

National Pollution Funds Center Determination

Claim Number and Name:	N05019-TX02, Highland Bayou Oil Spill
Claimant:	TGLO, TPW, TCEQ
Claim Type:	Natural Resources Damages (NRD)
Amount Requested:	\$116,365.63
Offer Amount:	\$116,365.63
Denied Amount:	\$0
Determination Date:	March 29, 2023
NPFC Claim Manager:	[REDACTED]

I. Discussion of Factual, Legal, and Administrative Basis for Claim

Summary of the Incident and Claim

On December 18, 2004, an abandoned, corroded tank battery discharged approximately 9,460 gallons of crude oil into the Highland Bayou and the surrounding marsh in Hitchcock, Galveston County, Texas (FPN N05019).¹ The Texas General Land Office (TGLO) responded to the incident, and through the use of vacuum trucks and sorbent booms and sweeps, recovered much of the spilled oil from Highland Bayou's shorelines and surrounding marsh.² During the six-day recovery effort, response activities also included ditching and flushing marsh and intertidal areas.³ While conducting response activities, the TGLO found two oiled ducks and dead shrimp at the Louis boat ramp in Hitchcock, Texas.⁴ The TGLO identified several parties with a connection to the source facility but based on a review of evidence in the administrative record, none are a financially liable Responsible Party (RP) under OPA.⁵

On November 22, 2006, the National Pollution Funds Center (NPFC) received a \$1,006,003 claim from the TGLO, the Texas Parks and Wildlife Department (TPWD) and the Texas Commission on Environmental Quality (TCEQ) (collectively "the Trustees") to conduct a natural resource damage assessment (NRDA) for this incident along with thirteen other spills (Assessment Claim). The NPFC assigned individual claim numbers for each of the 14 incidents. The NPFC assigned claim number N05019-TX1 to the 2004 Highland Bayou oil spill, and the NPFC paid the Trustees \$230,495.82 in natural resource damages (NRD) as reasonable assessment costs for the incident.^{6, 7}

¹ TGLO Incident Report 1125 12/18/2004

² SITREP 5 Galveston Bay Incident Memo

³ 39 SITREP 3, 4, Galveston Bay Incident Memo

⁴ TGLO Incident Report 0950 12/20/2004

⁵ Several parties only had mineral rights with respect to the discharge source and two others have previously been released from liability for the incident through litigation with the USCG.

⁶ The NPFC provided a total of \$451,942 on March 18, 2009 in combined NRD for past assessment costs associated with 13 of the 14 incidents and for future assessment for the 2004 Highland Bayou oil spill (FPN N05019), an October 2000 spill in the Houston Ship Channel (FPN N01016) and the 1999 Trinity Bay oil spill.

⁷ NPFC Claim Determination for Galveston Bay Area Oil Spills, August 18, 2008

The Trustees published a combined Final Damage Assessment and Restoration Plan/Environmental Assessment (DARP/EA) on June 28, 2019, for the Trinity Bay and Highland Bayou oil spills.

On October 28, 2021, the NPFC received a \$116,365.63 claim (the Claim) from the Trustees for restoration to compensate the public for natural resource injuries associated with the Highland Bayou oil spill. The NPFC assigned Claim Number N05019-TX02 to the Claim. On November 18, 2021, the NPFC requested additional information to include cited references, model data files, model validation process information, and budget narrative.⁸ The TGLO provided additional information in response to portions of the request on January 14, 2022, April 19, 2022, and April 22, 2022. This determination presents the NPFC's findings with respect to this Claim.

Jurisdictional Information

The NPFC first considered whether the claimed damages arose from an incident as defined by the Oil Pollution Act (OPA). 33 U.S.C. §2701 *et seq.* To be covered, the incident must involve a discharge, or a substantial threat of discharge, of oil from a vessel or facility into navigable waters of the United States after August 18, 1990. Based on the information summarized in the previous section, and the NPFC's 2008 determination of jurisdiction in the Assessment Claim, the NPFC has determined that this claim is for NRD resulting from an OPA incident.

Claimant Eligibility

The NPFC next considered whether the claimants are eligible to submit a claim for compensation. The governor of each State designates trustees for natural resources pursuant to OPA,⁹ with responsibility to assess damages to natural resources under their trusteeship and develop and implement plans to restore, rehabilitate, replace, or acquire the equivalent of those injured natural resources.¹⁰ Pursuant to 33 C.F.R. 136.207, natural resource trustees may present claims to the NPFC for uncompensated natural resource damages, which include the cost of restoring, rehabilitating, replacing, or acquiring the equivalent of, the damaged natural resources.¹¹

This claim for natural resource damages was submitted by the TGLO, on behalf of itself, the TPWD, and the TCEQ. These state agencies, under the authority of the Governor of the State of Texas, are the designated state natural resource trustee and the designated agencies to conduct the damage assessment and pursue appropriate remedies pursuant to the Texas Natural Resources Code, Oil Spill Prevention and Response Act of 1991,¹² the Texas Natural

⁸ NPFC Request for Additional Information, November 18, 2021.

