U.S. Department
of Homeland Security

**United States
Coast Guard**

Director
United States Coast Guard
National Pollution Funds Center

Natural Resource Damage (NRD)
Claims Division
4200 Wilson Blvd.
Suite 1000
Arlington, VA 22203-1804
Staff Symbol: (CN)
Phone: 202-493-6723
E-mail: Scott.D.Knoche@uscg.mil

5890

September 29, 2008

CERTIFIED MAIL – RETURN RECEIPT REQUESTED
Number: 7005 3110 0000 5238 3817

Susan Moore, Field Supervisor
United States Department of Interior
Sacramento Fish and Wildlife Office
2800 Cottage Way W-2605
Sacramento, CA 95825

Re: Claim Number: **A02005-OI2**

Dear Ms. Moore:

The National Pollution Funds Center (NPFC) has reviewed the claim prepared by the U.S. Fish and Wildlife Service (FWS), National Park Service (NPS), National Oceanic and Atmospheric Administration (NOAA), and California Department of Fish and Game (CDFG) for natural resource damages (NRD) resulting from the sunken *S.S. Jacob Luckenbach* (hereinafter *Luckenbach*) and other unknown sources (Claim Number A02005-OI2). We have determined $3,853,092 in NRD costs are compensable at this time. This includes $621,309 for past assessment costs, $462,568 for trustee council administrative costs, and $2,769,215 to implement the following restoration projects:

1. Protection of Nesting Habitat at Kokechik Flats, Alaska;
2. Sea Otter Pathogens Education and Outreach;
3. Reading Rock Murre Colony Restoration;
4. Protection of Grebe Nesting Colonies at Northern California Lakes; and
5. Nesting Habitat Restoration at Ano Nuevo Island.

The NPFC is issuing this partial determination to enable implementation of those projects for which our evaluation has been completed, while we continue to adjudicate the remaining portions of the claim. Our partial determination was made in accordance with the requirements of the Oil Pollution Act of 1990 (OPA) (33 U.S.C. 2701 *et seq.*), including provisions for determining claimant eligibility and jurisdiction, and adherence

to the natural resource damage assessment (NRDA) regulations at 15 CFR 990. The basis for our decision follows.

Summary of Claim

On July 14, 1953, the 469-foot freighter *Luckenbach* collided with another vessel and sank in the Gulf of the Farallones. As the vessel decayed on the ocean floor, it became the source of numerous oil spills. Major oiling events, later linked to the *Luckenbach*, were documented since 1973-1974. These events typically followed winter storms, and resulted in tarballs and oiled birds washing ashore. For example, about 800 dead oiled birds were recovered following the 1998 oiling events (known as the Point Reyes Tarball Incident). The United States Coast Guard (USCG) documented tarballs on Drakes Beach in June 1998, and wildlife recovery related to this event included 1400 dead oiled birds and 800 live oiled birds. In October 1998, approximately 200 five to fifty-pound tarballs were discovered near Sharp Park Beach. In April 2001, the USCG reported that eight to ten miles of Drakes and Limantour Beaches were impacted by tarballs.

In January 2002, USCG and state officials linked many of the periodic mystery spills and chronic oiling events to the *Luckenbach*. In the summer of 2002, the USCG, using about $20 million from the OSLTF, removed about 100,000 gallons of oil from the sunken vessel. Following oil response operations, the vessel was sealed to prevent oil remaining in the different vessel compartments from leaking. It is estimated that over 300,000 gallons of oil were released from the *Luckenbach* over time.

CDFG, USFWS, NPS, and NOAA conducted a NRDA to determine the nature and extent of losses resulting from these spills and the type and scale of restoration necessary to compensate for the natural resource losses. In total, the trustees estimated that over 50,000 birds representing more than 50 species and 8 Sea Otters were injured. After considering a range of restoration alternatives, the trustees selected 14 restoration projects to compensate for these losses.

On December 4, 2006, the NPFC received a NRD claim from the USFWS. The claim amount totaled $25,514,774, representing $502,736 of past assessment costs and $25,012,038 to implement the 14 restoration projects. The claimed amount to implement the restoration projects also included 15 percent contingency request for each project. On September 4, 2007, the NPFC received a revised NRD claim from the USFWS. This revised claim totaled $24,748,525, which included a revised estimate of restoration project implementation costs of $24,127,216 and a revised assessment cost component of $621,309.

The restoration projects proposed in the trustees' claim were scaled to compensate for injuries occurring after August 18, 1990 (the enactment of OPA) through December 2003. Injuries are attributed to the chronic releases of oil from the *Luckenbach* and, to a much lesser extent, other "mystery spills". These analyses show that about 90 percent of the bird mortality is attributable to the *Luckenbach*, 10 percent to "mystery spills", and less than 0.1 percent of bird mortality is attributable to natural seepage of Monterey Formation oil. While injuries from natural seeps are not compensable, the portion of total

injury resulting from natural sources is too small to affect the type and scale of restoration.

Table 1: Estimated Bird Mortality and Oil Sampling Results from Three Major Spill Periods

Period	Estimated Total Mortality[1]	# of Oil Samples	Luckenbach		Monterey Formation		Other Source ("mystery" spill(s))	
			Oil Sample Match	Estimated Mortality	Oil Sample Match	Estimated Mortality	Oil Sample Match	Estimated Mortality
Winter 1992-1993	47	16	81%	38	13%	6	6%	3
Winter 1997-1998	38,562	67	93%	35,863	0%	0	7%	2,699
2001-2003	9,214	60	78%	7,182	0%	0	22%	2,032
Chronic Oiling 1993-2001	205	94	27%	55	14%	29	59%	121
Total	**48,028**	**237**	**62%** [2]	**43,138 (90%)**	**6%**[2]	**35 (<0.1%)**	**32%** [2]	**4,855 (10%)**

Claimant Eligibility

Pursuant to 33 CFR 136.207, natural resource trustees may present claims to the Oil Spill Liability Trust Fund (OLSTF) for uncompensated NRD and the reasonable cost of assessing those damages. Natural resource trustees are designated according to Section 1006(b) of OPA (33 U.S.C. 2706 (b)); specifically, Federal trustees are designated by the President and state trustees by their respective Governors. This claim for NRD resulting from the *Luckenbach* and other mystery oil spills was submitted jointly by the FWS, NPS, NOAA, and CDFG. The FWS and NPS, under the authority of the Secretary of the Interior, and NOAA, under the authority of the Secretary of Commerce, are appropriate Federal natural resource trustees pursuant to the President's designation of Federal trustees under OPA, Executive Order 12777 (56 Fed. Reg. 54757, October 22, 1991), and Subpart G of the National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR 300.600). The CDFG is also an appropriate state natural resource trustee based on delegation letters on file at the NPFC[3].

[1] See DARP Appendix B for a breakdown of the mortality estimates by species.

[2] This total estimated percentage of oil match to source is based on a non-random sample of oiled feather analyses. For the estimated mortality attributable to each source see the figure in parentheses in the Estimated Mortality column.

[3] Letters dated October 5, 2007, from California Governor Swarzenegger designating the Secretary of Resources as California's natural resource trustee and letter dated November 15, 2007 from Secretary of Resources Mike Crisman delegating to the Director of the CDFG the authority to act as the natural resource trustee for the purposes of section 1006(b)(3) of OPA.

Because the *Luckenbach* sank almost fifty years before it was discovered to be leaking oil, there were no viable responsible parties for NPFC to designate.

Claimant's Burden of Proof

The trustees bear the burden of proving their entitlement to the amount claimed for compensation of NRD (33 CFR 136.105). Trustees may be assisted by the rebuttable presumption found at 33 USC 2706 (e)(2) and 15 CFR 990.13 when meeting their burden.

Under OPA's rebuttable presumption, trustee determinations made in accordance with 15 CFR 990 are initially presumed correct. However, where trustees use procedures that fail to comply with 15 CFR Part 990, the presumption of correctness will not apply to the non-compliant portions of the assessment. See Natural Resource Damage Assessments, 61 Fed. Reg. 440, 443 (January 5, 1996). Once the trustees establish that the presumption applies, responsible parties have the burdens of presenting alternative evidence and of persuading the fact finder that the determinations were incorrect. Although determinations made in compliance with 15 CFR 990 will initially be presumed correct, the presumption of correctness may be rebutted. If the rebuttal evidence is of sufficient weight, the NPFC may request that the trustees supplement their administrative record or claim with additional clarifying information and, ultimately, may deny the claim in whole or part.

Claim Presentation

This natural resource damage claim was submitted to the NPFC by the FWS, acting as the Lead Administrative Trustee (LAT). It included a cover letter and Administrative Record documents, including the final Damage Assessment and Restoration Plan/Environmental Assessment (DARP), and documentation of claim components and associated costs. This claim meets the general requirements for a claim as set out in the NPFC claims regulations (33 CFR 136.105).

Claims submitted under OPA must be based on the reasonable cost of assessing NRD and implementing a plan for restoration, rehabilitation, replacement, or acquisition of the equivalent of the natural resources damaged (15 CFR 136.207). Claimants have three years from the date of reasonable discovery of injury or the completion of the NRDA pursuant to the NRDA regulations, whichever is later (33 U.S.C. 2713(h)(2) and 2717(f)(1), 33 CFR 136.101, 15 CFR 990.64(b)). The last step in a NRDA is the development of the final DARP, which the trustees completed and released to the public on November 1, 2006. The NPFC received this claim on November 30, 2006, less than three years from the date the NRDA was completed. The claim was, therefore, prepared pursuant to a plan and presented within the statute of limitations set out in both the NPFC claims regulations and NRDA regulations as cited above.

Adherence to NRDA Regulations

The trustees have certified that they conducted the *Luckenbach* NRDA and developed the DARP in accordance with the applicable provisions of the NRDA regulations at 15 CFR 990. The NPFC, in addition to ensuring compliance with OPA, reviewed the claim to determine whether the DARP was developed in accordance with the NRDA regulations at 15 CFR 990. Specifically, the claim was reviewed to ensure that the following activities were conducted:

1. Determination of jurisdiction (15 CFR 990.41);
2. Determination to conduct restoration planning (15 CFR 990.42);
3. Publication of a Notice of Intent to Conduct Restoration Planning (15 CFR 990.44);
4. Opening of an Administrative Record (15 CFR 990.45);
5. Determination and quantification of injuries (15 CFR 990.51-990.52)/assessment methodology (15 CFR 990.27);
6. Range of feasible restoration alternatives was identified (15 CFR 990.53, except 990.53(d)), a preferred alternative was selected (15 CFR 990.54), and costs were reasonable (33 USC Sec. 2706 (d)(1), 15 CFR 990.30, 33 CFR 136.211).
7. Draft and final Restoration Plans developed (15 CFR 990.55); and
8. Coordination with trustees and the public (15 CFR 990.14).

1. *Determination of Jurisdiction*

Upon learning of an incident, trustees must determine whether they have jurisdiction to pursue restoration under OPA (15 CFR 990.41). To make a positive determination, the trustees must find that: (1) an OPA incident, as defined at 15 CFR 990.30, has occurred; (2) the incident was not a permitted discharge, from a public vessel, or from an onshore facility subject to the Trans-Alaska Pipeline Authority Act (43 USC 1651, *et seq.*); and (3) natural resources under their trusteeship may have been, or may be, injured as a result of the incident.

On January 6, 2004, the trustees published two Federal Register Notices[4] stating their intent to conduct restoration planning under OPA and providing the basis for their determination of jurisdiction. These Notices and other supporting information (*e.g.*, USCG Pollution Reports (POLREPS)) describe the response to the periodic oiling events that occurred off the coast of central California.

The NPFC finds that the discharges that occurred after OPA's date of enactment (August 18, 1990) from the *Luckenbach* wreck are an OPA vessel incident for which the trustees have jurisdiction. Likewise, the NPFC finds that the mystery spills constitute incidents as defined by OPA. The facts do not otherwise indicate when the mystery spill discharges commenced, so the dates of discovery are the effective dates of these incidents. The information presented in the Notices and other supporting information appropriately supports the trustees' determination that there is jurisdiction to pursue restoration and complies with the requirements of 15 CFR 990.41.

[4] Federal Register Vol. 69, No. 3, pages 672-673 and 673-675, January 6, 2004.

2. Determination to Conduct Restoration Planning

If the trustees determine that there is jurisdiction to pursue restoration, they must next determine that: (1) injuries have resulted, or are likely to result, from the incident; (2) response actions have not adequately addressed the injuries; and (3) feasible primary and/or compensatory restoration actions exist to address the potential injuries (15 CFR 990.42).

The Federal Register Notices published by the trustees state that their determination to conduct restoration planning was based on preassessment studies and data collection regarding potential injuries to seabirds and other natural resources. The trustees identified specific injuries to birds that were observed during the oiling events, with forensic analyses indicating that the oil on recovered dead birds was from the *Luckenbach* and other unknown anthropogenic sources. In addition, while response actions removed oil from the shoreline and sunken vessel, these actions did not restore or rehabilitate natural resource injuries resulting from this incident. The trustees also identify in the Federal Register Notices feasible restoration actions that exist to address the potential injuries.

Based on the information provided by the trustees, the NPFC has determined that the trustees' determination to conduct restoration planning was appropriate, and complies with 15 CFR 990.42.

3. *Notice of Intent to Conduct Restoration Planning*

Once the trustees determine that they have met conditions to proceed with NRDA, they must prepare a Notice of Intent (NOI) to Conduct Restoration Planning (15 CFR 990.44). The trustees published two Notices in the Federal Register on January 6, 2004 which detailed the trustees' determination of jurisdiction (15 CFR 990.41) and their determination to conduct restoration planning (15 CFR 990.42). The Notices included discussion of the facts of the incident, the natural resources and/or services likely to have been injured as a result of the incident, and the potential restoration actions relevant to the expected injuries. The NPFC finds that the NOIs published by the trustees complied with the requirements specified at 15 CFR 990.44.

4. *Administrative Record*

Concurrently with the publication of the NOI, the trustees must open a publicly available Administrative Record (AR) to document the basis for their restoration decisions (15 CFR 990.45). The opening of the AR for this incident and its public availability was announced in the two NOIs to Conduct Restoration Planning. The trustees maintained records documenting the information they considered as they planned and implemented assessment activities and addressed restoration and compensation issues. The trustees submitted the AR to the NPFC in support of this claim, and have made it available for public review at: California Department of Fish and Game, Office of Spill Prevention and Response, 1700 K Street, Suite 250, Sacramento, CA 95814. The NPFC finds these actions by the trustees satisfy the requirements of 15 CFR 990.45.

5. *Determination and Quantification of Injuries / Assessment Methodology*

Under 15 CFR 990.51 and 990.52, trustees must determine that injuries to natural resources and/or services, as defined in 15 CFR 990.30, have resulted from the incident, that the injured resources have been exposed to the discharged oil, and that a pathway can be established from the discharged oil to the exposed natural resources (15 CFR 990.51(d)). The NRDA regulations (15 CFR 990.27) established standards for assessment procedures, including that the procedures must be reliable and valid, be capable of providing information of use in determining the type and scale of restoration appropriate for a particular injury, and if a range of assessment procedures providing the same type and quantity of information is available, the most cost-effective procedures must be used. Also, under 15 CFR 990.53(d), trustees must determine the scale of restoration actions that will make the public and the environment whole. When determining the scale of restoration actions, the trustees must consider the use of resource-to-resource or service-to-service restoration (15 CFR 990.53(d)(2)), and evaluate the uncertainties associated with the projected consequences of the restoration action, including the discounting of all service quantities/values (15 CFR 990.53(d)(4)).

The DARP prepared by the trustees for the *Luckenbach* vessel incident and other "mystery" spills describes injuries resulting from multiple releases of oil. The link and pathway to the *Luckenbach* are documented through fingerprint analyses matching the source oil with oil on recovered wildlife. Approximately 90 percent of the samples from oiled wildlife matched the *Luckenbach* source oil; 10 percent were from unknown sources; and 0.1 percent matched oil from natural seeps of the Monterey Formation. While injuries from natural seep oil are not compensable under OPA, the contribution of natural seep oil to the overall injury is too small to affect the overall restoration requirement.

The trustees used the Beached Bird Model (Ford et al. 1987[5], 1996[6]) and the OSRISK Trajectory Model to estimate total direct mortality resulting from the spills. The application of these two models is described in the trustees' injury report on the seabird mortality resulting from the *Luckenbach* vessel incident (Ford et al. 2006[7]). The Beached Bird Model mortality estimate is based on the number of birds recovered, the probability of a bird persisting on the shoreline over a given time interval, and the likelihood that searchers will detect an oiled bird. The OSRISK Trajectory Model was used to estimate the number of birds washed out to sea through simulation of oil and seabird carcass trajectories.

Estimates of total injury were calculated several different ways depending on the species. For most bird species, the Single-Generation Stepwise Replacement Model was used to

[5] Ford, R.G., G.W. Page and H.R. Carter. 1987. Estimating mortality of seabirds from oil spills. *1987 Oil Spill Conference Proceedings.* Baltimore, MD.

[6] Ford, R.G., M.L. Bonnell, D.H. Varoujean, G.W. Page, H.R. Carter, B.E. Sharp, D. Heinemann and J.L Casey. 1996. Total Direct Mortality of Seabirds from the *Exxon Valdez* Oil Spill. *American Fisheries Society Symposium* 18:684-711.

[7] Ford, R.G., N.A. Strom, and J.L. Casey. 2006. Acute seabird mortality resulting from the *S.S. Luckenbach* and associated mystery oil spills, 1990-2003. Report prepared for the *Luckenbach* Trustee Council. Luckenbach Administrative Record.

calculate lost bird-years. To estimate Ashy Storm-Petrel, Common Murre, and Marbled Murrelet bird-years, the trustees developed location-specific population models.

Table 1 summarizes trustee estimates of the number of animals killed and calculated lost species-years since 1990. In total, more than 51,500 animals were estimated to have been killed between August 1990 and 2003 (Ford et al. 2006[7]).

Table 2. Summary of Natural Resource Injuries

Species	Estimated Number Killed	Estimated Discounted Species-Years Lost
Waterfowl (primarily Surf Scoters)	862	Not calculated
Loons (primarily Pacific Loons)	1,314	10,348
Grebes (primarily Western Grebes)	4,106	15,487
Procellarids (primarily Norther Fulmars)	4,796	75,781
Brown Pelicans	278	2,083
Cormorants (primarily Brandt's Cormorants)	1,460	7,070
Gulls (primarily California, Western, and Glaucous-winged Gulls)	2,388	Not calculated
Other Shorebirds (primarily Red Phalaropes)	1,554	Not calculated
Common Murres	31,806	1,821,554[8]
Marbled Murrelets	45	Not Available[9]
Other alcids (primarily Ancient Murrelets, Cassin's and Rhinoceros Auklets)	2,763	16,735
Sea Otters	8	9.9

The trustees used a Resource Equivalency Analysis (REA) to determine compensatory damages and scale appropriate restoration projects. To conduct the REA, trustees determined the amount of natural resource services (*i.e.* bird-years) that the affected resources would have provided had injury not occurred, and equated the quantity of lost services with those created by proposed compensatory restoration projects that would provide similar services.

