National Pollution Funds Center Determination

Claim Number and Name:	T07001-TX02, Trinity Bay Oil Spill
Claimant:	TGLO, TPW, TCEQ
Claim Type:	Natural Resources Damages - Restoration
Amount Requested:	$275,392.23
Offer Amount:	$0
Denied Amount:	$275,392.23
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 or about October 11, 1999, a broken pipeline released an estimated 3,150 gallons of crude oil, condensate, and gas into Trinity Bay, forming a one- by two-mile slick in open water.[1] The Texas General Land Office (TGLO) investigation found that the pipeline was an abandoned two-inch pipeline coming from shore and was not connected to any wells in the bay. While the TGLO secured, cut, and sealed the abandoned line, none of the product was contained or recovered and the TGLO was unable to identify a responsibly party (RP).[2] According to the TGLO, wind and wave conditions in Trinity Bay dispersed the spilled product.

On November 22, 2006, the National Pollution Funds Center (NPFC) received a $1,006,003 natural resource damages (NRD) claim from the TGLO, the Texas Parks and Wildlife Department (TPWD) and the Texas Commission on Environmental Quality (TCEQ) (collectively "the Trustees") for past and future assessment costs for this oil spill along with thirteen other spills in Galveston Bay (Assessment Claim). The NPFC assigned individual claim numbers for each of the 14 incidents. The NPFC assigned claim number T07001-TX1 to the 1999 Trinity Bay oil spill, and the NPFC paid the Trustees $95,039 in NRD from the Oil Spill Liability Trust Fund (OSLTF or Fund) as reasonable assessment costs for the incident.[3,4]

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

On October 28, 2021, the NPFC received a $275,392.23 claim (the Claim) from the Trustees for restoration to compensate the public for natural resource injuries resulting from the 1999 Trinity Bay oil spill as described in the DARP/EA. The NPFC assigned Claim Number T07001-TX02 to the Claim. On November 18, 2021, the NPFC requested additional information to include cited

[1] TGLO Incident Report for spill number 1999-2185
[2] No Federal Project Number (FPN) was opened for the incident
[3] NPFC Claim Determination for Galveston Bay Area Oil Spills, August 18, 2008
[4] 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 *Highland Bayou* oil spill (FPN N05019), an October 2000 spill in the Houston Ship Channel (FPN N01016) and the 1999 Trinity Bay oil spill.

references, model data files, model validation process information, and budget narrative.[5] The TGLO provided additional information in response to portions of the request on January 14, 2022, April 19, 2022, and April 22, 2022, but did not include the data files specific to the Habitat Equivalency Analysis (HEA). 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 claimant is eligible to submit a claim for compensation. The governor of each State designates trustees for natural resources pursuant to OPA [33 U.S.C. §2706 (b)(3)], 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. 33 U.S.C. §2706(c)(2). Pursuant to 33 CFR §136.207, natural resource trustees may present claims to the NPFC for uncompensated NRD, which include the cost of restoring, rehabilitating, replacing, or acquiring the equivalent of, the damaged natural resources. 33 U.S.C. §2706(d)(l)(A).

This claim for NRD 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 trustees 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, §40.107; the Texas Natural Resource Damage Assessment Regulations, 31 TAC Chapter 20; Subpart G of the National Oil and Hazardous Substances Pollution Contingency Plan, 40 CFR §300.605; and 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, the TPWD, and the TCEQ are authorized claimants for the State of Texas.

General Claim Requirements and Procedures for NRD Claims

Period of Limitations for claims: Claims for NRD to the NPFC 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 CFR §136.101(a)(l)(ii). The Trustees completed the NRDA with the finalization of the DARP/EA in June 2019. The NPFC received TGLO's written claim on October 28, 2021, within three years from finalizing the DARP/EA which marked the completion of the NRDA.

[5] NPFC Request for Additional Information, November 18, 2021.

Notice and opportunity to be heard: Claims for NRD are determined with respect to plans adopted under 33 U.S.C. §2706(d)(2) that are developed and implemented after adequate public notice, opportunity for a hearing, and consideration of all public comment. 33 U.S.C. §2706(c)(5). 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 Register (44TEXREG142) with a 30-day comment period.[6] No comments were received.