⁹ 33 U.S.C. §2706 (b)(3)

¹⁰ Adopted under 33 U.S.C. §2706(c)(2)

¹¹ 33 U.S.C. §2706(d)(1)(A)

¹² §40.107

Resource Damage Assessment Regulations,¹³ Subpart G of the National Oil and Hazardous Substances Pollution Contingency Plan,¹⁴ Section 1006(b)(3) of OPA. 33 U.S.C. §2706(b)(3), and affirmed in an August 14, 2000, letter from then Governor George W. Bush to then Director of the NPFC, Daniel Sheehan. The NPFC has determined that the TGLO, TPWD, and TCEQ are authorized claimants for the State of Texas.

General NRD Claim Requirements and Procedures for NRD Claims

Period of Limitations for claims: Claims for NRD to the Fund must be presented in writing to the Director, NPFC, within three years after the date on which the injury and its connection with the incident in question were reasonably discoverable with the exercise of due care, or within three years from the date of completion of the Natural Resource Damage Assessment (NRDA) under OPA [33 U.S.C. §2706(e)], whichever is later. 33 U.S.C. §2712(h)(2) and 33 C.F.R. 136.101(a)(1)(ii). The Trustees completed the assessment with the finalization of the DARP/EA in June 2019. The NPFC received the claim on October 28, 2021, within three years from finalizing the DARP/EA which marked the completion of the NRDA.

Notice and opportunity to be heard: Claims for natural resource damages are determined with respect to plans¹⁵ that are developed and implemented after adequate public notice, opportunity for a hearing, and consideration of all public comment.¹⁶ The Trustees posted a Notice of Availability and Request for Comments for the Draft DARP/EA, which forms the basis of this claim, on January 4, 2019, in the Texas Register¹⁷ with a 30-day comment period. No comments were received.¹⁸

Order of presentment: With certain exceptions, claims to the NPFC for damages must be presented first to the RP. 33 U.S.C. §2713(a). If a claim is presented in accordance with §2713(a) and is not settled by payment by any person within 90 days after the date upon which the claim was presented, the claimant may elect to commence an action in court or present the claim to the NPFC. 33 U.S.C. §2713(c)(2). As described in the Summary of the Incident and Claim, the NPFC was unable to identify any financially liable RPs for the incident.¹⁹ Accordingly, the Trustees additional due diligence prior to submitting claim confirmed lack of an identified RP.²⁰

¹³ 31 TAC Chapter 20

¹⁴ 40 C.F.R. 300.605

¹⁵ adopted under 33 U.S.C. §2706(d)(2)

¹⁶ 33 U.S.C. §2706(c)(5)

¹⁷ 44TEXREG 142

¹⁸ DARP/EA pp. 8-9

Certifications: Trustee claimants are required to provide certain certifications as to the integrity of the claim in accordance with 136 C.F.R. 136.105 and 209. This claim includes the requisite certifications and the Trustees' declaration of conducting their NRDA according to 15 CFR Part 990.

The NPFC has determined that the Trustees met the general claim requirements described above for a NRD claim to the OSLTF.

The Trustees' Burden of Proof

Trustees bear the burden of providing all evidence, information and documentation deemed necessary by the Director, NPFC, to support the claim. 33 C.F.R. §136.105(a). Unlike other types of claimants, Trustees may have a rebuttable presumption, so long as they follow the regulations under 15 C.F.R. Part 990:

Any determination or assessment of damages to natural resources for the purposes of this Act made under subsection (d) by a Federal, State, or Indian trustee in accordance with the regulations promulgated under paragraph (1) shall have the force and effect of a rebuttable presumption on behalf of the trustee in any administrative or judicial proceeding under this Act.

33 U.S.C. 2706(e)(2)

For assessment procedures to be in accordance with the Part, the assessment procedures must be capable of providing assessment information of use in determining the type and scale of restoration appropriate for a particular injury (§990.27(a)(1)); a more complex procedure must be reasonably related to the expected increase in the quantity and/or quality of relevant information provided by the more complex procedure (§990.27(a)(2)); and the procedure must be reliable and valid for the particular incident. (§990.27(a)(3)).

The NPFC adjudicates the entirety of a claim, including the assessment procedures used. The NPFC recognizes and accepts that modeling exposure and effects is generally accepted in NRDA.²¹ However, when using any type of modeling to characterize or quantify injury, the Trustees bear the burden of proving that their models are supported by the evidence in the record. To that end, as part of the adjudication process, the NPFC analyzes whether the models chosen for the incident are appropriate and whether the inputs and outputs of the models are consistent with observations in the field at the time of the incident. Inaccuracy in model selection, application, or results inconsistent with field observations may fail to afford Trustees a rebuttable presumption for the assessed damages.

The NPFC's Determination Process

During the adjudication of claims against the OSLTF, the NPFC acts as the finder of fact. In this role, the NPFC considers all relevant evidence and weighs its probative value when

²¹ 15 C.F.R. §990.27(a)(3)

adjudicating a claim. The NPFC is not bound by the findings or conclusions reached by other entities. If there is conflicting evidence in the record, the NPFC makes a determination as to what evidence is more credible or deserves greater weight, and finds facts based on the preponderance of the credible evidence.

The NPFC considers all the documentation provided by the Trustees and its own independently conducted fact finding. Through this process the NPFC may find in favor of a Trustee, even if particular procedure(s) used by the Trustee are determined to not be reliable or valid for the particular incident, if the preponderance of evidence supports the damages claimed. Conversely, the NPFC may find against a Trustee even when the NPFC determines certain procedures are valid for a particular incident, if the preponderance of evidence rebuts the Trustee's claimed damages.