In the process of examining the trustees' estimates of direct mortality and the calculation of lost bird-years, the NPFC requested additional information deemed necessary to evaluate the reliability and validity of the assessment approaches used by the trustees (Attachment A). Upon evaluation of the trustees' responses, the NPFC identified remaining technical issues (Attachment B) that were reviewed during a meeting with the trustees on June 19-21, 2007, in Sacramento, California. The trustees satisfactorily addressed the majority of the outstanding issues relating to the estimation of direct mortality and the calculation of lost bird-years by providing detailed examples of the application of the Beached Bird Model, the Single Generation Stepwise Replacement Model, and Local Population Models specific to the Ashy Storm-Petrel and Common

[8] The estimate provided here differs from the estimate in the DARP by about one percent, per trustee correction of inputs in Common Murre Local Population Model. See trustee response to question 2 in Attachment A.

[9] Because multiple Monte Carlo simulations were used, there is no single estimate of lost bird-years (DARP, Section 4.3.9).

Murre. However, while the trustees responded to the NPFC's request for more information regarding the quantification of Snowy Plover injuries (Attachment A, question 35), adjudication continues as to the reasonableness of the trustee estimate of injury for this species. As such, trustee estimate of Snowy Plover injury is not included in Table 1. Additionally, as noted in Table 1, the trustees have not provided the specific range of lost bird-years for the Marbled Murrelet. Thus, the NPFC is unable to determine the reasonableness of the trustees' estimate of lost Marbled Murrelet-years. The NPFC accepts the trustees' estimates of direct species mortality and lost bird-years, accepts trustee rationale for not calculating bird-years for waterfowl, gulls, and other shorebirds, and concludes that the trustees have complied with 15 CFR 990.27, 15 CFR 990.51-52, and 15 CFR 990.53(d) for all species except Marbled Murrelets and Snowy Plovers. A determination of the reasonableness of the mortality estimate for the Snowy Plover and the reasonableness of the estimate of lost bird-years for the Snowy Plover and the Marbled Murrelet will be provided when the NPFC completes adjudication of the restoration projects claimed for these species.

6. *Identification of a Range of Restoration Alternatives, Selection of Preferred Alternative(s), and Reasonableness of Costs.*

Trustees must consider a reasonable range of restoration alternatives before selecting the preferred alternative(s) (15 CFR 990.53). Each alternative should be comprised of primary and/or compensatory restoration components that address one or more specific injury(ies) associated with the incident.

Under 15 CFR 990.54, trustees must evaluate proposed restoration alternatives based on, at a minimum:

1. The cost to carry out the alternative;
2. The extent to which each alternative is expected to meet the trustees' goals and objectives of returning the injured natural resources and services to baseline and/or compensating for interim losses;
3. The likelihood of success of each alternative;
4. The extent to which each alternative will prevent future injury as a result of the incident and avoid collateral injury as a result of implementing the alternative;
5. The extent to which each alternative benefits more than one natural resource and/or service; and
6. The effect of each alternative on public health and safety.

Under 33 CFR 136.211(a) and 33 USC Sec. 2706 (d)(1), the amount of compensation allowable is the reasonable cost of assessing damages and the cost of restoring, rehabilitating, replacing, or acquiring the equivalent of the damaged natural resources. Using the OPA and other case-specific criteria, the trustees selected 14 restoration projects, 13 of which aim to restore the 50 species of birds that were injured and one to restore Sea Otter losses. As stated above, this partial determination is focused on five projects for which the NPFC adjudication is complete. A description of these five projects and the NPFC determination follow.

Common Murres

The trustees considered five potential restoration projects to compensate for injuries to Common Murres. The three preferred alternatives selected by the trustees were Seabird Colony Protection Program, Corvid Management at Point Reyes National Seashore, and Reading Rock Murre Colony Restoration. In addition to the three selected projects, the trustees considered Land Acquisition at Cape Viscaino to restore this species. This project was not selected due to project uncertainties, and because these colonies are currently increasing in population and are not threatened with development. The trustees also considered a restoration alternative involving an extension of the Devil's Slide Rock project. However, the trustees ultimately decided that this was not a viable project. Of the three projects identified by the trustees as preferred, the NPFC has completed adjudication of the Reading Rock Murre Colony Restoration project.

The Reading Rock Murre Colony Restoration project (located off Gold Bluff Beach in Humboldt County, California) aims to compensate for injuries to the Common Murre by preventing human disturbances during the nesting season, using social attraction techniques to attract Common Murres to Reading Rock and installing small barriers to keep California Sea Lions off the top of the rock. The trustees used data from a similar project to estimate colony growth at five percent per-year until the colony reaches maximum size (Appendix I, DARP).

The NPFC requested further description of the costs of the Reading Rock Murre Colony Restoration project (Attachment A, question 45). The trustees responded that the costs for this project were based on the budget for a similar Common Murre colony restoration project at Devil's Slide and provided the NPFC with the Devil's Slide project budget. The NPFC accepts this additional information as being reasonable, noting that, while similar, the budget for the Devils Slide project could differ from the proposed project at Reading Rock. If, in the course of project implementation and monitoring, any budgeted activity is not necessary to achieve resource restoration, the trustees will be required to return funds for those activities. Furthermore, trustees should view the "Cost Documentation, Progress Reporting, and Final Report" section of this determination for further description of reporting requirements and compensable costs.

The trustees have requested $250,000 to implement the project. This represents 19 percent of the project budget, with the remaining 81 percent of project funding being provided by other sources. Accordingly, 19 percent of bird-years restored via this project are attributed to funding obtained from the OSLTF as a result of this determination.

After review of all applicable documentation and trustee responses to NPFC requests for additional information, the NPFC concludes that the Reading Rock Murre Colony Restoration project is reasonable and appropriate (15 CFR 990.53-54, 33 USC Sec. 2706 (d)(1), 15 CFR 990.30, 33 CFR 136.211). All claimed costs ($250,000) to implement this project are compensable. This project restores 10,217 (0.5 percent) of the 1,821,554 Common Murre-years lost. NPFC adjudication continues on trustee funding requests for the two other projects (Colony Seabird Colony Protection Program and Corvid

Management at Point Reyes National Seashore) designed to restore 1,033,670 Common Murre-years[10].

Grebes

The trustees evaluated two restoration alternatives to compensate for injuries to Grebes. The preferred project, Protection of Grebe Nesting Colonies at Northern California Lakes, is designed to protect Western and Clark's Grebe nesting colonies from human disturbance. Protective actions include public education and outreach, as well as the establishment of small seasonal buffers around grebe nesting colonies. The trustees estimate that colony protections will result in an increase of 0.3 fledges per nest, which, over the 10-year life of the project, will restore 89 percent of the 15,487 grebe-years lost in the spill (Appendix E, DARP). This alternative was selected as the preferred alternative because it will provide widespread benefits at a relatively lower cost when compared to the rejected restoration alternative, Land Acquisition at Lake Earl, California.

The NPFC requested additional documentation to support the trustees' assertion that the preferred project would result in a reduction of human disturbance at nesting colonies, thus producing quantified nesting productivity gains. The NPFC also asked the trustees to clarify the REA credit calculations and the rationale behind all inputs and assumptions relating to these calculations. The trustees' responses to these are provided in Attachment A (questions 22, 23 and 24).

In a conference call with Steve Hampton[11] of CDFG on February 14, 2008, and in an email sent to Steve Hampton on February 20, 2008, the NPFC requested further information about the preferred project. Specifically, the NPFC requested: (1) that the trustees show that this project does not overlap with similar Grebe restoration projects, (2) that a similar ongoing restoration project has had demonstrable success in reducing human disturbance of Grebe colonies, and (3) clarification regarding the requested one-hundred acres of bulrush and protective fencing. In a response sent to the NPFC on February 22, 2008, the trustees describe how the proposed project would fit into the suite of ongoing restoration projects aimed at reducing human disturbance of grebe nests on lakes in Northern California. The trustees also submitted a revised budget without the bulrush and buoy components and initial start-up costs for Year 1, identifying these project components as no longer necessary. These revisions reduce the funding claimed for this project from $1,027,730 to $774,060.

After review of all applicable documentation and trustee responses to NPFC requests for additional information, the NPFC concludes that the trustees' identification of restoration alternatives, the selection of a preferred restoration alternative (Protection of Grebe Nesting Colonies at Northern California Lakes), and the scaling of the preferred alternative is reasonable and appropriate (15 CFR 990.53-54, 33 USC Sec. 2706 (d)(1),

[10] The trustees are only seeking funds to restore approximately 61 percent (# bird-years) of the injury to Common Murres.

[11] Steve Hampton is a lead technical expert for the trustees.

15 CFR 990.30, 33 CFR 136.211). All claimed costs ($774,060) to restore injuries to grebes are compensable.

Loons

The trustees considered two restoration alternatives to compensate for injuries to loons, with Protection of Nesting Habitat at Kokechik Flats, Alaska selected as the preferred alternative. This alternative is designed to reduce human disturbances to the nesting habitat of Pacific and Red-Throated Loons, and also waterfowl and Red Phalaropes. The trustees also considered a restoration project that would apply social attraction techniques to reestablish Common Loon nesting in California. However, this project was rejected due to its experimental nature and the uncertainty of restoration benefits.

Project components of the Protection of Nesting Habitat at Kokechik Flats, Alaska project include: 1) developing habitat management guidelines to protect and enhance nesting habitat; 2) minimizing human traffic and activities in sensitive areas; 3) conducting on-site education and outreach, and 4) monitoring habitat to ensure that all management guidelines are implemented. The trustees estimated that the project would benefit 360 nests, with a 0.32 increase in fledglings per nest and a 10-year project lifespan, generating 9,616 loon-years (Appendix D, DARP). This approximately compensates for the 10,348 lost loon-years resulting from the oiling events.

After review of all applicable documentation, the NPFC concludes that the trustees' identification of restoration alternatives, the selection of a preferred restoration alternative (Protection of Nesting Habitat at Kokechik Flats, Alaska), and the scaling of the preferred alternative is reasonable and appropriate (15 CFR 990.53-54, 33 USC Sec. 2706 (d)(1), 15 CFR 990.30, 33 CFR 136.211). All claimed costs ($600,000) to restore injuries to loons are compensable.

Waterfowl (swans, geese, and ducks)

The trustees considered four restoration alternatives to compensate for injuries to waterfowl, and selected Protection of Nesting Habitat at Kokechik Flats, Alaska, as the preferred alternative. This restoration alternative is the same project as described above for loons. The trustees did not estimate lost waterfowl-years or the waterfowl-years generated by the restoration alternative, based on their judgment that waterfowl would benefit substantially from this restoration alternative.

The two projects considered but not selected as preferred by the trustees involved the acquisition of land at Yukon Flats, Alaska, and Togiak National Wildlife Refuge, Alaska. These alternatives were determined by the trustees to be less cost-effective and less likely to succeed. The NPFC requested that the trustees provide the rationale for identifying as preferred a restoration alternative that primarily benefits Black Scoters, a species minimally injured by the spills, as opposed to selecting a restoration alternative that restores the more heavily impacted Surf and White-winged Scoters. The trustees stated that while considerable effort was expended searching for restoration projects for these

two species, no feasible and cost-effective projects could be identified (Attachment A, trustee response to question 19).

After review of all applicable documentation and responses to NPFC requests for additional information, the NPFC concurs with the trustee's decision to credit the Protection of Nesting Habitat at Kokechik Flats, Alaska project with full compensation of waterfowl losses. No additional expenses are required to restore waterfowl losses, and the NPFC determines that the trustees' identification of restoration alternatives and the selection of a preferred restoration alternative (Protection of Nesting Habitat at Kokechik Flats, Alaska) is reasonable and appropriate (15 CFR 990.53-54, 33 USC Sec. 2706 (d)(1), 15 CFR 990.30, 33 CFR 136.211).

Other Shorebirds

The Red Phalarope accounted for 89 percent of the birds collected from this species group. The trustees did not consider a restoration project for this specific species group based on their judgment that Red Phalaropes will benefit substantially from the project selected to restore injuries to waterfowl and loons (Protection of Nesting Habitat at Kokechik Flats, Alaska). In responding to the NPFC's questions about the trustees' decision not to scale Red Phalarope injury to the preferred restoration alternative (Attachment A, question 37), the trustees emphasized that the loon is the key species in the scaling of the restoration alternative, and that both Red Phalaropes and waterfowl would benefit substantially from this alternative.

After review of all applicable documentation and responses to NPFC requests for additional information, the NPFC concurs with the trustees' decision to credit the Protection of Nesting Habitat at Kokechik Flats, Alaska project with full compensation of losses to other shorebirds. No additional expenses are required to restore these losses, and the NPFC determines that the trustees' identification of restoration alternatives and the selection of a preferred restoration alternative (Protection of Nesting Habitat at Kokechik Flats, Alaska) is reasonable and appropriate (15 CFR 990.53-54, 33 USC Sec. 2706 (d)(1), 15 CFR 990.30, 33 CFR 136.211).

Other Alcids (Ancient Murrelet and Rhinoceros Auklet)

The trustees selected one restoration project to compensate for the injuries to Ancient Murrelets and one project to compensate for injuries to Rhinoceros Auklets. The Ancient Murrelet project involves the eradication of rats in the Queen Charlotte Islands, Canada. Boxes and poisoned bait will be used to remove rats from Ellen Island and Bischon Island. The selected project for the Rhinoceros Auklet is Nesting Habitat Restoration on Ano Nuevo Island. The restoration work is expected to increase the number of nests on the island, which have been decreasing rapidly due to soil erosion. In addition to the selected projects, the trustees considered alternatives for Alcids involving rat eradication on Murchison and Faraday Islands, Canada, and Rat Island, Alaska, raccoon eradication at Saunders Island, Canada, and rat quarantine at Langara Island, Canada. The rat eradication project at Murchison and Faraday Islands, Canada and Rat Island, Alaska were not selected because these projects are relatively expensive and exceed what is

necessary to compensate for the injured resources. The raccoon eradication project was not selected due to a high risk of raccoon recolonization, and the rat quarantine project was rejected because of a high chance of receiving alternate funding. Of the two selected projects, the NPFC has completed adjudication of Nesting Habitat Restoration at Ano Nuevo Island.

The trustees estimate that a two percent yearly increase in nests, resulting from vegetation restoration on Ano Nuevo Island, will generate 4,299 Rhinoceros Auklet-years (DARP, Appendix L). This compensates for the 4,095 bird-years estimated to have been lost as a result of the oiling events. The NPFC requested clarification regarding the high proposed monitoring/management costs of this project (relative to restoration costs), as well as the contribution of the educational component to the project restoration goals. The trustees subsequently provided the NPFC with a modified budget that reduced the amount claimed for this restoration project from $1,032,000 to $1,024,000. The "Aerial Orthophotography" and "Education" activities were eliminated from the overall project budget. The NPFC notes that despite the elimination of aerial orthophotography, the budget for this category remains the same. The NPFC also notes that the elimination of the "Education" category in years one and two of the budget, a budget reduction of $1300 each year, corresponds with an unexplained $1300 increase in the "Restoration Field Work Phase 1" for years one and two. However, in light of the substantial contribution of project funding coming from other sources and the resulting reduced bird-years for which the trustees are requesting restoration funds, the NPFC accepts these budget modifications.

After review of all applicable documentation and trustee responses to NPFC requests for additional information, the NPFC concludes that the trustees' identification of restoration alternatives, the selection of Nesting Habitat Restoration at Ano Nuevo Island, and the scaling of this restoration alternative is reasonable and appropriate (15 CFR 990.53-54, 33 USC Sec. 2706 (d)(1), 15 CFR 990.30, 33 CFR 136.211). All claimed costs to restore injuries to the Rhinoceros Auklet ($1,024,000) are compensable.

Sea Otters

The trustees selected a Sea Otter restoration project designed to educate the public about the connection between anthropogenic sources of pollution, Sea Otter diseases and mortality, and Sea Otter population recovery. This project addresses a leading cause of Sea Otter mortality, and thus addresses one of the primary factors impeding recovery. By targeting boat owners, home owners, and cat owners with educational messages, the trustees estimate that a four percent per-year reduction in Sea Otter mortality is possible, which would compensate for the eight Sea Otters estimated to have been killed as a result of the oiling events (Appendix M, DARP). As this project was the only restoration alternative that the trustees evaluated in the DARP, the NPFC requested that the trustees affirm that a reasonable range of restoration alternatives was evaluated. The trustees responded that Sea Otter experts identified this project as being the most viable (Attachment A, question 54). The NPFC also requested clarification regarding the estimation of a four percent reduction in Sea Otter mortality resulting from the implementation of this project (Attachment A, question 55). In response, the trustees

provided the rationale behind their estimation of a four percent reduction in Sea Otter mortality. Finally, the NPFC requested the trustees describe the contribution of the "shutterbug" Sea Otter module to Sea Otter restoration. The trustees, in an email sent on February 19, 2008, stated that the "shutterbug" Sea Otter module is a software tool that will be used to educate the public about the link between human activities and Sea Otter disease, and thus is in line with the aim of the project.

After review of all applicable documentation and trustee responses to NPFC requests for additional information, the NPFC concludes that the identification and selection of a preferred restoration alternative (Sea Otter Pathogens Education and Outreach), and the scaling of the preferred alternative is reasonable and appropriate (15 CFR 990.53-54, 33 USC Sec. 2706 (d)(1), 15 CFR 990.30, 33 CFR 136.211). All $121,155 of the claimed costs to restore injuries to Sea Otters are compensable.

Assessment Costs

The NPFC reviewed the cost documentation submitted by the trustees in support of the $621,309 in claimed assessment costs. In an email sent to the trustees on January 23, 2008, the NPFC requested that the trustees provide additional information regarding the claimed assessment activities. Specifically, the NPFC requested: (1) an explanation of labor hours for DOI employees; (2) undocumented administrative costs for DOI; (3) undocumented personnel compensation overhead costs for NOAA; and (4) the need for more information regarding indirect and overhead rates and charges applied to costs for each agency. The trustees provided all information requested in an email sent to the NPFC on February 26, 2008. The NPFC finds the claimed assessment costs of $621,309 to be reasonable and compensable (33 USC Sec. 2706 (d)(1), 15 CFR 990.30, 33 CFR 136.211).

Trustee Council Administrative Oversight

The trustees are claiming $1,079,326 for Trustee Council administrative oversight activities. The NPFC requested additional justification for these claimed costs (Attachment A, question 9). In response, the trustees explained that these costs would be used for regular meetings (and occasional site visits) to review progress of restoration projects and to make decisions approving allocations of funds, making changes to project scopes and budgets, requesting contingency funding, and ensuring the acceptability of reports as well as the adequacy of cost documentation.