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 Fund. 33 U.S.C. §2713(c)(2). Because no RP was identified for the Trinity Bay oil spill, the Trustees were allowed to present their claim directly to the Fund.

Certifications: Trustee claimants are required to provide certain certifications as to the integrity of the claim in accordance with 33 C.F.R. §136.105 and 209. The Claim includes the requisite certifications and the Trustees' declaration[7] of conducting their NRDA according to the provisions of 15 CFR Part 990.

The NPFC has determined the Trustees met the above claim requirements and procedures 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

[6] DARP/EA pp. 8-9
[7] Certification by [redacted], TGLO included in Claim Form, page 5 of 5.

NRDA.[8] However, when using any type of modeling procedure to characterize or quantify injury, the Trustees bear the burden of proving that their models are supported by the evidence in the record. Accordingly, the NPFC analyzes whether the models chosen for the assessment are appropriate for the incident and whether the inputs and outputs of the models are consistent with observations in the field for the modeled period. Modeled results that are not consistent with actual observations from an incident could be a compelling indicator that model inputs were inaccurately selected and/or applied by the Trustees or that the model itself is not reliable and valid for the incident and therefore may fail to afford the Trustees a rebuttable presumption for the assessed damages.

The NPFC's Determination Process

In its adjudication, the NPFC acts as the finder of fact. In this role, the NPFC considers all relevant evidence and weighs its probative value when 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).[9] 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 not 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.[10] Trustees must also establish the pathway by which the discharged oil was transported from the incident linking the incident to the injuries.[11]

[8] 15 C.F.R. §990.27(a)(3)
[9] 33 C.F.R. Part 136.
[10] See 15 C.F.R. 990.51(d)
[11] Id.

During the response, other than the observations of light sheen on surface waters, the TGLO did not report any observed physical impacts to natural resources from oil. In their shoreline surveys following the spill, the TGLO did not observe any oiled shoreline attributable to the incident. The TGLO discontinued further surveys and other response efforts based on the observed rates of oil dispersion and inability to recover any product. The Trustees did not conduct any on-scene assessment activities during the incident and did not provide any other evidence in their DARP/EA of observed/documented injuries to natural resources and/or reports of shoreline oiling. The NPFC reviewed historical National Response Center (NRC) reports and found no reports of sheening on October 10, 1999[12], or after October 11, 1999, or reports of oiled birds or other wildlife, shoreline oiling, or fish kills that may be attributable to the incident.[13]

Although the survey efforts to find stranded oil did not document impacts to shorelines, fish, or wildlife, the Trustees determined that, given the amount of oil spilled, they should move forward with the NRDA. The Trustees relied solely on 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.

Environmental, geographical, physical-chemical, and biological databases supply required information to the model for computation of fates and effects. The physical fate model in SIMAP estimates the distribution of oil (as mass and concentrations) on the water surface, on shorelines, in the water column, and in bottom sediments. The biological exposure model in SIMAP estimates the area, volume, or portion of a stock or population affected by surface oil, concentrations of oil components in the water, oil stranded on shorelines, and sediment contamination. Losses are estimated by species or species group for wildlife, fish, and invertebrates by multiplying percent loss by species density. To apply the model, incident specific inputs were used when known, and available values from the literature were used when incident specific data were not known. The SIMAP model used by the Trustees quantified the direct injuries to natural resources as: 27 birds killed, 748 kg of fish and demersal invertebrates killed, 851 kg of intertidal invertebrates lost, and 166 m^2 of intertidal saltmarsh vegetation destroyed.

The Trustees determined that natural recovery was sufficient to restore resources to baseline levels and limited their Claim to compensatory damages for the lost interim ecological benefits prior to natural recovery of the injured resources to baseline.[14] The interim loss was characterized in terms of direct mortality and associated foregone productivity of the various resource categories. The Trustees used SIMAP to model the direct mortality and foregone production[15] for each resource category and to convert those losses to the amount of food (marsh biomass) required to replace the associated lost biological production.[16]

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[12] For modeling purposes, the Trustees used a scenario that involved the discharge of oil occurring on October 10, 1999

[13] https://nrc.uscg.mil/FOIAFiles/CY99.xlsx

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

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

[16] Rowe, J. J., French McCay, D., Graham, E. Crowley, D. Schroeder M. Dischер, J.M and T.J. Reilly. 2013. Galveston Bay Area Oil Spills SIMAP Injuries Report. Applied Sciences Associates, Inc. South Kingstown, RI. 79 pp.