The NPFC utilizes an informal process when adjudicating claims against the Oil Spill Liability Trust Fund (OSLTF).²² As a result, 5 U.S.C. § 555(e) requires the NPFC to provide a brief statement explaining its decision. This determination is issued to satisfy that requirement. Furthermore, as this determination is based on the unique facts giving rise to this claim, it should not be viewed as controlling over future NPFC claims determinations.

II. Injury Determination and Quantification

As discussed below, the NPFC evaluated the assessment procedures used for injury determination and quantification and finds the Trustees have met, by the preponderance of evidence, the burden of proof for the injury claimed. "Injury" as defined by 15 C.F.R. Part 990.30, means an observable or measurable adverse change in a natural resource or impairment of a natural resource service. In determining injury, the Trustee must establish whether natural resources were exposed, either directly or indirectly, to the discharged oil from the incident, and estimate the amount or concentration and spatial and temporal extent of the exposure.²³ Trustees must also establish the pathway by which the discharged oil was transported from the incident linking the incident to the injuries.

Oil discharged during the spill escaped the poorly maintained containment berm and entered an adjacent high marsh.²⁴ The bulk of the discharged oil appeared to have been contained in the high marsh immediately adjacent to the tank battery; estimated at 1 acre of impact. Some oil eventually entered Highland Bayou and contaminated the adjacent shoreline.²⁵ Stranded oil was observed in natural collection points.²⁶ Total shoreline habitat where visible oil was observed was estimated at between 1 to 2 linear miles. The majority of injury for this spill occurred due to a relatively large amount of crude oil entering a shallow body of water which resulted in slow dilution. The flow-path concentrated the spill in the subsurface, penetrating the roots system of marsh vegetation, coating and smothering intertidal resources, and requiring more aggressive tactics for removal which further negatively impacted the

²² 33 C.F.R. Part 136.

²³ See 15 C.F.R. 990.51(d)

²⁴ Galveston Bay Area Oil Spills Incident Information Memorandum

²⁵ SIMAP Injuries Report April 2013, Table 3-6, Figure 3-10

²⁶ POLREP 4

environment and its inhabitants.²⁷ Additionally, two oiled ducks and dead shrimp were found during response operations.²⁸

Based on these observations from the response, the Trustees assessed injuries to wildlife, fish, invertebrates, and marsh habitat. The Trustees used the Spill Impact Model Analysis Package (SIMAP) to both determine the resources impacted by the incident and the associated injuries. SIMAP contains physical fate and biological effects models which estimate exposure and impact on each habitat and species (or species group) in the area of a spill. Losses are estimated by species or species group for wildlife, fish, and invertebrates by multiplying percent loss by species density. The SIMAP Fates Model simulates the distribution of oil in space and time; and the SIMAP Biological Effects Model calculates the area, volume, or portion of a stock or population affected by a surface oil, concentrations of oil components in the water, and sediment contamination. For wildlife, the number or fraction of a population suffering oil-induced effects is proportional to the water-surface area swept by oil (or area/length of shoreline oiled) of sufficient quantity to provide a lethal dose to an exposed animal. As such, an accurate representation of the geographic and temporal distribution of oil and overlapping presence of fish and wildlife are critical to obtaining valid results. To apply the model, incident specific inputs were used when known, and best available values from the literature were used when incident specific data were not known. The SIMAP model used by the Trustees quantified the injury as approximately: 33 waterfowl, 1 seabird, 3 wading birds, and 0.1 shorebirds injured, for a total of 36 birds.²⁹ Fishing group estimates of biomass are as follows: small pelagic fish were approximated to have 152kg killed and 60kg production foregone for a total estimate of 211kg; large pelagic fish 9kg killed and 81kg production foregone for a total of 90kg; total demersal fish 207kg killed and 540kg production foregone for a total of 747kg; demersal invertebrates 7kg killed and 2 kg production foregone for a total of 9kg, and no mollusks killed.³⁰ In total the Trustees estimated 374kg of biomass were killed and 683kg were lost to foregone production, for a total of 1,058kg of compensable biomass. Additionally, the Trustees estimated there were 4,782 kg wet weight of vegetation and invertebrates lost due to oiling of 1.16 acres of wetland and shoreline habitats.³¹

The Trustees determined that natural recovery was sufficient to restore resources to baseline levels, and chose to limit their Claim to compensatory damages for interim losses³² of natural resources. The interim loss was characterized in terms of direct mortality and foregone productivity³³ of the various resource categories. The Trustees used the Spill Impact Model Analysis Package (SIMAP) to model the direct mortality and foregone productions for each

²⁷ Galveston Bay Area Oil Spills Incident Information Memorandum Attachment 3

²⁸ Galveston Bay Area Oil Spills Incident Information Memorandum

²⁹ Final DARP/EA, Table 3-1.

³⁰ DARP/EA Table 3-4

³¹ Final DARP/EA, Section 3.3 p.17

³² The diminution (reduction) in value of injured resources pending their restoration pursuant to 33 USC 2706(d)(1)(B)

³³ Production refers to lost reproduction (future animals and plants) of the individuals killed by the oil

resource category and convert those losses to the amount of food (marsh biomass) required to replace the lost production.