The NPFC finds that the trustees have provided sufficient information to support the request for administrative oversight costs. The total request, however, was adjusted to reflect this partial determination. This is supported by the trustee assumption (stated in the trustee response to question 9 in Attachment A) "that the level of effort, as measured by the frequency of Trustee Council meetings per year, would be closely related to the number of active restoration projects." The NPFC therefore calculated the proportional percentage of project-years that are being funded. According to information provided by the trustees, there are 84 total project-years, with 36 of these project-years involving projects approved in this partial determination. Thus, approximately 43 percent of the

funding request for Trustee Council Oversight Activities is approved in this determination. The amount determined to be compensable is $462,568, while a determination for the remaining $616,758 will be made when adjudication on the projects not included in this determination is complete.

7. *Development of Draft and Final Restoration Plans*

The provisions of 15 CFR 990.55 require that natural resource damages be based upon a plan developed with opportunity for public review and comment. Further, the final DARP/EA must contain certain specific information, including: (1) a summary of injury assessment procedures used; (2) a description of the nature, degree, spatial and temporal extent of injuries resulting from the incident; (3) the goals and objectives of restoration; (4) the range of restoration alternatives considered, and a discussion of how such alternatives were developed and evaluated; (5) identification of the trustees' preferred alternative(s); (6) a description of past and proposed involvement of the responsible parties in the assessment; (7) a description of monitoring for documenting restoration effectiveness, including performance criteria that will be used to determine the success of restoration or need for interim corrective action; (8) responses to public comments; and (9) an indication of any changes made to the draft Restoration Plan. Trustees must also establish restoration objectives that are specific to the injuries.

Accordingly, the trustees held a 45-day public comment period on the draft DARP from February 28, 2006, to April 14, 2006. Comments are included and summarized in Appendix N of the final DARP along with trustee replies. The final DARP prepared by the trustees for the *Luckenbach* vessel incident also includes the additional required components, thereby complying with 15 CFR 990.55.

8. *Coordination with Trustees and the Public*

The *Luckenbach* vessel incident has affected the interests of multiple trustees. Thus, to ensure that full restoration is achieved without double recovery of damages (15 CFR 990.14), the trustees must designate one or more Lead Administrative Trustee(s) (LAT) to act as coordinator(s) (15 CFR 990.14(a)(1). The natural resource trustees involved in this incident (FWS, NPS, NOAA, and CDFG), agreed that the FWS would serve as the LAT. Section 15 CFR 990.55 requires that trustees provide the public with an opportunity for review and comment on the draft DARP. The trustees coordinated with the public by opening an AR, publishing the NOI, maintaining a website, and providing opportunity for public review of and comment on the draft DARP. As discussed in the previous section, a 45-day public review period was held on the draft plan. Fifteen written comments and numerous verbal comments were received from the public, including comments from seabird ornithologists and scientific organizations. Protection of a Sooty Shearwater colony on mainland New Zealand was suggested in the public comment period and added to the suite of proposed restoration projects in the final DARP. The NPFC has determined that the trustees appropriately coordinated assessment activities and provided opportunities for public involvement consistent with OPA requirements (15 CFR 990.14 and 990.55).

Revolving Trust Fund and Return of Unused Funding to the OSLTF

As established by OPA (33 U.S.C. 2706(f)) and set out in both the NPFC claims regulations (33 CFR 136.211) and the NRDA regulations (15 CFR 990.65), sums recovered by trustees for NRD must be retained by the trustees in a revolving trust account. All unused funds shall be returned to the OSLTF in a timely basis and no later than 6 months from the completion of each individual project as described in this determination in accordance with 15 CFR 990.65.

Cost Documentation, Progress Reporting, and Final Report

As the designated LAT for this claim, DOI shall ensure that all claim expenditures are documented appropriately and spent according to the *Luckenbach* Restoration Plan as approved in this determination. Any funds not spent or appropriately documented shall be returned to the Fund. Accurate and timely cost documentation is also required to support any requests for contingency funding. Trustees will be required to submit annual reports and a final report for each project funded. Cost documentation will be required to be submitted with the final report.

One year from the date of this determination, and annually thereafter, DOI shall provide the NPFC with a report on the status of project implementation and expenditures. These annual progress reports should include the following for each funded project:

1. Certification by DOI that all restoration activities have been conducted in accordance with the *Luckenbach* Restoration Plan as approved in this determination;
2. A progress report that includes a description of work accomplished, a timeline for future activities, and any unexpected problems incurred during implementation;
3. A summary of expenditures by category (labor, contracts, purchases/expendables, travel, government equipment); and
4. A narrative description of the work accomplished by each individual and how that work fits into the overall progress of the project for the year. Enough detail should be included to determine reasonableness of costs for each employee when cost documentation is received with the final report.

In addition to these annual reporting requirements the LAT shall submit a final progress report within 120 days of the date project implementation is completed. This report should include cost documentation for all project expenditures. With this report, the NPFC will reconcile costs and all remaining funds and/or inadequately documented costs will be returned to the NPFC. This final report shall include a summary of project implementation and restoration benefits achieved, as well as the cost documentation of all project expenditures as follows:

Labor: For each employee -- A description of their function/role, hours worked, labor rate, and indirect rate. An explanation of indirect rate expenditures, if any, will be necessary.

Travel: Paid travel reimbursement vouchers and receipts.

Contract: Activities undertaken, lists of deliverables, and contract invoices and receipts.

Purchases/Expendables: Invoices and receipts, along with an explanation of costs.

Government Equipment: Costs incurred for equipment and other miscellaneous resources should be documented. Trustees should provide the rate (*i.e.* hourly, weekly) and time for all equipment used for which costs were being incurred.

The NPFC has prepared a standardized template to facilitate annual progress and cost reporting.

NPFC Treatment of Contingency

NPFC recognizes that the costs in this plan are estimated and that these costs may unexpectedly increase, and/or that new and unforeseeable costs may surface in the future.

To address this, the NPFC has determined that the OSLTF will remain available for potential contingencies that arise during the implementation of this plan. Due to the uncertain nature of the requested contingencies at the time of this determination, contingent amounts will be paid only if and when unforeseen costs arise and are supported by appropriate reporting and documentation of costs incurred to date. Future contingency payments will be available on a project-specific basis under the following criteria:

1. The potential in complex project plans to overlook certain activities/costs that are later found to be necessary to complete the project, and

2. The potential that certain costs of a plan are subject to later developments or events that result in an increase in costs, and that can be described in reasonable detail and within reasonable costs parameters (*e.g.*, a plan to purchase property may be subject to the future availability of property for purchase and/or the outcome of purchase negotiations).

In the future, if the need for additional funding arises under either of the two criteria above, the Trustees may request it from the NPFC. Timely submission of annual reports and cost expenditures will facilitate expedited review and consideration of contingency requests. Any request for additional funding must document that this funding is needed for the completion of the activities outlined in the plan, that the request complies with the above two criteria, and that the increased costs are reasonable. It is the trustees' responsibility to accurately track the costs being incurred under the plan and to support the need for additional funding.

The amount of contingency funding available to the trustees for this determination is detailed below. In rare cases, an increase to the determined amounts may be granted if adequate documentation and rationale are provided. Further, contingency payments are only available for a limited period of time after NPFC payment of the original plan.

Contingency payments are only available from the OSLTF for six years after payment is made to the trustees, as after that time the majority of the projects will be completed. The contingency percentage assigned by project is based on the NPFC's determination of the degree of each project's complexity or potential for unknown events (Table 3).

Table 3. Approved Contingency Amounts

Restoration Project	Contingency	Amount
Protection of Nesting Habitat at Kokechik Flats, Alaska	15%	$90,000
Protection of Grebe Nesting Colonies at Northern California Lakes	15%	$116,109
Reading Rock Murre Colony Restoration	15%	$37,500
Nesting Habitat Restoration on Año Nuevo Island	15%	$153,600
Sea Otter Pathogens Education and Outreach	15%	$18,173
TOTAL		**$415,382**

Summary of Partial Determination

The findings of this partial determination are summarized in Table 4 below according to resource category. The specified claimed amounts exclude the 15 percent contingency identified for each project.

Table 4. NPFC Summary Determination Findings

Resource/ Species	Estimated Injury (species-years)	Preferred Restoration Alternative	Estimated Restoration (species-years)	Claimed Amount	NPFC Determination
Common Murre	1,821,554	Reading Rock colony Restoration	10,217[12]	$250,000	Approved
Grebes	15,487	Grebe Colony Protection at Northern California Lakes	13,746	$774,060	Approved
Waterfowl	Not Calculated	Protection of nesting areas in Kokechik Flats, Alaska	Not Calculated	$600,000	Approved
Loons	10,348		9,616		
Other Shorebirds	Not Calculated		Not Calculated		
Other Alcids *(Rhinoceros Auklet)*	4,095	Nesting habitat at Ano Nuevo Island	4,299	$1,024,000	Approved
Sea Otters	9.9	Sea Otter Pathogen and Outreach	10.8	$121,155	Approved
Subtotal				**$2,769,215**	
Oversight					
Trustee Council Administrative Oversight				$462,568	Approved
Subtotal				**$462,568**	
NRD Assessment					
DOI				$86,514	Approved
NOAA				$250,021	Approved
CDFG				$284,774	Approved
Subtotal				**$621,309**	
TOTAL				**$3,853,092**	

This offer constitutes full and final payment for injuries to grebes, loons, waterfowl, other shorebirds (Red Phalaropes), other alcids (Rhinoceros Auklet) and Sea Otters, and partial payment for injuries to Common Murres, that resulted from the *Luckenbach* vessel incident between August 18, 1990 and December 2003. If you accept these offers, please sign the enclosed Acceptance/Release Forms where indicated and return to:

Director (cn)
U.S. Coast Guard
National Pollution Funds Center
4200 Wilson Boulevard, Suite 1000
Arlington, VA 22203-1804

[12] Adjudication continues on two projects that would contribute to the restoration of Common Murre-years.

If we do not receive the signed original Acceptance/Release Form within 60 days of the date of this letter, the offers are void. If the settlements are accepted, your payment will be mailed within 30 days of receipt of the Release Form. Please provide account information and instruction for the transfer of funds to your trustee account when you submit the Release Form.

If you have any questions or would like to discuss the matter, you may write me at the above address or contact me by phone at 202-493-6723.

Sincerely,

Scott Knoche
Claims Manager
Natural Resource Damage Claims Division
National Pollution Funds Center
U.S. Coast Guard

ENCLOSED: (1) Attachment A
(2) Attachment B
(3) Acceptance/Release Form

Attachment A

Answers to Questions on the *S.S. Jacob Luckenbach* Damage Assessment and Restoration Plan/Environmental Assessment (DARP/EA) and Appendices

There is insufficient information presented in the DARP or the Appendices to adequately evaluate the validity of injury and restoration scaling calculations. It would be useful to see the injury and restoration calculations and spreadsheets for each species injured. Specifically, Claimants should provide

1. Detailed bird injury quantification calculations using the Beached Bird Model for a select number of example species that use this model, such as the northern fulmar;

   Trustee Reply: A detailed example of Beached Bird Model calculations is given below. The data are for Common Murres recovered from Segment 1.16 in the Pt. Reyes area. Rows shaded green indicate days when searches occurred, white rows indicate days when the deposition rate was estimated from the search at the end of the interval, and yellow rows indicate gaps that were considered too long for extrapolation (more than 7 days). The columns are defined as:

   Day: Number of days since 26 November 2001

   Birds Recovered: The number of birds recovered by searchers on a given day.

   Segment Length: Total length of the segment in kilometers (2.1 km).

   Search Lengt:h: Length of segment searched on a given day (km).

   Searcher efficiency: The probability that a carcass would be found on a given search. All searches of segment 1.16 were carried out by two searchers. For murres, we estimated the likelihood that at least one of two searchers would locate a carcass as they passed it was 0.540. In cases where only part of a segment was searched, searcher efficiency was adjusted to take into account the partial search of the segment. For example, on day 12, only 0.231 km was searched. Searcher efficiency was therefore (0.231 / 2.1) x 0.54 = 0.059.

   Average Persistence: Based on data described in section 3.3.2.2 of the Acute Seabird Mortality Report, average persistence for large birds (such as murres) in the Pt. Reyes area was estimated to be 0.66, 0.48, 0.43, 0.40, 0.38, and 0.36 for inter-search intervals of 1, 2, 3, 4, 5, and 6 days respectively

   Estimated Deposition Rate: Estimated number of birds deposited per day *per km of segment.* Calculations using the Beached Bird model are provided in detail below.

Day	Birds Recovered	Segment Length	Search Length	Searcher Efficiency	Average Persistence	Estimated Deposition Rate
12	0	2.10	0.23	0.06	.	.
34	0	2.10	0.40	0.10	.	.
35	.	.	.	.	.	1.23
36	.	.	.	.	.	1.23
37	.	.	.	.	.	1.23
38	.	.	.	.	.	1.23

39	.	.	.	.	.	1.23
40	3	2.10	2.10	0.54	0.36	1.23
41	0	2.10	0.25	0.06	0.66	0
42	.	.	.	.	.	0
43	.	.	.	.	.	0
44	0	2.10	2.10	0.54	0.43	0
45	.	.	.	.	.	3.57
46	1	2.10	0.55	0.14	0.48	3.57
63	0	2.10	1.79	0.46	.	.
64	0	2.10	2.10	0.54	0.66	0
65	0	2.10	2.10	0.54	0.66	0
77	0	2.10	2.10	0.54	.	.
106	0	2.10	2.10	0.54	.	.
388	0	2.10	0.21	0.05	.	.

Search on Day 12: The search was not bounded by an earlier search within the previous seven days, so it is not used to estimate the deposition rate.

Search on Day 34: The search was not bounded by an earlier search within the previous seven days, so it is not used to estimate the deposition rate.

Search on Day 40: Three birds were found on the search. Search efficiency was 0.54, so 3.0 / 0.54 = 5.56 birds were actually on the beach at the time of the search. Average persistence over the 6 day interval was 0.36, implying that 5.56 / 0.36 = 15.44 birds total were deposited over the interval. Since the interval was 6 days and the length of the segment was 2.1 km, the deposition rate per km per day would have been 15.44 birds / (6 days x 2.1 km) = 1.23 birds / (km day).

Search on Day 41: No birds were found, therefore deposition was estimated to be zero.

Search on Day 44: No birds were found, therefore deposition was estimated to be zero.

Search on Day 46: One bird was found on the search. Search efficiency was 0.54, but only a fraction of the beach, 0.55 km out of 2.1 km, was searched. Searcher efficiency was therefore estimated to be 0.54 x (0.55 / 2.1) = 0.14. The bird that was found therefore represents 1.0 / 0.14 = 7.07 birds that were actually on the beach at the time of the search. Average persistence over the 2 day interval was 0.48, implying that 7.19 / 0.48 = 14.98 birds total were deposited over the interval. Since the interval was 2 days long and the length of the segment was 2.1 km, the deposition rate per km per day would have been 14.98 birds / (2 days x 2.1 km) = 3.57 birds / (km day).

Search on Day 63: The search was not bounded by an earlier search within seven days or less, so it is not used to estimate the deposition rate.

Search on Day 64: No birds were found, therefore deposition was estimated to be zero.

Search on Day 65: No birds were found, therefore deposition was estimated to be zero.

Search on Day 77: The search was not bounded by an earlier search within seven days or less, so it is not used to estimate the deposition rate.

Search on Day 106: The search was not bounded by an earlier search within seven days or less, so it is not used to estimate the deposition rate.

Search on Day 388: The search was not bounded by an earlier search within seven days or less, so it is not used to estimate the deposition rate.

2. Detailed bird injury quantification calculations using the Local Population Model for common murres;

Trustee Reply: This is provided in a separate file called COMU-3-07-NPFC.xls. The file includes five separate workbooks:

1. "Good-Year": This is where demographic parameters reflecting vital rates in good-years are entered. Yellow cells reflect input values that can be changed. Green cells are output cells that present values that are in the DARP. White cells are additional output values that may be helpful for calibration. Gray cells include identities, calculation checks, and other intermediate values.

2. "Bad-years": This is where demographic parameters reflecting vital rates of bad-years are entered. This sheet has the same structure as the "good-year" sheet.

3. "Mean-Year": This is where the proportion of good-years and bad-years are entered. It includes information that may help with calibration.

4. "Injury&FI-Protection": This sheet simultaneously evaluates the injury of the *Luckenbach* incidents and quantifies benefits of a regional colony protection project. Input cells are in yellow. See question 39 form more discussion.

5. "Corvid-Benefits": This sheet quantifies the benefits of a successful corvid control project.

In preparing these replies for the NPFC, the following adjustments to the spreadsheets were made:

1. Deterministic "mean-year" fecundity was changed from a geometric mean to an arithmetic mean. The deterministic survival parameter was kept at the geometric mean.

2. The probability of a good-year was set at 0.80. This is the value that was presented in the DARP. In the process of evaluating the sensitivity of this parameter, it was mistakenly left at 0.85 during some calculations.

3. Density-dependence in the regional population model begins at 500,000. This is the value that was presented in the DARP. In the process of evaluating the sensitivity of this parameter, it was mistakenly left at 360,000 during some calculations.

4. Winter 1997-1998 Mortality set to 23,152. This is the value presented in the DARP. Mortality estimates for that year were revised after the COMU analysis was completed. The value used in the COMU calculations presented in the DARP was 23,300 (i.e., less than a 1% change).

5. Chronic 1998-2001 Mortality estimates set to 63. This is the value in the DARP. Mortality estimates for that year were revised after the COMU analysis was complete. The value used in the calculations presented in the DARP was 64.

6. The initial age structure of the Pt. Reyes colony was modified. Stable age structure values were used, but they were based upon the assumption that the colony was not growing in size. The initial age structure was modified to reflect a population that was growing at a rate of 3-4% a year.

7. The initial population size at the Pt. Reyes colony was changed from 27,700 total birds to approximately 36,500 breeding birds.

8. The benefits of the corvid control project were set to begin accruing in 2007. This value is consistent with other project dates in the DARP. The value used in the calculations presented in the DARP was 2006.

The end results of these adjustments are not substantially different. The calculated lost bird-years from the incident are 1,821,554 (versus 1,857,471 as presented in the DARP). Likewise, the benefits from the projects shifted by about 1%.

3. Detailed bird injury quantification calculations using the Swept Through Model for a select number of example species that use this model, such as the marbled murrelet;

Trustee Reply: The Swept Through Model was not used. The Marbled Murrelets were modeled via extrapolation from Western Grebes. Both Marbled Murrelets and Western Grebes are found at sea primarily in a narrow band within two miles of shore, relatively far from the *Luckenbach* vessel (which is 17 miles offshore). Both spend most of their time swimming on the surface and diving for food. Both are highly susceptible to oiling. For these reasons, we assumed their oiling rates to be similar. Because Western Grebes are far more numerous, we found plenty of oiled grebes on the beaches and were able to use the Beached Bird Model to estimate their mortality. We found only three Marbled Murrelets, as they are much less numerous as well as harder to find when beached. This small number of beached bird recoveries made using the Beached Bird Model problematic for murrelets. Because we had good data on the at-sea abundance of both Western Grebes and Marbled Murrelets, we were able to estimate the oiling rate for Western Grebes, apply that to Marbled Murrelets, and thus estimate mortality for Marbled Murrelets. The example below illustrates the steps using hypothetical numbers for one segment of the coast for one spill event:

a. Collect 50 Western Grebes on the beach; using BBM, estimate that 200 actually died.
b. At-sea surveys estimate that 2,000 grebes were in the area, thus the oiling rate was 10%.
c. At-sea surveys estimate that 100 murrelets were in the area. Using the same oiling rate of 10%, 10 Marbled Murrelets likely died.