The NPFC generally considers SIMAP as an appropriate tool for trajectory and fate modeling and estimating biological injury when appropriately applied.[17] However, the NPFC critically evaluated the use of the SIMAP model when determining whether its use and application was valid and reliable for this incident. The NPFC focused its adjudication on whether the model inputs and outputs are persuasive in the context of incident specific observations and the available literature to determine the appropriateness of the model's implementation for this particular incident.

Physical fate of oil

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 (generally varying the time and rate of discharge). For the model that was ultimately selected by the Trustees, the Trustees applied the physical and chemical characteristics of a West Texas Crude (WTC),[18] used the estimated 3,150 gallons total discharge in the TGLO Incident Report as the quantity of WTC discharged, and applied an initial discharge time of 10:00 CT on October 10, 1999, with 95% of the oil discharging in the first 15 minutes.[19] The selected timeframe (more than 24 hours before the first report) and nature of the discharge is the only scenario applied which produced an oil trajectory that includes oiling on surface waters to the north of the discharge location.[20] The model estimates that surface oiling declined to less than 10% in 3 days, while 57% of the discharged oil stranded on shorelines within 3 days (largely along the eastern shore of Atkinson Island to the southwest, west, and northwest of the discharge site). The highest percent oil dissolved or entrained in water was 17% which, sometime during day 11, almost entirely and suddenly settled into the sediments. At the end of the simulation (14 days), no oil remained on the water surface, 1.3% was entrained into the water column, 36% remained ashore, 38% had evaporated, 8% decayed, and 17% was in bottom sediments.[21] Notably the Trustees did not vary the physical characteristics of the oil used in the simulation even though the various reports at the time describe the estimated 3,150-gallon discharge as a combination of crude, condensate, and gas.

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[17] Other claims including SIMAP injury assessment methodology include (but are not necessarily limited to): Florida Mystery Spill, M00098-OC1 (Assessment and Restoration Claim paid based in part on SIMAP assessment methodology); T/B Vistabella, 071031-PR1 (Assessment Claim using SIMAP for injury assessment; a subsequent restoration claim was not submitted); T/V Genmar Progress, M07029-OI1 (Preassessment Initiate using SIMAP for injury assessment – claim settled before coming to Fund); S99018-OI1 (Assessment and Restoration Claim paid based in part on SIMAP assessment methodology for fish and invertebrate injury assessment); G02AAA-OI1 Rouge River Assessment Claim (for SIMAP model based assessment); and G02AAA-OI02 Rouge River (Restoration Claim denied based on incident specific observations rebutting the SIMAP modeled results).

[18] SIMAP Report p. 37-38 lists the properties and cites the source values as derived from the Environment Canada Oil Property Catalogue.

[19] SIMAP Report Section 4.2, p. 46-47

[20] Responders specifically indicated that surface oiling was traveling to the north, therefore a model simulation was selected that would include northerly movement of the oil

[21] SIMAP Report Appendix C, pp. C10-C15

The model estimated that up to 57% of the total discharged oil reached and stranded on the shorelines and covered up to 7.7 km of shoreline with oil sufficiently thick to kill plants and animals. During the incident, the TGLO investigated four locations to the north/northeast of the spill site based on the communications indicating the spill was spreading to the north. No oil was found on the northern shorelines, and the TGLO determined at the time that wind and wave conditions in Trinity Bay had dispersed the spilled product.[22] Similarly, shoreline surveys southwest of the discharge location on Atkinson Island conducted on the morning of October 12, 1999, also found no shoreline oiling attributed to the incident.