The NPFC generally considers SIMAP as a reasonable and appropriate tool for fate and transport modeling and estimating biological exposure.³⁴ As such, the NPFC focused the adjudication on whether the model inputs and outputs are consistent with incident specific observations and the available literature to determine the appropriateness of the model's implementation for this particular claim.

Physical fate of oil and biological effects

The SIMAP results for a given incident rely heavily on the inputs selected for type of oil spilled, the quantity discharged, and the time frame and rate of discharge. The quantity of oil was derived directly from the incident reports. The type of oil was never positively characterized, and the time frame/rate of discharge are unknown for this incident. The NPFC relied on the incident reports from the time of the spill as the most reliable evidence to determine if the procedures, including inputs, assumptions, and results of the SIMAP, are persuasive.

The Trustees ran the SIMAP model varying inputs to derive a scenario that best replicated the oiling conditions known at the time of the incident. Site specific inputs of wind speed and direction data, available observations and information derived from on-scene reports, were found to be reasonable and appropriate and generally consistent with observed conditions. Wind speed and direction data was taken from a site 16 miles north of the spill site.^{35, 36, 37, 38}

The DARP/EA does not make particular note of search efforts to find injured fish or wildlife, and studies have shown that even with concerted efforts, only a percentage of carcasses are found.³⁹ The SIMAP's estimated quantification of 5840 kg biomass lost, and 1.16 acres of estimated intertidal salt marsh vegetation injury is further corroborated by contemporaneous evidence. Specifically, visual observations of 1-2 linear miles of oiled shoreline habitat

³⁴ Other claims paid including SIMAP injury assessment methodology to quantify damages include (but are not necessarily limited to): Florida Mystery Spill, M00098-OC1 (Assessment and Restoration Claim based in part on SIMAP assessment methodology); S99018-OI1 (Assessment and Restoration Claim based in part on SIMAP assessment methodology for fish and invertebrate injury assessment)

³⁵ Hourly wind speed and direction data during and after the spill were obtained from the NOAA Galveston Pleasure Pier Station (GPP) with periods of observational data gaps at GPP assumed equal to observations at Eagle Point located approximately 16 miles north of GPP (NOAA, 2009a); noted in SIMAP Injury Report April 2013

³⁶ Wind speed in SIMAP inputs and SITREPS 3, 4, and POLREP 4 align. SITREP 5 records a slightly higher instance but similar to wind speed inputs for the day

³⁷ SIMAP Injuries Report April 2013 Section 3.3 p 35

³⁸ Galveston Bay Area SIMAP Injuries Report April 2013, p. 37

³⁹ Search intervals in beached bird monitoring, Ford (2006); Acute seabird mortality resulting from the S. S. Luckenbach and associated mystery oil spills, 1990-2003, Ford, Strom & Casey (2006); Underestimating the damage: interpreting cetacean carcass recoveries in the context of the Deepwater Horizon/BP incident, Williams, Gero, Bejder, Calambokidis, Kraus, Lusseau, Read, & Robbins (2011)

during the response plus noted significant intrusion and expected additional injury to the marsh through response actions including ditch digging and flushing.⁴⁰ The NPFC has concluded that the modeled distribution of oil and the expected resulting impacts to fish & invertebrates, wildlife, and habitat are supported by the incident specific data and is persuasive based on the preponderance of the evidence.

III. Restoration Identification and Scaling

Swan Lake and the surrounding areas were severely affected by ground sinking due to extensive groundwater pumping and shoreline erosion and shoreline retreat from the early 1950s through the late 1990s. Restoration efforts of this area in Texas City, along the southwestern border of Galveston Bay, first began with construction of a breakwater in 2002. Phase I of the Swan Lake Marsh Restoration Project began in 2004.

The Swan Lake Salt Marsh Restoration Project's intent is to restore salt marsh and fish habitats and to prevent future damage to sensitive herbaceous wetland habitat that compensates the public for lost services and resources due to the Incidents. Measurable objectives are: completion of site preparation work, completion of final design and specifications acquisition of federal and state permits, placement of approximately 55,000 cubic yards of materials⁴¹ and restoration of approximately 8.13 acres of salt marsh in Swan Lake, and planting of *Spartina alterniflora* in the constructed cell(s).

Restoration Alternatives

Other restoration projects considered by the Trustees were: Dickinson Bay Bird Island (II) Restoration & Oyster Reef Enhancement, which involves raising elevations along certain portions of an existing remnant island ridge in Dickinson Bay (western side of Galveston Bay) and sculpting the island to prescribed slopes and elevations to create oyster reef, upland/bird nesting and rookery habitat, and estuarine intertidal wetland habitats, Virginia Point Habitat Restoration, which involves freshwater pond/wetland creation and upland habitat enhancement (tree planting) at Virginia Point Preserve Complex in Texas City, Texas; and a no action alternative.