4. Detailed derivation of lost bird year injury quantification multiplier, including calculation of each multiplier from the demographic parameters provided, for each species.

Trustee Reply: The method for deriving the lost bird year multiplier is described in Appendix C and demographic parameters in the following appendices. While this information should be sufficient for deriving lost bird-years (as well as gained bird-years per fledge), we provide some of the actual spreadsheets as examples. Included are:

- pelican corms CAAU Baja REA Luckenbach for NPFC.xls
  (described in Appendix G)
- SNPL Pt Reyes REA Luckenbach for NPFC.xls
  (described in Appendix H)
- ANMU Q Charlottes REA Luckenbach for NPFC.xls
  (described in Appendix K)
- RHAU Ano REA Luckenbach for NPFC.xls
  (described in Appendix L)

These should provide sufficient examples to understand the application of the method. Please contact Steve Hampton of CDFG-OSPR if you have questions about these spreadsheets or any of the other REAs.

5. Detailed derivation of bird-years per fledge figures used in restoration credit scaling, including calculations for each species.

   Trustee Reply: See question 4 above.

6. Please provide an Index to the Administrative Record that will allow NPFC to see what the Administrative Record contains.

   Trustee Reply: An index of the Administrative Record is provided herein Luckenbach Admin Record Index.doc. Most of these documents have already been provided. Please contact Steve Hampton of CDFG-OSPR if you need help locating any of them.

7. Are 67 oiled feather samples from 2,964 birds collected during the Point Reyes Tarball Incident (a 2.26% sampling rate) sufficiently representative to conclude that all oiled birds for this incident are attributable to Luckenbach and/or mystery-source oils? Note that the higher sampling rate for 1992-93 (34.8%) yielded a 13% match to Monterey Formation (natural seep) oil – comparable to the rate for "Other Winters" and "Summers" in Table 2.

   Trustee Reply: A sample size of 67 from a source population of 2,964 is the sample size required to draw a statistically significant conclusion with 90% confidence with a 10% margin of error. This is based on the following formula for determining sample size:

   $$n = n_0/[1+(n_0-1)/N]$$

   where

   $$n_0 = [t^2*p*(1-p)]/d^2$$

   and

   n = sample size (equals 67, based on the parameters below)
   N = total population (2,964)
   p = assumed proportion of sample n that meets the hypothesis (conservatively set at 0.5)
   d = margin of error (0.10)
   t = statistic from Student t distribution (1.65, implying a 90% degree of confidence)

   Thus, we can say with 90% confidence that the true percentage of the 2,964 birds that had *Luckenbach* oil was 83%, plus or minus 10% (that is, between 83% and 99% because five of the 67 samples matched another source). While no Monterey formation oil was detected, it is possible that as many as 10% may have had that, but the sampling did not detect it. Given other factors such as the timing and location of the oiled birds, as well as the high cost to run each sample ($475, unless the amount of oil is too small to characterize), the Trustees believe that this sample size is sufficient.

8. Trustees appear to conclude that all 257 birds collected during Summer 2002 oil removal operations were attributable to Luckenbach oil, based on only 3 feather samples (1.17% sampling rate) – what is the basis for this conclusion?

   Trustee Reply: The Summer 2002 oiling event was a unique *Luckenbach* event because the releases occurred during cleanup and removal operations from the *Luckenbach* vessel. Response personnel directly observed the oil from underwater, on boats and on aircraft as it was released. These releases were accidental but an inevitable part of trying to access the wreck and pump oil out of it. Fortunately, the number of oiled birds was relatively low. The location of the oil was

documented and the oiled birds were recovered on beaches directly adjacent to the observed oil. While a few samples were collected to ensure matches with past releases, the sampling was not critical to link the birds to the *Luckenbach* due to the direct observations made by field personnel.

9. Trustee agency oversight/management administrative costs are summed up by agency by year. Please describe how these claimed costs will be used and basis for claimed cost estimates.

   Trustee Reply: The Trustees' NRDAR claim includes $977,494 for Trustee Council administrative costs. These funds will be used to fund the participation of Trustee agency technical and legal staff on the *Luckenbach* Trustee Council and to oversee implementation of restoration projects. Trustee Council activities will include regular meetings (and occasional site visits) to review progress of restoration projects and to make decisions approving allocations of funds, changes to project scopes and budgets, requests for contingency funding, acceptability of reports, and adequacy of cost documentation. Project oversight costs will include development and administration of contracts and/or cooperative agreements, coordination with contractors and/or cooperators on project implementation, permitting, and environmental compliance, and review of invoices and reports.

   These costs were estimated based on Trustee agency experience on other Trustee Councils, with the added consideration that the *Luckenbach* restoration program, because of the magnitude and duration of natural resource injuries caused by this spill, involves more restoration projects and a proportionately larger budget than more typical NRDAR cases. The Trustees assumed that the level of effort, as measured by the frequency of Trustee Council meetings per year, would be closely related to the number of active restoration projects. The Trustees also assumed that the level of effort would be greater in the initial years of projects, would diminish as projects get up and running, and would be minimal once project actions are completed and projects are in the success monitoring phase. Thus, administrative cost estimates for all agencies are greatest in the first two years (2007 and 2008 in attached spreadsheet) when all the projects are in their early phases and substantial coordination is needed to complete the planning and environmental compliance phases and to get projects to the implementation phase. Estimated costs go down after year two when most projects should reach the implementation phase. Costs are reduced further after year 10 (2016) when only one project remains active. The same discount rate applied to restoration projects was also applied to out year administrative costs.

   The administrative cost claim is based on the assumption that all administrative work will be handled in-house by agency staff; however, it is possible that the FWS, as Federal Lead Administrative Trustee, will need to hire a contractor to assist with financial tracking and reporting. We assume that the added costs of the contractor would be offset by reduced in-house costs and the overall estimate of administrative costs would be unchanged.

10. Is the core assumption of the single-generation stepwise replacement model used to calculate lost bird-years – that each year after a spill the juvenile age class will be entirely replaced – valid for species (e.g., grebes) for which a large percentage (10%) of the local adult population may have been killed? I.e., can Claimants provide data or rationale to support the assumption that the breeding population, and hence fledgling/juvenile production, will/did not decline post-spills for such species?

    Trustee Reply: The assumption that breeding continues after a spill at the same pace as before (and thus generates the same number of juveniles as before the spill) is predicated on the concept that there are enough "floaters" (non-breeding adults) in the adult population to fill the nest vacancies and become breeders. Obviously, this cannot occur when the number of breeders killed exceeds the number of floaters left alive.

    With respect to grebes, the Trustees considered an alternative approach, but in the end opted for the single-generation stepwise replacement model because of certain mitigating factors. The four

main mitigating factors were: (1) the grebe kill was spread over 13 years; (2) the grebe kill was spread across several species; (3) the grebe kill was likely spread across all age classes; and (4) the grebe kill, for Western and Clark's Grebes, was likely spread across many colonies. While over 4,000 grebes were estimated killed, these were spread from 1990 to 2003. The estimated loss of 2,897 grebes during the winter 1997-98 event was the most significant, although this event especially involved other grebe species, not just Western Grebes. It is likely that a large number of juvenile and sub-adult birds, as well as breeding adults, were impacted. Finally, the birds that winter along the California coast (and were oiled) likely came from a wide variety of colonies throughout western North America. Unfortunately, grebes have proven unsuitable for radio-tracking, as they are very sensitive to devices attached to them. The seasonal movements of birds from certain regions or colonies are thus poorly understood. However, if they came primarily from any one or two colonies, a massive decline would have been detected. A recent kill of several thousand grebes off southern California (the Ventura Seep Oil Release) also resulted in no massive decline at any one colony, again suggesting birds from many colonies mix together in the winter off the California coast.

11. Please describe the Streamline Analysis of Currents (SAC) and Diagnostic Analysis of Currents (DAC) circulation models and provide supporting documentation, if available.

Trustee Reply: SAC was used to define tidal flow within the study area. It assumes barotropic conditions, no vertical transport, an incompressible flow field, no rotation, and steady state. Calibration was based on local tidal data. The model is referenced in Galt and Payton (1981).

DAC was used to describe barotropic setup along the coastline due to Ekman transport. It simulates flow by balancing pressure with Coriolis and bottom-friction sources. It is based on a reduced form of the Navier-Stokes equation and assumes that the currents are steady and relatively slow-moving with frictional forces confined to the surface and bottom (Galt 1975, 1980).

The above descriptions are taken in part from (Petrae 1995).

References:

Galt, J.A. 1975. Development of a simplified diagnostic model for the interpretation of oceanographic data. NOAA Technical Report ERL 339-PMEL 25. Seattle: Pacific Marine Environmental Laboratory, Environmental Research Laboratories. 46 pp.

Galt, J.A. 1980. A finite element solution for procedure for the interpolation of current data in complex regions. Journal of Physical Oceanography (10) 12:1984-1997

Galt, J.A., and D.L. Payton. 1981. Finite element routines for the analysis and simulation of nearshore circulation . Proceedings of the 1981 Oil Spill Conference American Petroleum Institute, Washington D.C.

Petrae, Lcdr Gary. ed. 1995. Barge Morris J. Berman spill: NOAA's scientific response. HAZMAT Report 95-10. Seattle: Hazardous Materials Response and Assessment Division, NOAA. 63 p.

12. What is the basis for assuming that survival of rehabilitated birds is 100% (for Period 6) for all species other than common murre and western grebe?

Trustee Reply: The survival of seabirds subsequent to rehabilitation varies among species. It is generally assumed that species that spend all of their time at sea (except when breeding), such as murres and grebes, are more vulnerable than species that are adapted to resting onshore, such as penguins, gulls, and pelicans. Birds that spend most of the time feeding and resting on the water are subject to extreme thermal stress if their insulation is compromised.

Sharp (1996) and Wernham et al. (1997) found in the United States and Great Britain, respectively, that after release, cleaned Common Murres survived only a median of 6 days in

North America and 6.5 days in Great Britain, and very few survived sufficiently long to breed. However, to account for the argument that seabird rehabilitation techniques have improved since the early 1990s (see for example Golightly et al. 2002, Newman et al. 2003), as well as the fact that few birds were involved and survivorship in the wild is difficult to measure, we kept our estimates conservative, deliberately choosing survivorship values that were higher than we believe to be the case.

Based on Sharp (1996, 2000), we estimated that 25% of the murres and grebes survived to lead 'normal' lives, since these species are most likely to be stressed by oiling (see question 38 for full discussion). We used a higher value for survivorship, 50%, for other species, which are less likely to be stressed by oil, during Period 4. We assumed that improvements in rehabilitation techniques were significant enough to justify a conservative estimate of 100% survivorship for other species in Period 6. Note that this refers to very few individuals, as murres and grebes account for the majority of released birds.

References:

Golightly, R.T., Newman, S.H., Craig, E.M, Carter, H.R., & Mazet, J.A.K. 2002. Survival and behavior of western gulls following exposure to oil and rehabilitation. Wildlife Society Bulletin 30:539-546.

Newman, S.H., Ziccardi, M.H., Berkner, A.B,. Holcombe, J., Clumpner, C. & Mazet, J.A.K. 2003. A historical account of oiled wildlife care in California. Marine Ornithology 31: 59-64.

Sharp, B. E. 1996. Post-release survival of oiled, cleaned seabirds in North America. Ibis 138(2):222-229.

Sharp, B. E. 2000. Survival and fate after release of Common Murres oiled on the Pacific coast of North America since 1996: an update. R.G. Ford Consulting Co. Rept. to Calif. Fish and Game, Office of Oil Spill Prevention and Response.

Wernham, C. V., W. J. Peach, and S. J. Brown. 1997. Survival rates of rehabilitated guillemots. BTO Research Rept. No. 186. British Trust for Ornithology, Thetford, Norfolk, England.

13. What is the basis for assuming that survival of rehabilitated birds is 50% (for Period 4) for all species other than common murre and western grebe? Why does this survival assumption differ from that for Period 6 (see previous question)?

Trustee Reply: See answer above.

14. Since a portion of the spill area (Point Reyes, for example) is rocky, what are the implications of the fact that only one beach segment from any of the searches related to Luckenbach spill incident was similar to the rocky habitat used in the searcher efficiency study? Does this bias the beached bird recovery data, and if so, how? Does the inclusion of data only for sandy beaches in the Beached Bird Model runs bias the mortality estimates?

Trustee Reply: This question is relevant for only one of the 110 beach segments used in the BBM. Within the entire spill area, there were only two rocky beaches that were accessible and searched often enough to be used in the BBM: Franklin Pt. near Ano Nuevo and North Shelter Cove near Pacifica. Two other rocky beaches (Bodega Head and Fish Docks) were only visited once and do

not enter into the calculations. However, because no birds were found at North Shelter Cove, search efficiency is not an issue there. Thus, this question is only relevant for Franklin Pt. This beach segment is 0.9 miles long (representing less than half a percent of the spill zone). It was searched seven times, resulting in the recovery of three birds.

In the experiment, searcher efficiency was about 20% greater on rocky beaches than on sandy beaches. This difference would lead to less than a 20% difference in the number of carcasses found on these beaches since most carcasses had more than one opportunity to be recovered. The expected bias would therefore be less than 20% of half a percent. In order to simplify the modeling procedure, we therefore made the assumption that all birds were collected under sandy beach conditions of searcher efficiency. This simplification thus did produce a very small bias for Franklin Pt. This simplification does not affect extrapolations to other rocky beaches. See question 15 below for discussion on that point.

15. What do the 55.9% and 47.4% searched portions of the beaches correspond to? Are these percentages of the miles of sandy beach within each sector, or of the total miles of shoreline within each sector? Does the total mortality correction factor applied to unsearched areas assume that these areas consist only of sandy beach (as were modeled for searched areas – see previous question), and if so, how might this bias the resulting mortality estimates?

Trustee Reply: The searched portions of the beach in the San Mateo and Pt. Reyes sectors (47.4% and 55.9% respectively) refer to beaches that were searched with sufficient frequency that the beached bird model could be applied (searches spaced seven days or less apart).

The Beached Bird Model (BBM) estimates the deposition rate on searched beaches and extrapolates that estimate to unsearched beaches. Calculation of the deposition rate takes into account any substrate specific factors such as searcher efficiency. The nature of the beach substrate, whether rocky or sandy, therefore does not affect mortality estimates as long as the deposition rates on rocky and sandy beaches are comparable.

For example, consider a situation where there are two adjacent beaches, one rocky and one sandy, and the sandy beach is visited and the rocky beach is not. The estimated deposition rate on the sandy beach would take into account searcher efficiency on sandy substrates, and the BBM would provide an estimate of the deposition rate based on parameters appropriate to a sandy beach. The estimated deposition rate would then be extrapolated to the adjacent segment of rocky beach. Since the rocky beach was not visited, searcher efficiency on the rocky beach does not enter into the calculation. If the rocky segment had been searched, BBM estimates of the deposition rate based on searcher efficiency values for rocky beaches should lead to estimates of deposition rate comparable to what was estimated for the sandy beach.

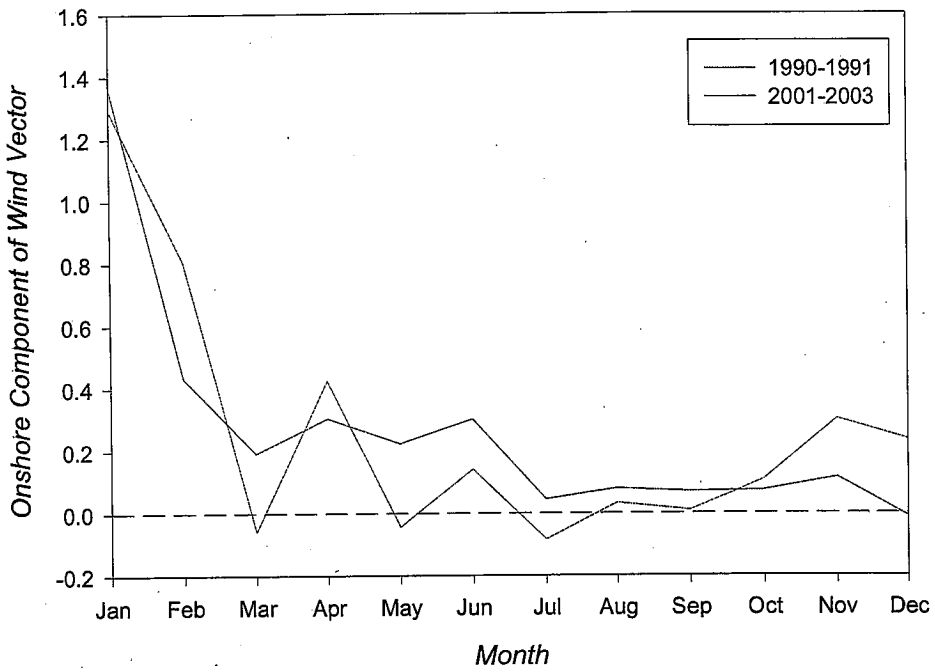
16. Ford et al. attempt to estimate seabird mortality from the poorly documented spill episode of 1990-1991 by assuming that the collection of live birds by the public during that episode is directly comparable to live bird collection in 2001-2003, and that bird mortalities would occur in the same ratio. What is the basis for these assumptions, and for treating the 1990-91 and 2001-2003 beaching events as directly comparable, without examining or correcting for potential differences in weather and other variables that affect beached bird recovery, such as search effort and search efficiency?

Trustee Reply: The analogy between the mortality events of 1990-1991 and 2001-2003 is based on two assumptions: (1) oiled birds were equally likely to be beached, and (2) birds were equally likely to be recovered by the public.

Regarding the first assumption, Ford examined the relative magnitude of the onshore component of the wind vectors between 1990-1991 and 2001-2003, using data from Buoy 46026 in the Gulf of the Farallones. Because the coastline is oriented in a generally north/south direction, shoreward movement driven by the wind can be estimated as $\rho\text{Sin}(\theta)$ where ρ is the wind velocity, and θ is

the wind direction. For example, when θ is 0°, then Sin(θ) is 0.0, and drifting carcasses (taking into account wind effects only) would move parallel to the shore. If the angle were 90°, then Sin(θ) would be 1.0 and drifting carcasses would be moving directly shoreward. Monthly averages for the shoreward component of the wind are shown below:

Average monthly onshore component (westerly) of wind vector
(ρSin(θ) where ρ is wind speed and θ is wind direction).
Larger values indicate stronger or more frequent onshore winds.



Overall patterns of onshore winds were generally similar during the two periods. Since most mortality occurred during the winter months, data for December through February are the most relevant. During those months the onshore component of the wind was generally higher during the 1990-1991 period than the 2001-2003 period, leading to a possible underestimate in the number of birds actually killed during the 1990-1991 event.

