill as a grassroots coalition of citizens and member groups (commercial fishing organizations, environmental organizations, and recreational user groups - membership attached) who are working towards reforming oil industry practices and state and federal policies on oil. This includes policies and precedents for mitigation of spills.

The ORA strongly supports the proposal drafted by Rick Steiner of the Coastal Coalition for a comprehensive settlement of natural resource damages from the Exxon Valdez spill.

We wish to emphasize the following three salient points of the proposal.

First, we need a settlement as soon as possible. The settlement would circumvent protracted litigation over hard-to-quantify damage of natural resources and allow restoration and protection of resources in spill-impacted areas to proceed immediately.

Second, the highest priority for any restoration funds is to protect the ecosystem from further damage. As Mr. Steiner eloquently pointed out, proposed timber harvests in the spill-impacted area could well be more devastating to the ecosystem than the oil spill while the synergistic effects of these two insults may result in irreparable damage to the natural resources and the communities that depend on them for subsistence and commercial interests. We need adequate funds for acquiring conservations easements and timber rights and accomplishing the other proposal objectives.

Third, we need local input and control over disbursement of restoration funds. This is an absolute MUST and the input/control must include citizens. Use of the fund to expand local, state, and federal bureaucracy must be minimized. Citizens have the most drive to protect their own backyard - and lowest overhead to accomplish the objectives! Including citizens in this process would enhance awareness at the local levels and, hopefully, rebuild citizen's trust in corporate and political institutions' ability and sincerity to protect natural resources.

In summary, the ORA strongly supports the establishment of a two billion dollar Alaska Restoration Fund to accomplish the five principle elements of the Coastal Coalition proposal.