The Trustees selected the Swan Lake Salt Marsh Restoration Project as their preferred restoration alternative based on the following criteria⁴²: (1) the project is located on a shoreline area near the location of the Incident and provides restoration benefits for the same type of resources injured; (2) cost effectiveness derived from the cost-sharing nature of the project between multiple funding sources; (3) project has ability to provide benefits to multiple resources⁴³; and (4) the Trustees have had historical success with similar

⁴⁰ SITREP 3, 4, Galveston Bay Incident Memo

⁴¹ Materials include the beneficial use of dredged material (BUDM)

⁴² DARP/EA Chapters 5 and 6 pp. 37-55

⁴³ Swan Lake: Pilot Study Site Utilizing Processed Industrial Wastewater to Manage Salinity in Lower Galveston Bay, 2.5 Planned Project Benefit (p.11)

endeavors.⁴⁴ Additionally, the Trustees do not anticipate significant risk to public health or safety from the preferred alternative.⁴⁵

The NPFC finds that Trustees have proven by a preponderance of the evidence that the restoration project is reasonable and appropriate. The proposed project is scalable, provides direct benefit to wildlife, fish, and invertebrates and has a high probability of success as demonstrated through previous similar endeavors in the vicinity with minimal negative impact.⁴⁶ As a component of a larger project, certain associated costs are covered through other sources improving cost efficiency. The TGLO has dedicated funds of 35% contingency in the Swan Lake Salt Marsh Restoration budget (not funded by NPFC) as well as backup funding through Gulf of Mexico Energy Security Act (GOMESA) which provide additional assurance that the Highland Bayou Spill percentage of the project can be completed with the funds requested from NPFC. Furthermore, funding a portion of the Swan Lake Restoration Project, which began in 2004 and completed sampling analysis planning in 2018⁴⁷, will have greater dollar efficiency than a stand-alone compensatory restoration project for the amount requested in consideration of both fixed costs and marginal rate of return.⁴⁸

HEA

While developing the preferred restoration alternative, the Trustees also had to determine the appropriate amount of salt marsh acreage needed to compensate for the equivalent of the damaged natural resources (5840 kg biomass lost, and 1.16 acres salt marsh). The Trustees would only restore a portion of the 8.13 acres of salt marsh created by the overall Swan Lake project to compensate for the specific damages from the Highland Bayou oil spill. To quantify the specific restoration needed from the SIMAP data, the Trustees employed Habitat Equivalency Analysis (HEA) with a trophic web model.⁴⁹ Essentially, the methodology calculates the quantity of habitat needed to produce the same biomass as was lost due to the spill. The model assumes that food is the limiting factor for higher trophic⁵⁰ level production and that the value of a habitat restoration project can be measured in terms of production and energetic efficiencies (the amount of food energy required to sustain organisms) at various trophic levels. The HEA relies on the calculated trophic primary production⁵¹ equivalency of

⁴⁴ Dickinson Bayou Marsh Project; Swan Lake 2007 Restoration Marsh Project; 2019 Swan Lake Feasibility Study

⁴⁵ 2019 Swan Lake Feasibility Study, Section 4.2 NEPA Review, Section 4.3 Section 408 Review (p. 34)

⁴⁶ Dickinson Bayou Marsh Project; Swan Lake 2007 Restoration Marsh Project; 2019 Swan Lake Feasibility Study

⁴⁷ 2019 Swan Lake Feasibility Study, 2018 Sampling and Analysis Report -Swan Lake Marsh Restoration Sediment, Water, and Elutriate, Section 2.0 Background (p.1)

⁴⁸ Swan Lake Design Concept Memo

⁴⁹ DARP/EA Section 3.4 pp. 13-26. The Trustees describe a 8.3 acre project which combines the 5.7 acre portion attributable to the Trinity Bay claim and 2.6 attributable to the Highland Bayou claim, both of which are included in the DARP.

⁵⁰ Trophic describes the food web relationship among species. Generally speaking higher trophic level species are higher in the food chain than lower trophic level species.

⁵¹ Primary production refers to species lowest in the food chain - organisms that convert inorganic substrates into complex organic substances. The injury to higher order species in a food chain can then be scaled to the amount of primary production that would be needed to replace the higher order species

the injured resources, the rate at which primary production develops with marsh restoration, and incorporates a discount rate⁵² for the years since injury and years to replacement to produce comparable “present day” values.⁵³

The ecological efficiency, or “trophic equivalency” derived for the injured species categories range from 0.4-20% relative to benthic invertebrate production, with higher order bird species and large pelagic fish having the lowest ecological efficiency, and bottom or filter feeding invertebrates and small pelagic fish having the highest ecological efficiency relative to benthic invertebrate production.⁵⁴ Although it is unlikely that food is the limiting factor for all the categories of species injured, the methodology converts losses to a single metric from which to scale restoration. To calculate the equivalent trophic primary production of the calculated injury (5840 kg biomass lost, and 1.16 acres salt marsh), the HEA⁵⁵ incorporated injury parameters, including: the geographic extent of habitat service loss (area), the degree of habitat service loss (percent), and the rate of recovery (time). The Trustees calculated that 276,088 kg of primary production compensates for the calculated injury.⁵⁶

This primary production value is then translated to the area of habitat creation need to achieve restoration by multiplying the expected net gain in annual productivity per unit area of restored habitat by the project life (i.e., the number of years the restored habitat will exist), and discounting for the delay before benefits are realized. The Trustees used the following criteria in the HEA to calculate the acreage needed for the restoration: the created marsh will take 5 years to develop the maximum achievable function of 50% annual primary production rate⁵⁷, a total project life of 15 years, and 3% discounting based on an assumed start date of restoration and utilizing a “present day” value of 2004 (the year of the incident).⁵⁸ The HEA calculated 2.414 acres of salt marsh creation would be needed to compensate for injuries from the Highland Bayou oil spill.