Evaluating search efficiency by the public is difficult from a quantitative standpoint. Nonetheless, it is very likely that public awareness of the effects of oil on birds and the potential for rehabilitation has increased over time. Outreach programs such as BeachWatch and BeachCombers as well as the development of the Oiled Wildlife Care Network have made it much easier for members of the public to recover and turn in live injured birds (75% of those recovered by the public were alive in the 2001-2003 period) and much likelier that they would be aware of the possibility of handing the birds over to qualified personnel for treatment. It is therefore possible that the 'efficiency' of the public has increased since 1990-1991. This would also lead to an underestimate of bird mortality during the 1990-1991 period. The Trustees conservatively assumed that the public search effort was similar across spill events.

17. Was Beach Watch survey data normalized in order to estimate background deposition separately for the Point Reyes and San Mateo areas to allow for the significantly different asymptotic persistence limits between these areas?

Trustee Reply: Separate background rates were not used for the Point Reyes and San Mateo areas. Because persistence rates differ between the two areas, it is possible that the estimated rate of background deposition in the two areas as calculated from the Beach Watch data also differ, which

would affect the estimates of acute mortality. In order to explore the magnitude of this issue, we recalculated background deposition from the Beach Watch data separately for the Point Reyes (northern) and San Mateo/Monterey Bay (southern) sectors. We focused on several species groups and recalculated estimated mortality for the 2001-2003 incident. Results are indicated in the "revised Table 9", and compared to the original Table 9 from Ford (2006). Revised numbers are in red. This results in a small reduction in background deposition for murres and grebes, and an increase in background deposition for cormorants and loons. Because the changes were minor, the remaining species were not recalculated. Because of an increase in total estimated dead grebes, the total estimated mortality for Marbled Murrelets also increased, from 9 to 10.

Revised Table 9. Estimated bird mortality for Period 6 (2001-2003).

Species/Groups	Beached Bird Model	Lost at Sea	Unknown Locations	Bay / FI / Water	Estimated Back-ground Deposition	Survived Rehab and Release (Estimate)	TOTAL Estimated Dead
Common Murre	5600	515	44	204	93	74	6196
Procellarids							15
Grebes	1001	0	4	18	66	14	943
Cormorants	628	0	0	0	101	0	527
Loons	348	20	0	3	58	4	309
Waterfowl	33	0	0	0	14	2	17
Phalaropes	65	6	0	0	25	0	46
Other Shorebirds	43	0	0	0	12	0	31
Gulls	1144	105	0	2	444	6	801
Brown Pelican	82	0	0	1	24	3	56
Marbled Murrelet							10
Ancient Murrelet	94	9	0	2	0	0	105
Cassin's Auklet	81	7	0	1	11	0	78
Rhinoceros Auklet	148	14	0	10	23	0	149
Other Alcids	30	3	0	0	20	0	13
Other/Unid. Spp.							3
Land Birds							5
ALL SPECIES	**9,297**	**679**	**48**	**241**	**891**	**103**	**9,304**

The following table summarizes the changes between the original Table 9 and the revised results above.

Species/Groups	ORIGINAL Estimated Dead	REVISED Estimated Dead	% change for 2001-03 Episode
Common Murre	6,159	6,196	+0.6%
Grebes	867	943	+8.8%
Cormorants	529	527	-0.4%
Loons	326	309	-5.2%
Marbled Murrelet	9	10	+11.1%

Considering the relatively small magnitude of the changes, and the fact that the changes don't go in a predictable direction (i.e. some are positive and some are negative), the Trustees did not conduct further analysis on other species and spill episodes. Likewise, the Trustees do not believe that the magnitude of these revisions warrants a change in the scale of restoration.

18. Why were lost bird-years not calculated for waterfowl? This calculation is needed to determine the appropriate scale of restoration for loons and waterfowl as a species group. Quantifying injury and scaling restoration only for loons may result in aggregate under- or over-compensation.

Trustee Reply: The Kokechik Flats restoration project simultaneously addresses three bird species groups: loons, waterfowl, and other shorebirds. The Trustees considered loons to be the key species in scaling this project because, due to the life history characteristics of these species, the lost bird-years per bird killed would be greatest for loons (they are the longest-lived and slowest-reproducing). However, scaling the project to restore loons would result in some overcompensation for waterfowl and other shorebirds. This results from the natural difference in population size for each of these groups at the project site. Kokechik Flats contains an estimated 360 breeding pairs of loons. However, it contains several thousand pairs of breeding waterfowl and over 1,000 breeding pairs of Red Phalaropes (the primary species of concern in the "other shorebirds" groups). The number of birds killed in each group from the oil spills is 1,314 for loons, 862 for waterfowl, and 1,599 for other shorebirds. Due to the life history characteristics of these species, the lost bird-years per bird killed would be greatest for loons (they are the longest-lived and slowest-reproducing). In beginning the bird REA for these species, it became apparent that waterfowl and other shorebirds would have fewer lost bird-years than loons but many more nests at the project site. Accordingly, if the loons were compensated for, compensation would simultaneously be met for both waterfowl and other shorebirds as well. This is what is meant in the Restoration Plan (page 53) when we state: "Realizing that waterfowl will benefit tremendously from the restoration project selected to benefit loons and phalaropes..., lost bird-years were not calculated for waterfowl." A similar statement appears on page 94 with respect to other shorebirds. While this project thus results in some over-compensation for waterfowl and other shorebirds, the Trustees considered it a very cost-effective project for loons, as well as addressing the injuries to waterfowl and other shorebirds. The alternative loon projects were far more expensive. Furthermore, this was the only proposed project that benefited Red Phalaropes, the primary species of concern in the "other shorebirds" group.

19. Please provide a more complete explanation of the rationale for selection of a preferred restoration alternative for waterfowl that fails to benefit the species most heavily injured by the spill. Surf and white-winged scoters accounted for 121 of 144 (84%) of waterfowl collected 1997-2003; black scoter accounted for only 1 of 144 (0.7%) (see Table on pg. 54), yet Kokechik Flats benefits only black scoter. How was this determined to derive equivalent restoration in light of other alternatives that would benefit surf and white-winged scoters?

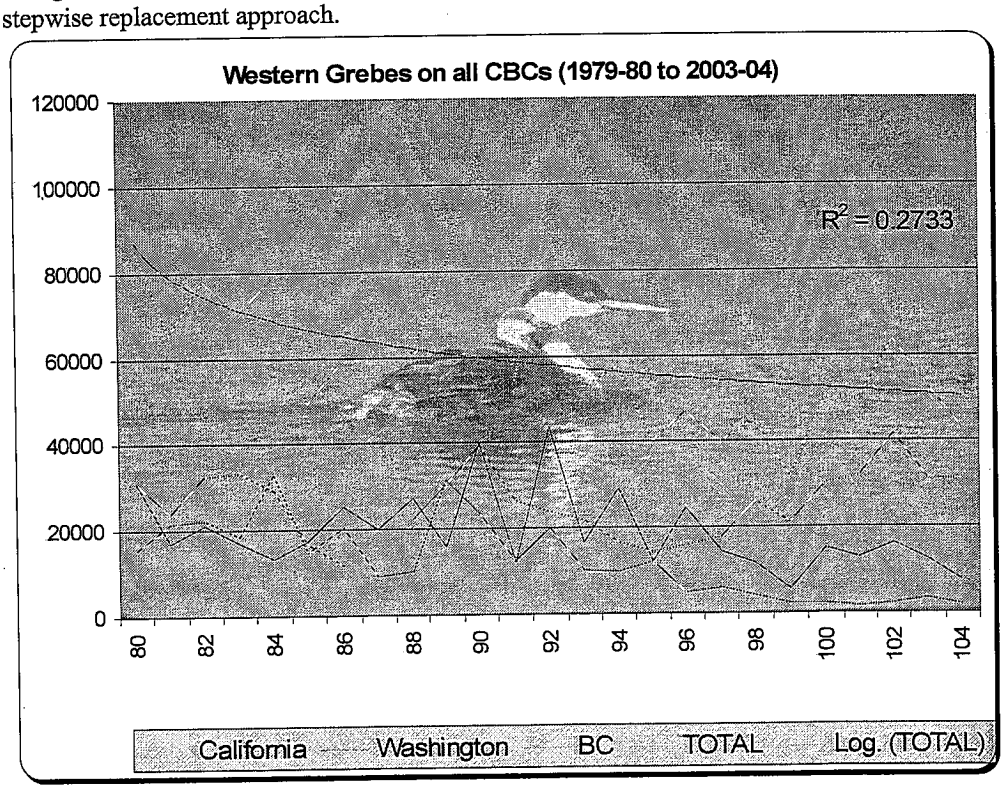
Trustee Reply: The Trustees expended considerable effort searching for a restoration project that would benefit Surf and White-winged Scoters. In California, we contacted John Takekawa of the USGS, a well-known scoter researcher, and explored potential restoration actions on the wintering grounds, such as San Francisco Bay, where the birds are suspected of being subject to contaminants in their diet. When we could find no feasible restoration action on the wintering grounds, we turned our attention to potential projects on the nesting grounds and contacted agency wildlife managers (e.g. USFWS personnel associated with several National Wildlife Refuges in Alaska) and private non-profit resource conservation specialists (e.g. Ducks Unlimited Canada). This proved equally unpromising.

Two of the primary nesting grounds for these species along the Pacific Flyway are the Yukon Flats and the MacKenzie River Delta. The Yukon Flats are 700 miles inland from the Yukon River Delta, the site of Kokechik Flats. The MacKenzie River Delta is further east, in the Northwest Territories of Canada, near the Arctic Ocean. The Canada project focused on advocacy to protect nesting habitat from potential oil and natural gas development. Due to the uncertainties associated with such advocacy, the Trustees did not prefer that project. The interior Alaska projects would acquire private in-holdings with the Togiak and/or Yukon Flats National Wildlife Refuges. These projects, however, provided minimal benefits to scoters at tremendous cost. The first issue was that the scoters nest in very low densities, approximately one nest per 283 acres. Including scaup and other waterfowl, nest density increased to a maximum of one nest per 50 acres. Four parcels were proposed for acquisition, totaling 425 acres at a cost of over $230,000. It was estimated these parcels may contain a total of seven scoter nests, far less than the number required to restore the injured resource (a preliminary scoter REA suggested we needed to project

20 times that number, or 140 nests). The second issue was that these nests to be protected were not subject to significant on-going threats of disturbance or development. Thus, the actual benefit per nest was minimal. After considerable discussion with these land managers, the Trustees decided that restoration options specifically for Surf and White-winged Scoters were not feasible and/or cost-effective and that the waterfowl compensation would be best addressed through the Kokechik Flats project, which simultaneously benefited loons and other shorebirds. That project does benefit Black Scoters, a closely-related species.

20. Interim losses for grebes were calculated based on a return to "pre-spill conditions," not baseline conditions. This fails to take into account the declining baseline population (see Conservation Issues, page 60 – grebe populations have declined approximately 50% in 25 years), and could significantly affect calculation of interim losses. Please provide more information on the specific pre-spill populations used in calculating interim losses (e.g., are they incident-specific or static? how are they determined?).

Trustee Reply: While it is true that Western Grebe numbers on Christmas Bird Counts have fallen from around 80,000 in 1980 to the lower 40,000's in recent years, the decline leveled off in the mid-1990's and the population has been relatively steady since then (see chart below). This is likely due to the decline of grebe colonies at vulnerable sites, but their persistence at protected sites. Thus, pre-spill conditions and baseline conditions are essentially the same, as the population has been relatively flat since the mid-1990's. Note that the restoration project focuses on at-risk colonies that are often successful, but have suffered failures in some of the recent years due to disturbance events. Based upon recent work by Ivey (2004), the Trustees believe that the past declines were largely due to low fecundity (caused by disrupted breeding efforts) as opposed to changes in survivorship. Only the latter would effect lost bird-year calculations in the juvenile stepwise replacement approach.



21. What is the rationale for use of demographic parameters that imply an approximately constant population size for a species that has experienced a 50% population decline in the last 25 years?

Trustee Reply: See the answer to question 20 above.

22. Are reductions in nest productivity documented for colonies other than Clear Lake? Only the productivity reductions observed at Clear Lake are documented in the Conservation Issues discussion (pg. 60). If the other colonies considered for protection do not have similarly documented disturbance-related productivity reductions, what is the basis for positing, and quantifying, productivity gains (and hence restoration benefit) from reductions in disturbance at these colonies?

Trustee Reply: While reductions in nest productivity have not been documented for colonies other than Clear Lake, the Trustees have determined that conditions and threats at other lakes are similar to those at Clear Lake. In 2003 the Trustees (using funding from a different source) employed grebe expert Gary Ivey to survey many of the grebe nesting lakes in the state. He assessed each lake with respect to both grebe breeding use and human disturbance. He did not have the time or staff to conduct the detailed surveys necessary to quantify nest productivity. However, he did provide a detailed management plan with specific recommended actions to protect the colonies at each lake, including an estimated budget of what it would cost. This plan is referenced as Ivey (2004) in the DARP and is available at http://www.dfg.ca.gov/ospr/organizational/scientific/nrda/FINAL%20GREBE%20REPORT.pdf It describes conditions and threats at the other lakes as very similar to those at Clear Lake. The Trustees largely followed Ivey's recommendations, although we have removed plans and budgets for wake barriers after discussions with resource managers at Clear Lake and Eagle Lake revealed that this project component would create problems with the local populace, and that the need could best be met via the other project components. See question 24 for details on the productivity data at Clear Lake.

23. What is the rationale for assuming that the proposed project will be 80% successful at eliminating disturbance events – and how is 80% success defined (elimination of 80% of disturbances in any single year, or elimination of ALL disturbances in 80% of the years)?

Trustee Reply: By 80%, the Trustees mean that, in any given year, an average of 80% of the chicks that would otherwise be lost to disturbance events will be protected and saved (see question 24 below for further details on how this is incorporated into the credit calculations). Since disturbances and their impacts vary significantly from year to year, and it is impossible to quantify how many disturbances were prevented, the 80% figure represents, to some degree the professional judgment of the Trustees. However, the Trustees' past experience with similar projects strongly suggests that the project will be largely successful in meeting its goals. Indeed, implementation of the pilot project at Clear Lake has been on-going for several years and, while not all project components have yet been implemented, major disturbance events have not occurred and the grebe colonies have succeeded at producing young at natural levels (approximately one fledge per pair). At the same time, the Trustees are cognizant of the fact that a single disturbance event may have catastrophic impacts on a colony and that the program may not reach all boaters or that not all boaters may comply. The Trustees also have had experience with similar "public compliance" issues with respect to trash at campgrounds, helicopter disturbance at murre colonies, and the deliberate feeding of bears and other wildlife. In these cases, public education and outreach is highly effective, although violations occasionally occur as a result of ignorance or deliberate actions.

24. Please clarify the Credit calculations for projected restoration benefits from the Clear Lake Project, and provide the rationale for all inputs and assumptions underlying these calculations (for example, what is the basis for assuming the project will produce and/or maintain an annual average productivity of 0.5 fledges per nest?).

Trustee Reply: The parameters for grebe productivity in the credit calculations come from 13 years of data collected by Dan Anderson of UC Davis at Clear Lake. While the detailed data is not yet published or available, Professor Anderson noted that, in good years with no disturbance events, productivity is approximately 1.0 fledges per nest. In bad years with disturbance events, productivity is approximately 0.2 fledges per nest. Since there have been seven good years and six

bad years, this amounts to an overall average of 0.63 fledges per nest. The Trustees consider this the productivity without the project. With the project, productivity could potentially increase to 1.00 fledges per nest, a gain of 0.37 fledges per nest. However, we only expect to realize 80% of that benefit, or 0.30 fledges per nest. Thus, average productivity with the project is expected to be 0.63 + 0.30 = 0.93 fledges per nest, for an average annual benefit of 0.30 fledges per nest. Without rounding error, the precise number is 0.295. The last sentence on page E-1 has a typo: 0.5 fledges per nest should be 1.0 fledges per nest (or 0.5 fledges per adult).

25. While it is understood that northern fulmars have "not been a focus of conservation concern," (pg. 65), they nonetheless account for almost 94% of estimated mortality and 95.7% of lost bird-years among procellarids. What is the rationale for not undertaking more thorough evaluations of the restoration alternative (ground squirrel eradication at the Semidi Islands) that would address northern fulmar injury (i.e., was it not *possible* to evaluate the feasibility of this project)? How/why would the feasibility of this project be markedly different from that of any other rodent eradication project (which have been – see last paragraph on pg. 68 – "carried out on many islands worldwide")?

Trustee Reply: The Trustees contacted several seabird experts in Alaska in an attempt to identify a suitable restoration project that would provide benefits to Northern Fulmars. All but the Semidi Islands project were limited to monitoring only and were not projected to lead to increased bird populations. While very expensive, the Semidi Islands project is attractive, eradicating Arctic Ground-Squirrels from fulmar nesting islands. The primary feasibility question was not centered on the physical ability to remove the ground-squirrels, but rather whether or not the ground-squirrels were introduced or native to the islands. If the ground-squirrels are determined to be native, depredation of fulmar nests would be considered a natural process and eradication would not be permitted. The USFWS is planning DNA studies to evaluate this question, and does not expect an answer for several years. Due to this time delay and uncertainty, the Trustees elected to take this project off the table and instead focused on other restoration actions.

26. Is it reasonable to assume that the mouse eradication project will consistently provide the predicted benefits through the year 2100 (and that mice will not be reintroduced within the next 90 years)?

Trustee Reply: The Trustees feel this assumption is reasonable, given the islands' remoteness and strict access limitations. The Farallon Islands are entirely managed by the USFWS as a National Wildlife Refuge. The Refuge is committed to maintaining rodent-free islands once this project is implemented. Access to the islands is restricted to all but a very small number of agency personnel and researchers (e.g. even the Trustee Council has not been able to visit the site). Furthermore, there is no dock or anchorage for vessels. All people and material are off-loaded via a crane from an idling boat. In preparation for this project, the Farallones NWR is establishing new quarantine measures to ensure that no mice are accidentally transported onto the islands. In addition, bait stations and traps will be in place to monitor for any mice on the island. Due to the uniqueness and remoteness of these islands, the Trustees do not anticipate any change in ownership or management and thus believe that benefits will continue thru 2100. It is probably more likely that storm-petrels would be threatened by unforeseen environmental or anthropogenic events than mouse reintroduction, though such uncertainties are addressed via the discount rate.

27. Are there potential effects on birds (including ashy storm-petrel) from the rodenticide, such as incidental poisoning and/or effects from consumption of poisoned mice? What are the similarities and differences between the rat eradication at Anacapa Island and the mouse eradication at the Farallon Islands? Also, have Claimants allowed for the cost of a NEPA EA in the project budget?