The NPFC finds the Trustees' model not persuasive for shoreline impacts given that the TGLO was unable to locate any areas of shoreline oiling during the incident and the further lack of any other reports of shoreline oiling attributable to the incident. Although, the Trustees' chosen model predicts that some of the shoreline oiling may have occurred after the TGLO ceased field surveys, the NPFC finds the modeled outcome unlikely to have occurred without being observed given the location and extent of suggested shoreline oiling. Also confounding is the anomaly on Day 11 resulting in the sudden precipitation of dispersed oil into bottom sediments. The Trustees provided no explanation for this event, and the NPFC found no evidence of similar oil behavior in other reviewed SIMAP modeled scenarios.[23] As such, the NPFC is not persuaded that the modeled outcomes represent the exposure potential of trust natural resources. It may be that the Trustees mischaracterized the product spilled (e.g., not accounting for condensate or gas in the quantity discharged), quantity spilled, timing of the spill, or other less obvious aspect of the model which produced a scenario that is not supported by the preponderance of the evidence.

Biological effects

The SIMAP model incorporates environmental, geographical, physical/chemical, and biological databases to produce a model of the expected biological effects. The SIMAP biological effects model produced outcomes including: ~7.7 km of intertidal shoreline sufficiently oiled to kill animals and/or plants, 27 total birds killed, and 748 kg of fish and demersal invertebrates killed. The model then calculated production forgone for each category of biological injury (or recovery time for intertidal habitats and intertidal invertebrates) to arrive at a total injury for each category.

To model bird injuries, the model incorporates the probability of a bird contacting oil of 10 microns (µm) thick, whether on water or shoreline and the probability of death once oiled.[24] None of the three spill reports mentioned above indicate an oil appearance consistent with oil ≥10 µm thick, though thicker oiling may have been present prior to the first report.[25,26] Similarly, the NPFC acknowledges that even relatively minor oiling can cause bird deaths. Given the large size of the oil sheen area (as much as several square miles according to National Response Center (NRC) reports related to the incident[27]), the likelihood of the identified species to be in the area, and the relatively low bird injury calculated by the model, the NPFC finds the bird injury quantification persuasive.

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[22] SIMAP Report p. 41
[23] The NPFC reviewed the fate and trajectory models for the Highland Bayou incident (N05019-TX02) and Rouge River (G02AAA-OI02) to see if similar dramatic oil fate phenomena occurred in those situations.
[24] SIMAP Report pp. 11-12
[25] Rainbow sheen (the descriptor used in both NRC reports to describe the oil sheen) is less than 1 µm thick.
[26] Fingas, M. 2018. The Challenges of Remotely Measuring oil Slick Thickness. Remote Sensing 2018, 10, 319.
[27] NRC Report 501994 estimates a 5x7 mile sheen observed at 14:30 local time on October 11, 1999 and NRC Report 501999 estimates a 2x5 mile sheen observed at 15:00 local time on October 11, 1999

The Trustees' claimed fish and demersal invertebrate injuries are derived from the modeled concentrations of oil constituents in the water column and bottom sediments and expected population densities exposed.[28] As discussed, no fish or macroinvertebrate injuries were observed, though the NPFC recognizes that these types of injuries are often difficult to document. However, as discussed above, the Trustees provided no explanation, nor could the NPFC find an explanation, for the sudden movement of oil from the water column into bottom sediments on or about Day 11 of the fates modeling, nor the effects of the resulting deposition on demersal fish and invertebrate injury.[29] The NPFC requires further explanation of the oil fate as projected by the model to evaluate the quantification of injury to demersal fish and invertebrates.

The modeled injuries to intertidal invertebrate communities and vegetation are predicated on oil thicknesses of >0.1 mm and >1 mm resulting in invertebrate and vegetation injuries along 7.7 km and 0.83 km, respectively. The Trustees applied a 3-5-year recovery time for intertidal invertebrates (depending on shoreline habitat type) to derive the total injury. Based on studies exploring the effects and recovery rate of salt marsh habitats subject to light oiling by light crude oil in warm estuaries during periods of senescence (vegetation die back associate with fall and winter), the assumed 5-year recovery time for marsh vegetation and marsh invertebrates is significantly greater than the literature supports.[30] Additionally, production rates used to calculate initial population density levels were derived from studies of "natural" systems whereas the shoreline/marsh areas suggested as impacted at Atkinson Island appear to be recently created habitat from beneficial use of dredge disposal.[31] In the restoration scaling discussion, the Trustees indicate that created wetlands of this type are expected to function at 50% of natural productivity.[32] The NPFC finds the application of a 100% productivity as the starting condition for impacted shorelines overestimates the injury to these natural resources.