The NPFC requested⁵⁹ SIMAP and HEA data files and received SIMAP files⁶⁰ including the rate of functional development of created wetland⁶¹ (described as a sigmoid recovery curve,

⁵² Trustees apply a 3% economic discount rate to account for the real or perceived increased cost of the injured resource over time.

⁵³ For this instance, the trustees used the year of spill (2004) as the “present day” from which both injury value and restoration value are discounted per SIMAP Report Section 2, pp. 8-23

⁵⁴ SIMAP report, Section 7.2, p. 62

⁵⁵ French McCay, Quantifying the Scale of Restoration Required to Compensate for the Impacts of the North Cape Oil Spill on Fish and Invertebrates; French McCay & Rowe, Habitat Restoration as Mitigation for Lost Production at Multiple Trophic Levels; Darnell & Smith, Avian Use of Natural and Created Salt Marsh in Texas, USA

⁵⁶ DARP Table 3-10 (p. 25) details calculations for converting modeled injury to primary production required, and then to what this equates to in terms of acreage of salt marsh production needed for compensatory restoration. 1058 kgs of injured fish and invertebrates convert to 250,268 kgs of primary production needed and results in 8854 m² of needed salt marsh creation. 31 injured birds convert to 25,820 kgs of primary production needed and results in 913 m² of needed salt marsh creation, totaling approximately 9,767 m² or 2.414 acres.

⁵⁷ 50% production as compared to a naturally derived estuarine marsh.

⁵⁸ SIMAP Report, Section 7.1, p. 60 and DARP/EA Section 3.4.1 p. 18

⁵⁹ AI Request November 18, 2021

⁶⁰ AI received 4/20/2022

⁶¹ Functional development equation found in SIMAP Injuries Report April 2013 p 17

which is an S-shaped curve that illustrates how functionality over time increases and progresses⁶²), consistency between inputs and values discussed in the DARP/EA, and the discount period used (but not the date discounting was utilized until).^{63, 64}

For discounting purposes, the Trustees used a 2014 (as stated in the SIMAP Report⁶⁵) or 2019 (as stated in the DARP/EA⁶⁶) project start date. Without the HEA documentation, the NPFC cannot determine which year was applied in the model. Three percent (3%) is a standard annual discounting rate utilized in NRDA and generally accepted by NPFC to account for injury compounding over the period of time necessary to complete NRDA.

The NPFC finds that Trustees have proven by a preponderance of the evidence that the restoration project provides equivalent restoration to the injuries calculated. HEA is a commonly used and reliable technique to scale restoration for comparable habitats and the TGLO acquired sufficient data to provide the HEA with inputs that could result in a supported restoration amount. Based on the observations from the spill and support from literature, the data inputs used and the results produced by the HEA are reasonable for the spill. The NPFC finds the range of values for ecological efficiency are appropriate in the context of the cited literature and the Lindeman 10% rule.⁶⁷ Additionally, the Trustees' assertions of a 15-year functional life for the created marsh and maximum productivity of 50% (relative to natural wetlands)⁶⁸ are consistent with available studies^{69,70} of productivity of created wetlands especially considering the rate and effects of relative sea level rise in Galveston Bay.⁷¹ The proposed project is scalable, provides direct benefit to wildlife, fish, and invertebrates and has a high probability of success as demonstrated through previous similar endeavors in the vicinity with minimal negative impact.⁷² In consideration of the dollar efficiency found in this restoration selection and the low dollar value of the claim, the

⁶² SIMAP Report, Section 7.1, p. 62; equation found in SIMAP Injury App A, 3.4 Intertidal, Wetland, and Terrestrial Plants and Invertebrates

⁶³ Atkinson et.al, 2010 Primary productivity in 20-year old created wetlands in southwestern Virginia. Wetlands 30:200-10

⁶⁴ [Coastal Change Summary | Galveston Bay Report Card \(galvbaygrade.org\)](#) describes relative sea level rise of over 2 ft in the past 100 years with a projected continuing trend, and USGS Fact Sheet 110-02 describes shoreline erosion averaging 2.4 ft per year as a result of sea level rise, loss of wetlands, and reduced sediment supply.

⁶⁵ SIMAP Report, Section 7.1, p. 60

⁶⁶ DARP/EA Section 3.4.1 p. 18

⁶⁷ Reichle, David. Food chains and trophic level transfers. The Global Carbon Cycle and Climate Change. Section 7.4; states that only 10% of energy is transferred from one trophic level to another and 90% of the energy is lost during transfer, respiration and digestion processes.

⁶⁸ The Trustees relied on LA DEQ (2003) which states productivity could potentially be 50%, 80%, or 100% and utilizes 50% for calculations.

⁶⁹ Español et al., 2012. Is net ecosystem production higher in natural relative to constructed wetlands? Aquatic Sciences DOI 10.1007/s00027-012-0284-1. 13 pages

⁷⁰ Atkinson et.al, 2010 Primary productivity in 20-year old created wetlands in southwestern Virginia. Wetlands 30:200-10

⁷¹ [Coastal Change Summary | Galveston Bay Report Card \(galvbaygrade.org\)](#) describes relative sea level rise of over 2 ft in the past 100 years with a projected continuing trend, and USGS Fact Sheet 110-02 describes shoreline erosion averaging 2.4 ft per year as a result of sea level rise, loss of wetlands, and reduced sediment supply.