Trustee Reply: The effects of the rodenticide will be fully evaluated in the NEPA process for the project. In general, the rodenticide poses only a very limited risk to individual landbirds and seabirds. There are no resident or breeding songbirds on the Farallon Islands. A few scattered trees provide shelter for vagrant landbirds who, lost or blown off-course, land on the island during

spring and fall migration. All but a handful of these birds leave the island after a few days or less, meaning that fewer than 25 individual small songbirds (sparrows, warblers, and a few other species of passerines) are present on the island outside of migratory seasons. Most seabirds are exclusively marine predators and do not feed while on land, making the risk that they will be affected by the rodenticide negligible. The one exception to this is the Western Gull, which are known to swallow a wide variety of items, edible or otherwise. To minimize the exposure to risk to gulls and landbirds, the NWR plans to apply rodenticide during the early winter, outside of the migratory period, when the number of gulls and other seabirds present on the islands is significantly lower than during the breeding season.

On Anacapa Island in southern California, researchers found only two gulls dead from rodenticide exposure after an early winter aerial-broadcast rat eradication. This represented an incidental loss rate that while unfortunate, had absolutely no population-level effect on Anacapa's gulls. Incidental mortality among individual grain-eating birds that are attracted to the bait pellets likewise would have no population-level effects. Some Burrowing Owls (no more than five) could be present on the island during the time period the project is planned. The NWR plans on capturing them and translocating them to more suitable habitat on the mainland. Potential impacts to birds will be addressed in the Migratory Bird Treaty Act permit procedures.

The Farallon mouse eradication is expected to be similar to the Anacapa rat eradication in many respects. One of the eradication methods that will be evaluated in subsequent NEPA analysis for this project will be the same basic technique used on Anacapa: aerial bait broadcast. Another alternative that will be evaluated, the use of bait stations, was also used on Anacapa. The bait formulation for mice on the Farallones, in terms of inert ingredients, pellet size, and pellet shape, would be slightly different from the bait designed for rats on Anacapa. Also, the bait application strategy will have to be designed to account for the feeding behaviors of mice, which are different than those of rats.

From an "affected environment" perspective, there are several similarities:
Anacapa and the Farallones are similar in topography and vegetation makeup (sheer cliffs abundant, very few trees or large shrubs). They are both home to large Western Gull colonies, which follow similar breeding and roosting schedules (e.g. there are the fewest gulls present during early through mid-winter). Both islands provide good haul-out habitat for marine mammals, and there are sea lions and harbor seals hauled out year-round on both islands' shores.

There are several differences between the two islands that will result in fewer environmental consequences for the Farallones mouse eradication. Anacapa is much larger, covering more than three times the land area of the South Farallones island group. Anacapa is also home to an endemic subspecies of deer mouse, *Peromyscus maniculatus anacapae*. Native deer mice are present in nearly all terrestrial habitats on Anacapa and were present during the rat eradication. The eradication effort was designed to mitigate for the short-term negative impact that rodenticide broadcast would have on the deer mouse population. This kind of complex mitigation for highly vulnerable mammal species would not be necessary on the Farallones, which has no native land mammals. There are also no breeding landbird species on the Farallones; there are 22 on Anacapa. The Farallon Islands do have two regularly breeding pinniped species (Steller's Sea Lion and Northern Elephant Seal), which Anacapa does not have. However, the eradication will be timed for the non-breeding season of pinnipeds.

The cost of conducting the NEPA process was not included in the claim to the NPFC because funding for this effort has already been provided by another source (the National Fish and Wildlife Foundation). That document is currently being drafted.

28. Sooty Shearwater project scaling: why do Claimants assume that project benefits continue through 2100? The basis for this scaling decision seems to be qualitative, rather than quantitative, in nature. Please provide additional information/rationale for this.

Trustee Reply: Appendix F describes the quantitative elements for scaling the Sooty Shearwater restoration project at Taiaroa Head, New Zealand. Specifically, we employed a local population model of the colony, comparing the population trajectory without the project and with the project. Without the project, the population continues its annual decline of 4.3% (from Mckechnie 2002). With the project, the Trustees assumed that the population would stabilize. A steady population is achieved via increases in fecundity (from 0.3 to 0.36) and adult survival (from 87.5% to 90.9%) as a result of the project, as described in Appendix F. The Trustees believe that the project will restore the historical natural population characteristics associated with a steady (non-increasing and non-declining) population. The project site is protected under a conservation easement which has been reviewed by Trustee legal counsel.

29. Why are the demographic parameters used in calculating injury for northern fulmar calibrated to imply a roughly constant population size, when this species has "increased dramatically in recent years" (see DARP, pg. 65, paragraph 4)? Was this increasing baseline considered in estimating natural recovery (and hence interim losses)?

Trustee Reply: Modeling an increasing baseline would result in a larger scale of required restoration actions. However, because the restoration projects do not specifically target fulmars (see questions 25 and 30), the Trustees assumed a roughly constant population size for calculating injuries, which is more consistent with other species in the group. It seemed inappropriate to add fulmar population growth into the equation when fulmars were essentially a surrogate species for others within the same family. Note that, on the restoration side, demographic parameters associated with the specific local populations at the project site were employed.

30. What is the rationale (from a resource management perspective) for equating restoration of ashy storm-petrels and sooty shearwaters to injury of northern fulmar? Is this biologically appropriate – i.e., do these species provide equivalent resource services to the ecosystem or fill the same ecological niche?

Trustee Reply: Northern Fulmars, Sooty Shearwaters, and Ashy Storm-Petrels are in the same order and do provide similar resource services. They are all in the order Procellarids, of which albatrosses are the most familiar (and largest) members. These seabirds share the following characteristics: they are highly pelagic, often foraging many miles offshore or even far out in the ocean, beyond most other seabird species; they are excellent long-distance fliers and migrate long distances; they are long-lived and lay a single egg each year; they nest at relatively few locations, primarily limited to remote islands. Birders often pay for pelagic birding trips on boats (much like whale-watching trips) to see these species.

31. Given that gulls account for approximately 58% of total mortalities in this resource class, what is the basis for Claimants' conclusion that the restoration projects for brown pelicans and cormorants will "more than compensate" for impacts to gulls? How was this determined in the absence of a calculation of lost bird-years for gulls?

Trustee Reply: See the reply to question 18. The same logic applied for gulls with respect to the Baja Islands project. Approximately 10,000 Western Gulls, the primary species injured in the oil spills, nest on these islands. This includes 600 breeding Western Gulls on San Martín, 500 on San Jeronimo, 1,150 on San Benito, 7,500 on Natividad, and smaller numbers (not surveyed) on San Roque and Asunción). Additionally, 200 Heermann's Gulls nest on San Benito and 75 on San Roque. While small, these are important colonies for Heermann's Gulls, as over 90% of the world's population nest on Isla Raza in the Gulf of California. Thus, these are critical alternative colonies in case of problems at Isla Raza. The project is expected to provide protection for these gull colonies while simultaneously benefiting pelicans, cormorants, and Cassin's Auklets. While attempting to scale the project for the gulls, it quickly became apparent that so many gull nests would be protected from human disturbance that the benefits would more than compensate for the injury. Thus, no further quantification using bird-years was done. Western Gulls will also benefit from the re-vegetation project at Año Nuevo Island.

32. In light of the existing protections and restricted access for the six islands – San Martin, San Jeronimo, San Benito, Natividad, San Roque and Asuncion – selected for restoration projects (e.g., government ownership, Biosphere Reserve status, requirements for Visitor's permits, etc.), how much restoration (in the form of disturbance/threat mitigation) will actually be achieved? This affects the cost effectiveness of the proposed projects, as they may yield only marginal or slight species-protection benefits at significant ($3.7M) cost. Are there data or studies on the current level of disturbance on each island, and on the actual projected benefits of the various proposed restoration activities?

Trustee Reply: While the islands enjoy legal protection, they are still subject to considerable human disturbance due to regular human use and limited enforcement resources.

A recent peer-reviewed article by Wolf et al. (2006) provides an excellent summary of the ongoing disturbance limiting seabird population on these islands.
See: WOLF, S., B. KEITT, A. AGUIRRE-MUÑOZ, B. TERSHY, E. PALACIOS and D. CROLL (2006). Transboundary seabird conservation in an important North American marine ecoregion. Environmental Conservation pp 1-12.
Current human use is as follows:

- San Martin has a fishing camp that includes a trail that runs right through the cormorant and pelican colonies. It also has two automated navigational lights that require maintenance (and thus human presence) at least twice per year.
- San Jeronimo supports a seasonal fishing camp and a year-round lighthouse keeper that walks around the island nearly daily flushing breeding and roosting birds and crushing burrows.
- San Benito and Natividad support permanent fishing camps that regularly disturb cormorant and pelican colonies and trample shearwater burrows. The community on Natividad has over 400 residents.
- San Roque and Asuncion have no facilities, but are regularly visited by people from the nearby town on the mainland.

The article by Wolf et al. (2006) clearly states disturbance as one of the primary (and most easily rectified) threats to seabirds on these islands.

Currently, the legal status of the islands are as follows: San Martin, San Jeronimo and San Benito (hereafter the Federal Islands) are Federal property but have no official status as protected areas and Natividad, San Roque and Asuncion Islands (hereafter the Protected Area Islands) are part of the Vizcaino Biosphere Reserve, essentially a national park in Mexico. A petition to create a Mexican protected area including the islands of San Martin, San Jeronimo and San Benito has been accepted by the Mexican government and gone through the public comment process. It is expected that this protected area will be decreed within the next year. However this remains a political process and there are no guarantees as to the timing of this decree.

Despite the current differences in the status of these islands, all are technically considered to have restricted access. Any visitors to the islands are supposed to have permits from either the Biosphere Reserve office or PROFEPA, the legal enforcement arm of the Mexican Department of Interior. In reality the only visitors that do get permits are usually scientific researchers from the US. In the case of the Vizcaino Biosphere reserve, it is the largest protected area in Latin America and the small staff of four to six people have priorities other than the protected area islands, thus little or no enforcement occurs.

For the Federal islands there is no mandate for enforcement; thus the restricted status is in name only. When these islands are decreed as part of a protected area, funding for staff will probably not be available from the government. Thus, increased management is unlikely.

In addition to the specific project tasks outlined in the DARP, a key element is the regular presence of biologists on the islands to address ongoing and new disturbance issues as they arise.

Conservacion de Islas, a Mexican NGO that has been sanctioned by the government to assist in managing islands off Baja California, will be directly involved in implementing the project. Under the proposed project, they will essentially assume environmental management responsibility for the islands within the project area. They have already entered into a similar agreement for the Guadalupe Island Biosphere Reserve which was decreed in June 2005. This agreement enables the group to provide on-the-ground management necessary to protect the island, as well as implement specific tasks (such as goat eradication, erosion control, animal and plant monitoring, etc.). Their funding comes from various private sources. This project has been successful. The proposed *Luckenbach* project will similarly provide funds to enable Conservacion de Islas to work with the local population and manage San Martin, San Jeronimo, San Benito, Natividad, Asuncion, and San Roque Islands with respect to the seabird colony issues and assist in the specific tasks outlined in the project description.

Regarding the second part of the question about data or studies on the current level of disturbance on each island and project benefits, there is considerable historical information but limited recent data (aside from the discussion in Wolf et al. 2006).

Most of the historical disturbance is outlined in the DARP. This includes the loss of the world's largest Double-crested Cormorant colony and Brown Pelican colony primarily from human disturbance. A large Brandt's Cormorant colony on San Jeronimo was lost due to disturbance (guano mining) as well as the pelican and cormorant colonies on Asuncion and San Roque (human activity). Recovery at all of these colonies is greatly reduced because of ongoing human disturbance.

A measure of the expected benefits of this project is exemplified by previous efforts to stop disturbance on San Roque Island. There, previously-extirpated cormorant and pelican colonies re-established after a several-year education and disturbance reduction program. However, once this plan lapsed, these new colonies were lost. This experience suggests that regular management and the presence of biologists will protect seabird colonies and enable them to rebound.

33. Please provide derivation of the costs and budgets for the Baja Islands Seabird Restoration projects, including the Personnel, Operating Supplies and Equipment categories for each project.

Trustee Reply: The detailed budgets for each of the island projects are provided on an Excel spreadsheet: Baja Islands budget DETAILS.xls, which we will send now to accompany this document. This sheet calculates all of the costs associated with each project over a 10-year period, which is the time frame for which the project was originally developed. The final scaled proposed project is six years.

Costs for each island project are totaled individually. However, it is assumed these projects will be funded as a group and certain costs were assigned to certain islands. For example, the cost for a scientific advisory group is loaded on the Asuncion and San Roque (ASR) project rather than prorated across all islands. In addition, while all islands have a core staff, these staff will assist on other islands during field intensive periods when more than 2 or 3 field staff are needed. Most equipment and supplies cannot be shared across islands as they are required simultaneously at each site.

Here is some additional information for interpreting the spreadsheet:

Column A: Item Descriptions

A 14-15: FTE is Full Time Equivalent and is used to calculate medical evacuation insurance for staff that will be in the field at any time during the project.

A 18 – 21: Country benefit and tax factor: a correction factor that adds to each salary the benefits for each person according to the country in which they are hired (USA, Mexico or Canada). Contractors (consulting fees) have no benefits (equals 1).

Column B: Country benefit and tax factor

Column G-P: An X in the column shows there is a cost for that year of the project and is calculated in the summation columns S – AC.

Columns T,V,X,Z,AB: Adjustment Factor – this code is used to adjust the cost of each category over the course of the project. For personnel this cost increases by 3% each year to account for cost of living increasing in salaries. In year 6 (T 12-T 16) the AF is reduced to account for a reduction in effort of 25% after the first five years.

The Trustees used this spreadsheet to calculate the present value cost of a six-year project. Specifically, we took the costs for years one thru six, discounted back to 2007 assuming we'd earn 1.5% above inflation, and derived a total present value cost. That calculation is presented in Baja Islands Seabird Restoration budget.xls which was supplied to the NPFC on the CD we sent in 2006.

34. What is the basis for the assumed colony growth rate of at least 10 new nests per year per species per island? What reason/basis is there to expect a six-fold increase in pelican nests on San Roque Island in six years?

Trustee Reply: The Trustees assumed this growth rate based upon growth rates at other locations involving both extirpated and depressed colonies. Colonies which have been completely extirpated must start from scratch, relying on immigrants from surrounding colonies to get it started. Others are depressed, and may rebound based solely on internal growth. In the Baja project, both situations exist. The Trustees estimate the benefits of a colony restoration project based upon how many "new nests" are created, as opposed to "redistributed nests" from other colonies. On the Baja Islands, it is quite possible that some project locations may experience a large amount of immediate apparent re-colonization, but this could simply be birds moving from an existing colony to the new site. The task of the Trustees is thus to estimate the net gain; how many nests are there that would not otherwise be there but for the project.

There are two excellent data sets of restoration projects successfully restoring seabird colonies that were extirpated. On Seal Island, Maine, a project saw Atlantic Puffins increase from 0 to 230 pairs over a period of 21 years (1985 thru 2005), an average increase of 11 pairs per year. In California, a Common Murre colony at Devil's Slide Rock was completely extirpated after the *Apex Houston* oil spill of 1986. In response to restoration actions, the colony grew from 0 to 361 nests in 11 years, an average increase of 33 pairs per year. This was due to immigration from other colonies as well as internal growth.

There are also examples of existing but depressed seabird colonies growing substantially as a result of restoration actions. In the Gulf of Maine, a colony of 2,543 Common Tern pairs grew to 5,616 pairs over 21 years, an average annual growth rate of 4.0%. At the same time, a colony of 1,720 Arctic Terns increased to 2,921 pairs (average annual growth = 2.7%) and Roseate Terns grew from 76 to 195 pairs (average annual growth of 4.8%, averaging 6 new pairs per year).

All of these examples used some of the same techniques as proposed in the Baja project, such as disturbance reduction and social attraction (e.g., use of decoys, etc.).

Based upon discussion of this issue with experienced seabird restoration experts, including those familiar with these islands, the Trustees estimated a minimum constant growth of 10 nests per year. In cases where there is little or no base population on the island (e.g., the project island is

starting with zero nests), this initial growth would have to come from overflow from growth at colonies on other islands. Such overflow, because it is dependent on yearly oceanographic conditions (in better years more birds attempt to nest so it is more likely birds will nest in new locations) and, over longer time frames, upon population increases elsewhere (an increasing colony is more likely to produce birds that look for new islands on which to nest), does not occur every year. Thus, in some years there may be more than 10 pairs that attempt to move into the project site and in other years fewer. The experts suggested that an average influx of 10 pairs per year from external colonies was a reasonable estimate based on results from other restoration projects and the current size of the seabird colonies in the region. Over the course of the six-year project, this implied a net growth of 60 pairs. In the specific case of San Roque Island, small numbers of pelicans and cormorants attempt to nest in most years but most or all of the nests are unsuccessful due to disturbance from humans. Thus, with disturbance reduction, these nests are much more likely to be successful. Birds produced from these nests can be counted as "new nests" since the birds are not from adults redistributed from other islands.

In cases where there is already a large base population at the project site capable of producing significant growth (e.g. 1,500 Cassin's Auklet pairs on San Martin), a minimum growth rate of 3% was used. This is a moderate growth rate for these species (which typically produce one egg per pair per year).

In two other situations, portions of Cassin's Auklet colonies were already at maximum size but at risk annually. These were 150 nests on San Jeronimo, which are often trampled by fishermen crossing the island, and 1,000 nests on San Benito, which are subject to trampling and disturbance from a variety of human activities. In these two cases, the benefits were based upon the number of current nests at risk from human activities and the benefits were simply the number of protected nests, with no forecasted growth.

35. What specific methodology was employed to commute 22 oiled plovers into 30 dead plovers from the Luckenbach incident? Please provide these calculations.

Trustee Reply: Unlike the other species impacted by the oil, Snowy Plovers are "sandpipers" and spend their entire day (and night) on the beach. They do not enter the water or swim. Thus, they would have contacted the oil while foraging via the tarballs on the beach. This is consistent with the fact that oiled plovers were only observed on the few occasions when tarballs were coming ashore. Because these birds are on the beach and are approachable, they are easily surveyed by trained observers. Despite their excellent camouflage, live birds can be located as they move and run over the sand.

11 Snowy Plovers on a beach from a distance of about 15 yards

The total number of observed oiled plovers was approximately 30 birds. This includes the 22 documented during the 1997-98 oiling event, as well as a scattering of other reports during later oiling events. All of these birds were still mobile and could not be captured. None were later found dead, which is not surprising due to their small size and camouflage (especially when still/dead), as well as the high likelihood that a moribund plover would be picked up by a gull or raven. However, repeated surveys failed to re-find all but a few of the oiled live plovers. Given the very small number of plovers in the area (less than 100 individuals) and the reliability of finding, observing, and re-finding them (many are color leg-banded and thus identifiable), this suggests the "disappeared" plovers succumbed to the oil.

It is possible that additional plovers were oiled and never observed even once. It is also possible that a few of the oiled plovers went on to survive and breed (the Trustees have documented an example of this from another oil spill). However, the Trustees assumed that these last two factors are probably small (surveys did not suggest a loss of more plovers) and off-setting, and that the 30 observed oiled plovers represent the best approximation of the total number of plovers that died from the spills.