As stated above, the evidence does not support a conclusion that shoreline oiling occurred; however, even if there was significant shoreline oiling that had somehow gone unobserved, the modeled productivity rates and recovery rates applied in the model are inconsistent with the environmental conditions as evidenced from the literature. Given both the unlikelihood of shoreline oiling as described by the trajectory and fates model and the degree of injury as described by the biological effects model, the NPFC concludes the Trustees' claimed injury quantification is not supported by the preponderance of the evidence.

III. Restoration Selection and Scaling

The NPFC also evaluated the Trustees' methods for selecting, scaling, and determining the cost of the restoration necessary to compensate for the claimed injuries.
The Trustees selected a salt marsh creation project to compensate for the injuries to natural

[28] SIMAP Report, Section 6.3, pp. 57-59
[29] SIMAP Report, Appendix C, C2.2. pp. C10-C15
[30] Oil Spills in Marshes: Planning and Response Considerations. 2013 NOAA and API. Chapter 2. Based on the conditions presented full recovery of vegetation is likely in the first or second growing season.
[31] Tate, J. et al. 2014. Houston-Galveston Navigation Channel Shoaling Study. USACE. December 2014. 156 pp., and M. Vincent et al. 2015. The History of Dredging at the Port of Houston: Ditching High and Low to Build a Port. Proceedings of the Western Dredging Association and Texas A&M University Center for Dredging Studies. Dredging Summit and Expo 2015. pp 469-486.
[32] Discussed later in this determination and referenced in the SIMAP Report, Section 7.1, p. 60 and DARP/EA Section 3.4.1 p. 18

resources. Of the restoration alternatives considered,[33] the Trustees determined that salt marsh creation has a high likelihood of success, is cost effective, and replaces and/or benefits the type of natural resources and services injured by the spill. To derive the acres of salt marsh creation to compensate for the injuries, the Trustees utilized Habitat Equivalency Analysis (HEA) and a Trophic Model Web.[34] The methodology is predicated on calculating the quantity of habitat needed to produce the same biomass as was lost due to the spill. The assumption is that food is the limiting factor for higher trophic[35] level production and that the value of a habitat restoration project can be measured in terms of production and energetic efficiencies at various trophic levels. The HEA relies on the calculated trophic primary production[36] equivalency of the injured resources, the rate at which primary production develops with marsh restoration and incorporates a discount rate[37] for the years since injury and years to replacement to produce comparable "present day" values.[38] The NPFC finds the HEA not persuasive based on the inputs derived from the injury calculation. However, the NPFC reviewed the aspects of the HEA not reliant on the injury quantification to determine whether the HEA may be valid if the Trustees provide information that satisfies deficiencies identified in the injury quantification. The NPFC's analysis of the evidence related to the Trustees' application of HEA in this instance follow.

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.[39] 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. The NPFC finds the range of values for ecological efficiency are appropriate in the context of the cited literature and the Lindeman 10% rule.[40]

The total calculated compensatory production, calculated as primary production necessary to replace the kind and quantity of biomass lost, is 563,750 kg of primary production.[41] This compensatory production is translated to area of habitat creation through multiplying the expected net gain in annual productivity per unit area of created habitat by the project life (i.e., the number of years the created habitat will exist), and discounting for the delay before

[33] DARP/EA Chapters 5 and 6 pp. 37-55
[34] 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.
[35] 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.
[36] 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
[37] Trustees apply a 3% economic discount rate to account for the real or perceived increased cost of the injured resource over time.
[38] For this instance, the trustees used the year of spill (1999) as the "present day" from which both injury value and restoration value are discounted per SIMAP Report Section 2, pp. 8-23
[39] SIMAP report, Section 7.2, p. 62
[40] Reichle, David. Food chains and trophic level transfers. The Global Carbon Cycle and Climate Change. Section 7.4. The Lindeman 10% Rule (or Lindeman's Law) is that 10% of food energy is transferred from one trophic level to another with the remaining lost through incomplete digestion, respiration, and mortality.
[41] This takes into consideration both the direct loss and the lost productivity for the various species and habitat along with the trophic equivalency discussed. DARP Sections 3.3 and 3.4 and SIMAP Report Appendix E: SIMAP Injuries Report

benefits are realized. The resulting compensatory restoration project is 5.71 acres of salt marsh creation. Restoration values informing the HEA include 5 years to develop the maximum achievable function of 50% annual primary production rate,[42] 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 1999 (the year of the incident).[43]