⁷² Dickinson Bayou Marsh Project; Swan Lake 2007 Restoration Marsh Project; 2019 Swan Lake Feasibility Study

difference in discounting to 2014⁷³ versus 2019⁷⁴ would not change the outcome because as stated above, the Trustees have already proven their entitlement by a preponderance of the evidence.

Restoration Cost

The TGLO claims \$116,365.63 to create the 2.414 acres of salt marsh to compensate for the natural resource injures. The damages include \$459.66 for regulatory submittals and processing, \$3,071.35 for engineering design and construction proposal package, \$354.93 for monitoring and adaptive management plan, \$414.85 for construction solicitation assistance, \$6,524.32 for mobilization/demobilization, \$102,745.06 for marsh creation, and \$2,805.46 for ancillary work⁷⁵ toward the Swan Lake Salt Marsh Restoration Plan.⁷⁶

The NPFC reviewed the cost of the preferred restoration alternative in terms of individual cost categories identified above as they pertain to the Highland Bayou Spill compensatory restoration and also as 1.30% of the larger restoration action. The following categories came in at 201% of the expected cost allotment based on the scale of Highland Bayou's portion of Swan Lake Restoration: regulation submittals and processing, engineering design and construction, proposal package, monitoring and adaptive management plans, and construction solicitation assistance.⁷⁷ Mobilization/demobilization, marsh creation, and ancillary work are valued true to the Highland Bayou's scale. Feasibility study data collection and surveys costs were not included⁷⁸, nor were trustee oversight/project management costs. The NPFC requested additional information from the TGLO regarding why prorated portions of certain costs of the greater project were not included and why certain costs were prorated at the 200% rate for compensatory restoration piece.⁷⁹ The TGLO explained the reason for these exclusions are because the Swan Lake Restoration project combines funding from multiple sources, each with different funding requirements and obligations. Therefore, the TGLO is unable to equitably distribute funding percentages between the project tasks such as planning, implementation, and monitoring. Most funding sources for Swan Lake are secured or are in the process of being secured. If any of those funds are not available or additional funding is needed to support the project, the TGLO oversees the administration and distribution of GOMESA funds and plans to use these funds to ensure project completion.⁸⁰

The NPFC finds these costs reasonable and appropriate. The cost of Highland Bayou's 1.3% contribution towards the Swan Lake Project is not distributed equally across project categories because of funding requirements and obligations from other sources, but overall cost is less than if they were distributed equally across categories, does not include a trustee oversight or project management component, and backup funding has been identified to further support the Swan Lake Project should it be required.

⁷³ 3% discounting over a 10 year period would indicate a beginning damage calculation of \$86,586.96

⁷⁴ 3% discounting over a 15 year period would indicate an initial damage calculation of \$74,690.67

⁷⁵ Bathymetric and Pre-Dredge Hazard Surveying Acceptance, Aerial Photography

⁷⁶ Swan Lake Marsh Restoration Costs Table

⁷⁷ Expected contribution toward these categories based on scaling would total \$1,424.16

⁷⁸ Highland Bayou's expected contribution based on scaling would be \$3,984.60

⁷⁹ AI Request November 18, 2021

⁸⁰ AI request received January 14, 2022, "Response to Questions - Cost of Restoration"

Implementation

Following state regulations, onsite surveying will be conducted, soil samples taken, and the data collected will be used to develop the construction plans and specifications for the marsh restoration project.⁸¹ Plants will be nursery grown and will likely be multi-stemmed. Plant spacing will be determined during engineering and design of the project and may vary depending on the availability of various sizes of plants. Passive deposition of sediment will reduce erosion and vegetation plantings will serve to accelerate this passive accretion by trapping and stabilizing sediments.

Project performance will be assessed by comparing quantitative monitoring results to predetermined performance standards that define the minimum physical or structural conditions deemed to represent normal and acceptable development of a marsh which may include but are not limited to the following parameters: project elevations and slopes, percentage of vegetation cover in the project area, and the ratio of open water to emergent vegetation.⁸² The monitoring program will utilize standards and parameters set to determine corrective action needed as well as goal and objective achievement.⁸³ Trustees anticipate certain corrective actions may be necessary and have set aside funds for that purpose.⁸⁴

Upon review of supporting literature⁸⁵ submitted, the NPFC concludes the proposed planting and corrective action plan has been found to be effective and cost efficient. Using the proposed construction technique is a feasible and proven technique with established methods which has been used throughout coastal Texas by local, state, and federal agencies, as well as the general public, to create wetlands in an effort to address wetland loss and for mitigation. Thus, the NPFC finds the implementation and performance monitoring plans to be reasonable and appropriate. The NPFC finds that the Trustees have proven by a preponderance of the evidence that the costs associated with the size of the marsh creation project are reasonable,⁸⁶ that the Trustees' methodology for assigning prorated costs is valid, and that, as a portion of a greater project with dedicated resources to address contingency and corrective measures, the damages claimed represent reasonable damages for the creation of 2.414 acres of salt marsh.