36. Please document or otherwise provide the basis for concluding that removal of invasive plants necessarily will result in recolonization by native plants. Did native vegetation come back in the Cape Mohican sponsored pilot project (see page 91, paragraph 3)?

Trustee Reply: Yes, native vegetation has come back in the pilot project area, as was described during the NPFC field trip to the project site in June 2006. Several species of native plants immediately re-colonized the area, while the non-native species have been successfully removed.

37. How will Claimants ensure/verify equivalent restoration for red phalarope without knowing/calculating lost phalarope bird-years, and the phalarope bird-years restored by the Kokechik Flats project?

Trustee Reply: See the reply to question 18, which addresses this question as well.

38. Newman et al. (2004) report a survival rate of 68% for rehabilitated common murre following the Stuyvesant spill; what is the basis of Trustees' assumption of a 25% survival rate following the Luckenbach spill?

Trustee Reply: There is a body of literature addressing the question of the fate of rehabilitated birds. While it has been demonstrated that gulls (which can forage on land) and penguins (which have blubber in addition to their feathers for insulation) can have high survival rates, it appears that other birds that forage by diving in the ocean (e.g. murres, loons, grebes, diving ducks) suffer poor survival after rehab. The Trustees considered the following sources:

1) Sharp, B.E. 1996. Post-release survival of oiled, cleaned seabirds in North America. *Ibis* 138(2): 222-228.
2) Sharp, B.E. 2000. Survival and fate after release of Common Murres oiled on the Pacific Coast of North America since 1996: An update. Prepared for California Dept. of Fish and Game. December 2000.
3) Newman, S.H. and J.A. Mazet. 2001. Post-release survival of Common Murres (Uria aalge) following the Stuyvesant oil spill. **Abstract only.** Presented at OWCN Research Symposium, May 2001, Sacramento.

Sharp examines banding returns of oiled and unoiled birds to compare their survival rates between the time of banding and the time of band recovery. In his 1996 paper, he examines various seabirds that were oiled, rehabbed, and released between 1969 and 1994. He makes a distinction between birds that were treated prior to 1990 in order to examine the impact of modern methods of bird rehabilitation. Note that he uses the British term for Common Murre, "Guillemot", in his 1996 paper. It is the same species (*Uria aalge*). For murres, his sample size is 78 rehabbed birds

pre-1990, 10 rehabbed birds between 1990 and 1994, and 641 non-oiled birds from throughout the period.

The median number of days between banding and recovery for the three groups was 6, 8, and 216 days respectively. The 95% confidence limits are 1 to 56 days, 0 to 263 days, and 424 to 546 days respectively.

There were some long-term recoveries (over 1 year after release) for all categories of birds. For all rehabbed murres, the rate of long-term recovery was 1.6 per 1,000 birds banded. For murres rehabbed since 1989, it was 1.3 per 1,000 birds banded. For non-oiled murres, it varied between 7.7 and 14.0 birds per 1,000 birds banded (depending on state and age class). For murres in California since 1989, the number of long-term recoveries for non-oiled birds is 6.5 times higher than for rehabbed birds.

Sharp notes that "it might be argued that recoveries during the few days after release are biased" due to such things as on-shore winds or higher search effort. However, he states that the comparatively low long-term recovery rates for rehabbed birds "can only be a consequence of abnormally high mortality in the year after release." Sharp further points out that most of the rehabbed birds are adults, while most of the non-oiled birds were banded on the nest. Given that adults have a much greater annual survival rate than juveniles, his results probably underestimate the actual differences in survival between rehabbed and non-oiled birds.

He thus concludes that: 1) "measures of survival were not greater for oiled birds treated in recent years with modern methods"; 2) "greater than 90%" of rehabbed birds die in their first year after release.

Sharp also does a literature review of other studies with similar results, noting that the only study regarding successful rehabilitation involved Jackass Penguins.

Finally, he even speaks to NRDA specifically, stating, "because their mortality rates are so high, oiled seabirds that have been cleaned and released should be added to the total of dead birds for the purpose of assessing damages of oil spills to seabirds and for the purpose of seeking compensation."

Sharp's 2000 paper adds more recent band recoveries to his data set and includes a discussion of the contribution of the few long-term surviving rehabbed birds to their breeding populations. Specifically, he adds 12 more rehabbed murres from California, released in 1996 and 1997 (including some Kure birds). He provides the raw data for all 12 birds in an appendix. The number of days survived for the 12 birds was 2, 2, 3, 4, 5, 6, 7, 7, 10, 14, 25, and 220 days (median = 6.5 days). There were no long-term recoveries. He does not provide the total number banded during the period, so we cannot assess if the sample size was too small.

Sharp concludes that these more recent birds "experienced the same poor survival as Common Murres oiled and treated between 1969 and 1996." He reiterates that between 1% (citing a 1997 study) and 10% (citing his own 1996 paper) of the birds may survive long-term. He provides a literature review regarding the fate of these surviving rehabbed birds (of several species, including murres) at breeding colonies. The sample size is extremely small. Nevertheless, breeding failure was common to all species in the year they were oiled. He writes, "In the case of COMU, 3 banded oiled and released birds were resighted at breeding colonies, but none bred in the breeding season after having been oiled, and 2 of 3 did not breed in the following year either."

Finally, he again addresses the NRDA issue directly, stating that "cleaned and treated birds should be considered the equivalent of dead birds for the purposes of oil spill damage assessment."

The Newman study involved the radio-marking of 31 oiled and rehabbed COMU (from the *Stuyvesant* spill) and 25 control COMU. All birds were adults. These birds were followed until confirmed dead, until their radios died, or until the search plane could no longer locate them. The

latter issue became a big problem, as the birds dispersed from Monterey Bay to Puget Sound, making surveillance very difficult.

The Newman report states in the introduction that 68% of the rehabilitated murres survived at least 80 days. However, this statement is misleading, as it includes many birds for which survival could not be confirmed. At another point in the report, it states that as few as 45% of the rehabbed birds may have been alive after 60 days. Birds in the study fell in to three groups: (1) those that were confirmed dead (i.e. they found the body); (2) those that were confirmed alive (i.e. they received a radio signal from a moving bird); and (3) those for which they received no radio signal and thus had no information. After 60 days, 45% were confirmed alive, 32% were confirmed dead, and there was no information regarding the other 23%. It is not clear how this last category compares with the control birds. Unfortunately, the report provides no table listing the number of days of last radio contact of the 31 rehabbed murres and 25 control murres. Requests for that data were turned down.

Based on these studies, it is likely that somewhere between 15% and 45% of the rehabbed birds survive in the long run. It is most tempting to use the midpoint, 30%. However, given the considerable uncertainty regarding their future contribution to the breeding population, the Trustees used 25%.

Note that this evaluation scarcely affects the scale of the restoration projects for murres. The 25% survival estimate only applies to the 601 murres that were captured alive, rehabbed, and released. The total mortality estimate of 31,806 murres includes predominantly birds found dead or birds not found at all but presumed dead. Thus, the 601 birds in question represent less than 2% of the total mortality estimate.

39. How can the benefits (i.e., restored bird-years) of signs and pamphlets be measured/calculated for restoration credit scaling purposes? Specifically, what is the rationale for selecting restoration scaling factors for these projects?

Trustee Reply: Signs and pamphlets are just some of the tools that outreach and education programs will employ. The seabird colony protection project will use a wide variety of methods targeted at specific user-groups. Examples include a specially designed page for pilot flight books to inform them of regulations and the locations of seabird colonies, visits to boat shows and angler groups, and meetings with private and public helicopter pilots. The benefits of individual project components (e.g., signs, pamphlets, meetings, etc.) are not quantified. In many cases, recipients will hear the message via several media.

The benefits are scaled via a predicted improvement in nest success at the seabird nesting colonies as a result of the project. Thus, murre fecundity with and without the project are compared. There are data from a similar project in Oregon that shows a 39% reduction in disturbance events (Reimer and Brown 1997). Additionally, there is some data from California demonstrating nest failure as a result of disturbance incidences that the Trustees believe would have been prevented with a project such as this one. For scaling, the Trustees assumed that fecundity would increase an average of 5% as a result of the project. In the population model, fecundity varies across age classes, as well as from "good years" to "bad years", based upon historical data. "Good years" and "bad years" were modeled to reflect varying oceanic conditions, which occasionally cause very low nest success. Increases in fecundity are bounded because murres lay only one egg per year. An average increase of 5% approached the maximum possible gain, as the most productive age classes in good years approached the highest fecundities recorded. This is reasonable, as murre productivity during "good years" is usually very high (around 0.8 fledges/nest), with human disturbances often a major factor whenever productivity is lower. See question 2 for more details.

40. Please provide a copy of the Reimer and Brown (1997) reference pertaining to the success of disturbance reduction at Three Arches NWR (this study is not listed in References). ?

Trustee Reply: The citation for this reference is:
Riemer, S. D., and R. F. Brown. 1997. Monitoring human-wildlife interactions and disturbance of seabirds and pinnipeds at Three Arch Rocks National Wildlife Refuge, 1993-1994. Oregon Department of Fish and Wildlife, Wildlife Diversity Program, Marne Region, Newport, OR. Technical Report #97-6-01.

A copy of the paper has been mailed to the NPFC.

41. What is Claimants' basis for scaling restoration credits for voluntary land management practices project? Page 105 of DARP/EA (paragraph 2, probability of success) describes the conditional nature of this project: "a key component of this project involves reaching agreements with local ranchers on changes in land use and feeding practices." How will the success of these agreements, and the project as a whole, be assured, measured and monitored over time?

Trustee Reply: Though changes in land management practices will not be compelled, negotiated agreements regarding such practices will contain legally enforceable terms, monitored by the PRNS. Previous discussions with the ranchers have indicated that they are willing to enter into such agreements. The local ranchers will be paid for their changes in land use practices in order to compensate them for additional costs they would incur in their dairy and beef cattle operations. This component of the corvid management project is best viewed as analogous to a land acquisition project; it requires a "voluntary" willing seller, but with payment comes a contract or commitment.

42. What is the basis for concluding that removal of non-native trees will successfully get rid of the ravens – are these the only trees where they roost in the area? Why won't the ravens find other roosts, if there is still an available food supply?

Trustee Reply: A roost site is where the ravens rest at night, seeking a safe place to sleep. Roost trees are typically dense in order to offer protection from Great-horned Owls. Outer Point Reyes is largely devoid of trees. The natural woodland areas are approximately 10 miles inland from the point. The trees scheduled for removal are the result of an abandoned Christmas tree farm, now on the property of Point Reyes National Seashore. This is the only group of trees within several miles suitable for a large raven roost and they are the only trees the ravens use for a roost. It is also the only substantial grove of trees near the outer point. Once these trees are removed, the ravens will need to move further inland, away from the outer point, to find suitable roost sites. This would require them to commute farther each day to the outer point, where they find food associated with the dairy operations, as well as the murre colonies. At the same time, the project will seek to limit this food supply.

43. What is the basis for concluding that corvid management may increase nest success approximately 10 percent? Are there data/studies to support this?

Trustee Reply: There are studies to support this, and the rationale for the 10% increase is describe in Appendix I, pages 5 and 6. The Trustees believe that, with the project, nest productivity at Point Reyes will increase from its current level of 81% of the Farallones average to 90% of the Farallones average. This is a 10% increase and would compensate for 21% of the murre injury. The reasons that it will not achieve a full 100% of the Farallones average are described in Appendix I. Note, however, that all the murre projects combined still do not fully address the magnitude of the injury. This would still be the case even if this project raised productivity at Point Reyes all the way to 100% of the productivity level of the Farallones.

44. Please provide details of how the $500,000 budget for corvid management was derived, particularly the $480,000 figure for "land management." What costing assumptions regarding the changes in value of dairy operations went into deriving this estimate?

Trustee Reply: This estimate was prepared by Point Reyes National Seashore (PRNS). It was based on the long-run discounted stream of revenues expected from a dairy farm on the point, considering the number of cows and value of milk. Thus, it represents the cost to "buy out" a dairy. Alternative changes in feed practices, as opposed to completely buying out the dairy, could cost less. See question 46 for additional discussion of the ranches at PRNS.

45. Please provide additional cost breakdown of the proposed budget for the Reading Rock colony restoration. What, and how definite, are the "other sources" of funding expected to account for 81% of the budget?

Trustee Reply: The cost of the Reading Rock project was based upon recent experience with the Devil's Slide Rock Common Murre Colony Restoration Project. The envisioned Reading Rock project is very similar in size and scope. The Devil's Slide project was actually more expensive, but included extensive monitoring of adjacent colonies. For application to Reading Rock, the Trustees only included components that would be used at Reading Rock. The included document (Devil's Slide project budget estimate 07-09.pdf) provides a snapshot of recent annual estimated budgets for the Devil's Slide project. The bulk of the cost is labor, with some additional costs for safety equipment (when accessing the rock), decoys, optical equipment, etc. The budget for Reading Rock does not include time for monitoring other colonies.

The other sources of funding are settlements from the *Kure* and *Stuyvesant* oil spills. Together, these other sources will contribute $950,000 toward this project. Given that it is the same Trustee agencies and largely the same personnel that are overseeing these funds, we are confident that they will be spent as anticipated. The draft *Stuyvesant* DARP describes the Reading Rock project (although no cost information is provided); the draft *Kure* DARP, being prepared for release to the public for comment, includes Reading Rock as a tentative preferred alternative.

46. How realistic is the assumption that PRNS will continue corvid management at the proposed level for 100 years, especially given that, as proposed, corvid management depends on compensating ranchers for voluntary changes in management practices? What funding mechanism is envisioned to ensure the success of this arrangement decades into the future?

Trustee Reply: The project components are expected to be long-lived or permanent. For example, the removal of the trees discussed in question 42 will be permanent; the trees are not expected to grow back. Likewise, many of the potential changes to ranching operations envisioned in the project would be permanent or long-lived. Examples include the construction of enclosed feeding areas to restrict raven access or the complete "buy out" of a ranch lease. There are several dairy and beef cattle ranches within the boundaries of PRNS. These have become the primary attractant for the raven population in recent years. These ranches operate under an agreement that was reached between the ranchers and the government when PRNS was created in 1962. The agreement gave the ranches to PRNS but allows the current ranch families to perpetually renew their leases, although they may not sell them to others. Some ranches have ceased operations as the next generation has opted not to renew the lease. Others have already received financial compensation to amend their operations (e.g. building a large feeding barn) to reduce opportunities for ravens to forage from their cattle feed. The project would fund similar types of land management changes, compensating ranchers for the additional costs that they may incur. Because these changes are expected to persist in the long-run, the Trustees reasonably assume that corvid numbers would be reduced for a long period of time.

47. Are parcels in California that are "*known* to contain nesting Marbled Murrelets" already protected from logging under California law (this is not clear from discussion of Cal. ESA on pg.40)?

Trustee Reply: Yes and no. Under existing law (which, of course, could change), no forest tracts may be harvested unless they have been surveyed for murrelet presence for two years. If no murrelets are detected, the trees may be harvested under the terms of an approved Timber Harvest

Plan. However, this survey process is not an infallible way to determine whether the trees in question are used by murrelets for nesting. Detecting murrelets is difficult. Furthermore, the birds may not occupy the same location every year or may skip nesting for one or more years if oceanic conditions result in a poor prey-base. If murrelets are detected, the tract is considered "occupied" and, under existing law, may not be harvested except under an approved Habitat Conservation Plan (HCP). Such plans may allow for harvesting if other areas are protected, resulting in a net loss of murrelet habitat in the short term (i.e. decades). The recent status review of the species found that, despite various legal protections, 5,364 acres of suitable nesting habitat had been lost due to logging between 1992 and 2003 in the western US (page 4-65 of McShane et al. 2004). While most of that was in Oregon, 697 acres were lost in California. Because of this recent experience as well as ongoing debate over the Endangered Species Act, the Trustees do not consider murrelet nesting habitat adequately protected.

48. What are the criteria for identifying a suitable parcel of land?

Trustee Reply: The primary criterion is whether or not the parcel contains the characteristics of Marbled Murrelet nesting habitat. Such habitat has been well studied and several papers provide detailed analysis of the type of trees, as well as size and characteristic of trees that murrelets will use for nesting, as well as characteristics of the surrounding forest. Thus, suitable murrelet habitat is readily identifiable. In general, murrelets in this region require old growth or dense residual stands of old growth trees. Unfortunately, no remaining privately owned parcels contain solely this habitat. However, there are several that do contain patches of this habitat, often along steep slopes or stream corridors. The Trustees will rely on past murrelet surveys and recent site visits by murrelet experts before committing to any one parcel. Note that the number of potential parcels is quite small and the "murrelet value" of most of these is known. Additional factors the Trustees will consider is cost and proximity to other murrelet areas, as well as proximity to potential sources of disturbance.

49. Land acquisition project specifies return of money to NPFC after 5 years if suitable parcel is not found. How will marbled murrelet restoration be achieved if no land is found?

Trustee Reply: In that instance, murrelet restoration would not be achieved. The Trustees are willing to extend this five-year project feasibility limit.

50. What is the basis of the $12,000/acre cost estimate for land acquisition – is this still current/valid? If changing land values necessitate budget revisions in the future (i.e., within the next 5 years), how will additional funds be procured?

Trustee Reply: This estimate comes from discussions with several non-profit conservation organizations that facilitate habitat protection. Because they routinely discuss potential acquisitions with landowners and others, they are cognizant of the land values for murrelet habitat. The Trustees recently received a proposal to contribute toward the acquisition of a parcel (which must remain confidential at the moment); the estimated price was approximately $10,000/acre. If the cost should rise above the estimate, the Trustees would seek to use contingency funds granted by the NPFC or seek additional contingency funds from the NPFC.

51. What comprises "Other Alcids" in the last row of the Table? Why were lost bird-years not calculated for these 233 estimated mortalities?

Trustee Reply: 13 "Other Alcids" were collected. These include several Pigeon Guillemots, one Horned Puffin (very irregular in California), and several alcids that could not be identified to species due to carcass scavenging. Pigeon Guillemots nest in scattered locations (not in colonies) along the coast and will likely benefit from several of the other restoration projects (e.g. Seabird Colony Protection).

52. What is the basis for assumption that project benefits will continue (i.e., that rats will remain eradicated) to 2100?

Trustee Reply: The islands proposed for the treatment are within the Gwaii Haanas National Park Reserve. The national park staff has indicated to the Trustees in writing that it is committed to this project and will provide on-going monitoring and management. Additionally, the islands are remote and re-introduction via human activity or shipwreck is considered unlikely.

53. How were the 4 recovered dead sea otters linked to the Luckenbach spills? Was this done solely on the basis of similarities to times and locations of bird recoveries, or was analytical data used to confirm the link? Please provide any documentary evidence that supports attributing these four sea otter deaths to Luckenbach incident.

Trustee Reply: The four recovered dead sea otters were oiled at similar times and places as oiled birds. Also, oil chemistry analyses revealed that they had non-California oil on them, implying an anthropogenic source from a mystery spill. While the oil did not match the *Luckenbach*, our claim also includes injuries for associated mystery spills that occurred during the same time. An additional seven oiled otters were collected between 1993 and 2001, but the oil was found to match Monterey oil, which occurs naturally from seeps as well as from human extraction and transport. These otters were not included. Furthermore, otters found beyond the geographical range of the oiled birds (Bodega to Carmel) were not included.