⁸¹ The engineering contractor will prepare the final marsh construction documents and specifications for the project. A United States Army Corps of Engineers (USACE) Section 10 of the Rivers and Harbors Act and Sec. 404 of the Clean Water Act permit will be obtained and, if necessary, a surface lease from the TGLO. Trustees will select a bidder for the construction of the marsh restoration project cells, as well as transportation and placement of materials in the project site.

⁸² Details concerning the performance measures and monitoring will be developed prior to implementation of the project.

⁸³ Possible corrective actions may include but are not limited to shoreline grading or additional placement of materials and shaping to establish a shallow sloping shoreline, fertilization of the plant community to enhance vegetative productivity, or planting vegetation in areas that experienced dieback.

⁸⁴ Proposal to Provide Professional Services for Swan Lake Marsh Restoration Phase II, CEPRP Project No. 1636, Task 4

⁸⁵ French McCay, Quantifying the Scale of Restoration Required to Compensate for the Impacts of the North Cape Oil Spill on Fish and Invertebrates; Van Raalte & Valiela, Production of Epibenthic Salt Marsh Algae: Light and Nutrient Limitation

⁸⁶ Total cost is well within, and generally lower than, costs associated with projects of similar scope along the Texas coast. Texas Restoration Area Fact Sheet July 2020. Deepwater Horizon Natural Resource Damage Assessment and Restoration.

IV. Summary

The NPFC has reviewed the Claim submitted by the TGLO, TPWD, and TCEQ for future costs to implement the identified compensatory restoration project for the Highland Bayou incident in accordance with 15 C.F.R. Part 990, OPA⁸⁷ and associated OSLTF Claims Regulations.⁸⁸ The NPFC finds the Trustees have proven their claim by a preponderance of the evidence that the assessment supports the compensatory damages claimed. Through this determination, the NPFC offers payment of \$116,365.63 to create 2.414 acres of salt marsh in Swan Lake.

Revolving Trust Fund and Return of Unused Funds to the OSLTF

As established by OPA⁸⁹, sums recovered by trustees for natural resource damages must be retained in a non-appropriated revolving trust account for use only to implement the activities addressed in this determination in accordance with Trustees' Plan. The Trustees will need to provide account information and evidence that the account meets the criteria stated before the NPFC can execute payment. The Trustees shall reimburse the Fund for any amounts received from the Fund in excess of that amount required to accomplish the activities for which the claim was paid.⁹⁰

Cost Documentation, Progress Reporting, and Final Report

The Trustees shall ensure that all expenditures of OSLTF funds are documented appropriately and spent according to the Plan for the activities approved in this determination. Any funds not spent for the activities in the Plan or appropriately documented shall be returned to the Fund.

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

1. Certification by the Trustees that all activities approved in this determination have been conducted in accordance with the Plan;
2. A progress report that includes a description of work accomplished, timeline for future activities, and any unexpected problems incurred during implementation;
3. A summary of expenditures by category (i.e., labor, consultant/contractors, and travel); and
4. A narrative description of the work accomplished by each individual and how that work fits into the overall progress of the work 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.

⁸⁷ 33 U.S.C. §2701 et seq.

⁸⁸ 33 C.F.R. Part 136

⁸⁹ 33 U.S.C. §2706(f)

⁹⁰ 33 C.F.R. 136.211(b)

The Trustees shall submit a final progress report within 120 days from the date an approved activity is complete. This report should include:

1. Certification by the Trustees that all expenditures of OSLTF funds were in accordance with the Plan as approved by the NPFC;
2. A summary of findings;
3. Copies of final reports and/or studies;
4. Documentation of OSLTF funds remaining in the Revolving Trust Fund for this claim, including account balance and interest earned; and
5. Documentation of all expenditures as follows:
 - a. Labor: For each employee -
 - i. A narrative description of the work accomplished by each individual and how that work fit into the Plan. Enough detail should be included to determine reasonableness of costs; and
 - ii. The number of hours worked, labor rate, and indirect rate. An explanation of indirect rate expenditures, if any, will be necessary;
 - b. Travel: Paid travel reimbursement vouchers and receipts;
 - c. Contract: Activities undertaken, lists of deliverables, and contract invoices and receipts;
 - d. Purchases/Expendables: Invoices and receipts, along with an explanation of costs; and
 - e. Government Equipment: Documentation of costs, including the rate (i.e., hourly, weekly) and time for all equipment used for which costs were incurred.

With the final report(s), the NPFC will reconcile costs and all remaining funds and/or inadequately documented costs will be returned to the OSLTF.

The NPFC has prepared standardized templates with instructions to facilitate final cost reporting.

[Submission Procedures for Acceptance/Release Form or Request for Reconsideration](#)

If you accept this offer, please complete the enclosed Acceptance/Release Form.

Submit signed Acceptance/Release forms or Request for Reconsideration to:

Director (Cn)
National Pollution Funds Center
U.S. Coast Guard Stop 7605
2703 Martin Luther King Jr. Ave. SE
Washington, DC 20593-7605

If the NPFC does not receive the signed Acceptance/Release Form or Request for Reconsideration within 60 days of the date of this letter, the offer is void. [If the settlement is

accepted, 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 Damage Assessment and Restoration Revolving Fund account with the signed form.