54. Selected restoration project (Sea Otter Pathogens Education and Outreach): Why was only one project considered?

Trustee Reply: The Trustees contacted the sea otter research team at the Long Marine Laboratory of the University of California at Santa Cruz, among the foremost otter experts in the world, to identify potential restoration projects for sea otters. After some discussion of the relatively small scale of the injury (and thus the project), the experts recommended the current project as the most viable and needed option. The Trustees thus relied on their assessment of potential projects and endorsed their recommendation.

A short television documentary on the current disease problem in sea otters was recently prepared, marking one of the first examples of public outreach regarding this issue. It also highlights the on-going monitoring network. It may be viewed at: http://www.kqed.org/quest/television/view/25. This video includes all of the experts that the Trustees consulted with in designing the proposed project.

55. Provide rationale for presumed 4% reduction in annual otter mortality used in restoration credit scaling?

Trustee Reply: It is known that approximately 325 sea otters in California die each year. 59 to 156 of these die from diseases, some of which will be addressed by this project. The Trustees calculated in the sea otter REA that saving two otters per year for six years (a 4% reduction in otter mortality) would compensate for the injury. For scaling purposes, the Trustees started from this point and asked whether or not the project had a reasonable chance of reaching this goal (saving two otters per year for six years that would otherwise die of diseases caused by anthropogenic run-off). Based upon some past experience with similar education efforts, the Trustees believe this is possible. See question 23 for some examples of education and outreach programs focused on wildlife. There are other examples from around the nation where outreach and education addressed non-point source pollution, as in this case, and resulted in improved water quality within a watershed as farms and households adopted better practices. See, for example, EPA's on-line description of non-point pollution watershed success stories at http://www.epa.gov/owow/nps/Success319/.

56. How will success be monitored with this outreach project?

Trustee Reply: Monitoring will be conducted on two fronts, neither of which will require funding from the NPFC. Both the distribution of educational materials and the presence of

anthropogenically-induced disease in sea otters will be monitored. The quantification of educational materials is described in the "performance criteria and monitoring" section on page 137 of the DARP. Necropsies are performed on all recovered dead sea otters in California by the California Department of Fish and Game as a matter of standard protocol (see the video mentioned in the answer to question 54). This will provide the greatest insight into the success of the program.

Attachment B

Outstanding Quantitative Luckenbach Natural Resource Damage Claim Needs June 5, 2007		
Claim Issue	**Factors Impeding Resolution of Claim Issue**	**Actions Proposed to Resolve Claim Issue**
Example Application of Beached Bird Model	o Claimant response to NPFC written questions (posed in February 2007) fails to provide the requested detailed bird injury quantification calculations. o Claimant response contains insufficient information/data to allow verification/validation or reproducibility of total bird mortality estimates generated by the Beached Bird Model and associated estimation techniques. o Specific parameters and/or data for which the derivation and/or rationale are not clear, either from Claimant's response to NPFC February questions or from earlier documentation included in the Acute Seabird Mortality report (Ford et al., 4/8/06) provided as part of the Claim, include: ➢ Searcher efficiencies used in the Luckenbach model runs (Claimant has not provided the frequencies of "findability" classes used in generating overall searcher efficiencies, as described in Section 3.3.1 of the Acute Seabird Mortality report, or the basis for equation (9) relating multiple-searcher efficiencies to single-searcher efficiency data derived from *M/V Kure* studies);	o Provide NPFC an in-person, guided demonstration of a detailed, step-by-step application of the Beached Bird Model, using the common murre as the example application. o Minimally, this in-person guided demonstration should be provided by the bird injury consultant who developed and applied the model for the Luckenbach NRD claim; preferably, the Claimant also will be present. o The bird injury consultant shall have all data and algorithms/equations used to generate the common murre injury quantification (i.e., the complete derivation of total mortalities) available at the time of the model demonstration in order to address NPFC questions/comments. o The demonstration should focus on the methods and procedures used to convert observed/recovered dead common murres (3,865) to total number of dead murres (31,806) claimed in the Luckenbach NRD claim. o Due to the comprehensive data set used to generate the total common murre mortality estimate in the claim, it likely is infeasible to show all Beached Bird Model calculations associated with common murre injury quantification actions. In order to illustrate how the injury quantification occurred for common murres, the bird injury consultant may consider focusing on demonstrating how total bird

Outstanding Quantitative Luckenbach Natural Resource Damage Claim Needs June 5, 2007		
Claim Issue	**Factors Impeding Resolution of Claim Issue**	**Actions Proposed to Resolve Claim Issue**
	➢ Application of bird carcass persistence functions derived using data collected under spring (April and May) conditions, as described in Sections 3.3.2.1 and 3.3.2.2 of the Acute Seabird Mortality report, to spill incident occurring primarily in winter (November to January); ➢ Data and calculations, corresponding to each of the three incident in Period 6, used to derive the "lost at sea" numbers in Table 9, as described in Section 4.1.2 of the Acute Seabird Mortality report; ➢ Data and calculations supporting the "lost at sea" numbers for the PRTI, shown in Table 10 – as shown, these numbers appear to exceed the implied 26.7% at-sea loss derived from Carter and Golightly (2003), as described in Section 4.2.3 of the Acute Seabird Mortality report; ➢ Chronic mortality estimates for Period 3 (1993-1997) and Period 5 (1998-2001) from Beach Watch data – the methodology, and the application of equation (12), as described in Section 4.3 of the Acute Seabird Mortality report, are not clear.	mortalities were calculated (i.e., the step-by-step progression from carcasses recovered to total mortalities) for *a given shoreline segment* (or timeframe or some other equivalent) using the model. o If using a given shoreline segment to illustrate the application of the Beached Bird Model to quantify common murre mortalities, then NPFC requests the bird injury consultant demonstrate how other shoreline segments (or timeframe or other units, as appropriate) are integrated to derive the total common murre mortality estimate (i.e., 31,806 dead common murres) in the claim. o NPFC requests adequate time for the bird injury consultant to provide a detailed demonstration, allowing for adequate questions and answer period. This is projected to require approximately one day's time. o NPFC requests the results of these discussions be written up by Claimant and submitted to NPFC in a timely manner (i.e., within three weeks of meeting).
Example Application of	o The derivations and applications of	o Provide an in-person demonstration (as described

Outstanding Quantitative Luckenbach Natural Resource Damage Claim Needs June 5, 2007		
Claim Issue	**Factors Impeding Resolution of Claim Issue**	**Actions Proposed to Resolve Claim Issue**
Local Population Model	parameters and equations/algorithms contained in the spreadsheet provided by Claimant (COMU-3-07-NPFC.xls) are not clear from the information provided. o Further explanation is needed to fully understand how specific parameters in the local population model are applied in calculating aggregate injury (lost bird-years) from total mortality, and in restoration credits/scaling. o Specific parameters and/or data for which the derivation and/or application are not clear from available information include: ➢ Population growth rate assumed/used in baseline population trajectory used in restoration credits calculations, as described in Appendix I. ➢ Where are total lost bird-years indicated in the spreadsheets provided, and how are they calculated/derived? ➢ Why do the spreadsheets provided show negative injury, and negative benefit of Luckenbach restoration, after 2047?	above for common murre mortality estimation) to describe how the Local Population Model was used to quantify lost bird-years for common murres. o Specifically, NPFC requests the Claimant's bird injury consultant to show how 1,857,471total lost bird-years were derived from the estimated 31,806 common murre mortalities using the Local Population Model. o NPFC requests that Claimant's bird injury consultant have all data and algorithms/equations used to derive the total lost bird-years available to address NPFC questions and comments. o As with common murre mortality quantification, it may be more illustrative and illuminating for bird injury consultant to provide an example derivation of total lost bird-years for a given shoreline segment or time period. If this is the case, then NPFC requests the bird injury consultant to also provide the methods and procedures for integrating other shoreline segment (or timeframe) data into calculations of total lost common murre bird-years. o NPFC requests adequate time for the bird injury. consultant to provide a detailed demonstration, allowing for adequate questions and answer period. This is projected to require approximately one-half day's time. o NPFC requests the results of these discussions be written up by Claimant and submitted to NPFC in a timely manner (i.e., within three weeks of meeting).

Outstanding Quantitative Luckenbach Natural Resource Damage Claim Needs June 5, 2007		
Claim Issue	**Factors Impeding Resolution of Claim Issue**	**Actions Proposed to Resolve Claim Issue**
Quantitative adjustments to Common Murre Local Population Model (i.e., in COMU-3-07-NPFC.xls)	○ Claimant has listed 8 specific adjustments that were made to parameters in the spreadsheets provided as the basis for common murre injury (lost bird-year) calculations, but fails to provide the complete rationale for 3 of those 8 adjustments. ○ Claimant does not indicate whether adjustments similar to those made for the common murre might be necessary for other species (e.g., to accommodate adjustments made to mortality estimates after the Resource Equivalency Analyses were drafted), and if so, whether and/or how such adjustments might affect the lost bird-year calculations/totals reported in the DARP and used as the basis for restoration planning. ○ Specific adjustments for which the rationale is missing, incomplete or unclear include: ➢ The change in population size at the Point Reyes common murre colony, from 27,700 total birds to 36,500 breeding birds; ➢ The change in deterministic "mean-year" fecundity from a geometric mean to an arithmetic mean, and the decision to keep the deterministic survival parameter at the geometric mean; ➢ The change from a stable-population age structure to a	○ NPFC requests the Claimant and bird injury consultant to address in person whether similar quantitative adjustments are required for other injured bird species. If so, then NPFC requests that Claimant address the following: ➢ What species are affected by amended calculations? ➢ Do these adjustments have a material impact on the magnitude of claimed injuries and damages? What is the percentage change in lost bird-years resulting from these adjustments? ➢ How should these adjustments be addressed? ○ NPFC requests adequate time for the Claimant and bird injury consultant to provide a detailed discussion of this issue, allowing for adequate questions and answer period. This is projected to require approximately up to one-half day's time. ○ NPFC requests the results of these discussions be written up by Claimant and submitted to NPFC in a timely manner (i.e., within three weeks of meeting).

Outstanding Quantitative Luckenbach Natural Resource Damage Claim Needs June 5, 2007		
Claim Issue	**Factors Impeding Resolution of Claim Issue**	**Actions Proposed to Resolve Claim Issue**
	growing-population age structure for the Point Reyes common murre colony, and why a growth rate of 3-4% was chosen, rather than the 5% average growth rate for the central California population cited in Appendix I.	
Marbled Murrelet Mortality Estimates	○ While the conceptual approach to murrelet mortality quantification is straightforward (applying a mortality proportion estimate derived for western grebes, using the Beached Bird Model, to murrelet populations observed in at-sea surveys, as described in Section 4.5 of the Acute Seabird Mortality report), questions remain regarding the application of this approach, specifically: ➢ Are there density-dependent differences in oiling rates (i.e., would common murres be subject to higher rates of oiling because there are far more of them on the water to contact the oil – 15,495, compared to 170 marbled murrelets)? ➢ Does the difference in body size between marbled murrelets and common murres affect oiling rates (i.e., would larger birds have a higher likelihood of contacting oil)?	○ Provide an in-person step-by-step, detailed derivation of murrelet mortality quantification based on western grebe mortalities. Show how western grebe carcass collection data was used in the model to generate total marbled murrelet mortalities. ○ This detailed discussion should involve the Claimant's bird injury consultants and, preferably, the Claimant. ○ All data and algorithms/equations used to generate the bird injury estimate should be available to the bird injury consultant at the time of this meeting with NPFC. ○ NPFC requests adequate time for the Claimant and bird injury consultant to provide a detailed discussion of this issue, allowing for adequate questions and answer period. This is projected to require approximately up to one-half day's time. ○ NPFC requests the results of these discussions be written up by Claimant and submitted to NPFC in a timely manner (i.e., within three weeks of meeting).
Derivation of Lost Bird Year Multiplier	○ Claimant has provided much of the data, and spreadsheet calculations, used to generate lost bird year multipliers, and	○ Provide an in-person demonstration to describe how the Single Generation Stepwise Replacement Model was used to quantify lost bird-years for

Outstanding Quantitative Luckenbach Natural Resource Damage Claim Needs June 5, 2007		
Claim Issue	**Factors Impeding Resolution of Claim Issue**	**Actions Proposed to Resolve Claim Issue**
	quantify restoration benefits, for several example species (pelicans, snowy plovers, ancient murrelets and Cassin's auklets). o In order to ensure that NPFC adequately understands the equations used and the specific application of individual parameters without duplicating research, time and effort already expended by Claimant in developing the data and spreadsheets, it would be advisable to meet with Claimant to "walk through" example spreadsheet calculations. This will eliminate the potential for assumptions or guesswork on the part of NPFC (or its contractors) regarding the derivation of and linkages between equations in the spreadsheets, and the definitions and applications of specific biological parameters.	brown pelicans. o Specifically, NPFC requests the Claimant's bird injury consultant to show how 2,083 total lost bird-years were derived from the estimated 278 brown pelican mortalities using the Single Generation Stepwise Replacement Model. o NPFC requests that Claimant's bird injury consultant have all data and algorithms/equations used to derive the total lost bird-years available to address NPFC questions and comments. o As with common murre mortality quantification, it may be more illustrative and illuminating for bird injury consultant to provide an example derivation of total lost bird-years for a give shoreline segment or time period. If this is the case, then NPFC requests the bird injury consultant to provide the methods and procedures for integrating other shoreline segment (or timeframe) data into calculations of total lost brown pelican bird-years. o NPFC requests adequate time for the bird injury consultant to provide a detailed demonstration, allowing for adequate questions and answer period. This is projected to require approximately one-half day's time. o NPFC requests the results of these discussions be written up by Claimant and submitted to NPFC in a timely manner (i.e., within three weeks of meeting).

U.S. Department
of Homeland Security

**United States
Coast Guard**

Director
United States Coast Guard
National Pollution Funds Center

Natural Resource Damage (NRD)
Claims Division
4200 Wilson Blvd.
Suite 1000
Arlington, VA 22203-1804
Staff Symbol: (CN)
Phone: 202-493-6723
E-mail: Scott.D.Knoche@uscg.mil

On behalf of U.S. Fish and Wildlife Service, National Park Service, National Oceanic and Atmospheric Administration, and California Department of Fish and Game, we, the undersigned, ACCEPT the payment/settlement offer of **$3,853,092** as a full and final release and satisfaction of the Trustees November 30, 2006 claim (as amended) for costs or damages for the 1) Grebes, 2) Waterfowl, 3) Loons, 4) Other Shorebirds, 5) Sea Otters, and partial release and satisfaction for 6) Common Murres and 7) Other Alcids. The costs and damages paid herein resulted from the 1) discharge of an unknown quantity of oil from the sunken *S.S. Jacob Luckenbach* between 1990 and December 2003, and 2) "mystery" spills from unknown anthropogenic sources. The Trustees' claim arises under the Oil Pollution Act of 1990 (33 U.S.C. 2712(a)(2)) for natural resource damages caused by the oil discharges during the Incident.

This settlement and release is intended to facilitate an interim payment under 33 U.S.C. § § 2712 (a)(4) and 2713 (d) to provide funding for some of the projects proposed by the Trustees to restore natural resources damages resulting from the Incident. As such, this settlement and release is not intended to cover all natural resource damages resulting from the Incident. This settlement and release only includes the portions of the Trustees' claim addressing the natural resource categories listed in the above paragraph. This settlement and release includes the following projects:

- Protection of Nesting Habitat at Kokechik Flats, Alaska;
- Sea Otter Pathogens Education and Outreach;
- Reading Rock Murre Colony Restoration;
- Protection of Grebe Nesting Colonies at Northern California Lakes; and
- Nesting Habitat Restoration at Ano Nuevo Island.

Although this settlement and release does not actually pay the contingencies awarded by NPFC for the above, the Trustee acknowledge that any future contingency payments for these projects will be limited to fifteen percent of the amount awarded by NPFC for each project as detailed in NPFC's Determination of the Trustees' claim. NPFC will authorize actual payment of these contingency awards from the Oil Spill Liability Trust Fund if and when a permissible contingency actually occurs during the implementation of the above projects. In order to support a request for contingency payment, the Trustees acknowledge that they will have to fully document that the request for payment complies with NPFC's policy for Natural Resource Damage Contingency Payments.

This settlement and release has no impact whatsoever on the adjudication of the costs or damages claimed by the Trustees for the Incident other than the natural resource categories of Grebes, Waterfowl, Loons, Other Shorebirds, Other Alcids, Sea Otters, and Common Murres. This settlement and release does not limit or bind in any way the authority of the NPFC to make a different determination of facts, rights or liabilities with respect to damages or costs for natural resource categories other than Grebes, Waterfowl, Loons, Other Shorebirds, Other Alcids, Sea Otters, and Common Murres. This settlement and release will NOT collaterally stop the NPFC from making a different determination with respect to damages or costs for natural resource categories other than Grebes, Waterfowl, Loons, Other Shorebirds, Other Alcids, Sea Otters, and Common Murres. This settlement and release will NOT have any res judicata effect whatsoever with respect to damages or costs for natural resource categories other than Grebes, Waterfowl, Loons, Other Shorebirds, Other Alcids, Sea Otters, and Common Murres.

This settlement is not an admission of liability by any party. We, the Trustees, hereby assign, transfer, and subrogate to the NPFC all rights, claims, interests and rights of action, that the Trustees may have against any party, person, firm or corporation that may be liable for the costs and damages reimbursed with this settlement and release. We, the Trustees, authorize the NPFC to request that the United States Department of Justice sue, compromise or settle in the name of the Trustees and agree that the NPFC be fully substituted for the Trustees and subrogated to those claims reimbursed with this settlement and release.

We, the Trustees, agree that upon acceptance of any damages or compensation from the Fund, the Trustees will cooperate fully with the NPFC and the United States Department of Justice in any claim and/or action by the United States against any person or party to recover the damages or compensation. The cooperation shall include, but is not limited to, immediately reimbursing the Fund for any damages or compensation received from any other source for the same claim, providing any documentation, evidence, testimony, and other support, as may be necessary for the United States to recover from any other person or party.

This Agreement is not intended to, nor shall it, vest rights in persons who are not parties to it. We, the Trustees, certify that to the best of our knowledge and belief the information contained in this claim represents all material facts and is true. We, the Trustees, understand that misrepresentation of facts is subject to prosecution under Federal law (including, but not limited to 18 U.S.C. 287 and 1001).

[*Attached signature page*]

Ren Lohoefener
Regional Director
California and Nevada Region
U.S. Fish and Wildlife Service
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1888

Date

Craig R. O'Connor
Special Counsel for Natural Resources
NOAA/GCNR-DACNW
7600 Sand Point Way NE
Seattle, WA 98115-6349

Date

Stephen Edinger
Acting Administrator
California Department of Fish and Game
Office of Spill Prevention and Response
1700 K Street, Suite 250
Sacramento, CA 95811

Date