The NPFC requested[44] but did not receive the HEA spreadsheets and therefore is unable to validate the rate of functional development of the created wetland,[45] the discount period used, or whether all inputs are consistent with the values discussed in the DARP/EA. The Trustees' assertions of a 15-year functional life for the created marsh and maximum productivity of 50% (relative to natural wetlands) are consistent with available studies of productivity of created wetlands,[46,47] especially considering the rate and effects of relative sea level rise and land subsidence in Galveston Bay.[48]

For discounting purposes, the Trustees used either a 2014 (as stated in the SIMAP Report)[49] or 2019 (as stated in the DARP) project start date[50] 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 and begin restoration. However, it is unclear if the Trustees are applying 15 or 20 years of discounting at 3%, and the Trustees presented no evidence that the length of time (whether 15 or 20 years) was necessary for a NRDA entirely reliant on tabletop modeling and utilizing a previously scoped restoration project[51] In the absence of additional clarity, the NPFC cannot validate the trustees' scaling calculations.

Costs associated with the 5.71-acre salt marsh creation project total $275,392.23 and include $10,154.62 in Engineering and Design costs, $15,440.54 for mobilization/demobilization, $243,157.63 for Marsh Creation, and $6,639.43 for ancillary work.[52] Feasibility study data collection and survey costs were not included, nor were Trustees' oversight/project management costs. The submitted costs represent a prorated portion of the more expansive 185-acre Swan Lake Marsh Restoration Plan.[53] The NPFC requested additional information from TGLO regarding why prorated portions of certain costs of the greater project were not

[42] 50% production as compared to a naturally derived estuarine marsh.
[43] SIMAP Report, Section 7.1, p. 60 and DARP/EA Section 3.4.1 p. 18
[44] AI Request November 18, 2021
[45] SIMAP Report, Section 7.1, p. 62
[46] Atkinson et.al, 2010 Primary productivity in 20-year-old created wetlands in southwestern Virginia. Wetlands 30:200-10
[47] 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
[48] 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.
[49] SIMAP Report, Section 7.1, p. 60
[50] DARP/EA Section 3.4.1 p. 18
[51] Even assuming the time associated with the assessment claim (T07008-TX01) was reasonable, the Trustees had anticipated only two additional years to complete NRDA from receipt of funds (payment made March 4, 2009). No explanation is given why an additional 10+ years were necessary to complete the NRDA and losses subject to economic discounting
[52] Ancillary work includes Bathymetric and Pre-Dredge Hazard Surveying Acceptance, Aerial Photography
[53] Swan Lake Costs – Final spreadsheet submitted with Claim

included and why certain costs were prorated at the 200% rate for compensatory restoration piece.[54] TGLO explained that the Swan Lake Restoration project combines funding from multiple sources, each with different funding requirements and obligations. Therefore, 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, and if any of those funds are not available or additional funding is needed to support the project, TGLO will use Gulf of Mexico Energy Security Act (GOMESA) funds to ensure project completion.[55]

Although the NPFC finds that the modeled injury and scaling for this particular claim is not supported, the NPFC finds otherwise that the costs associated with the size of the evaluated marsh creation project would be reasonable,[56] 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 would represent reasonable damages on a unit cost basis for a marsh creation project. However, because the preponderance of evidence does not support the scale of injuries or the scale of restoration, the NPFC finds the damages claimed to execute a 5.71 acres marsh creation project are not supported by a preponderance of the evidence.

IV. Conclusion

The NPFC has reviewed the Claim submitted by the Trustees for restoration implementation costs in accordance with OPA (33 U.S.C. §2701 et seq.) and associated OSLTF Claims Regulations (33 C.F.R. Part 136). The NPFC finds that the Trustees failed to meet the burden of proof under 33 C. F. R. §136.105(a) for its claim for damages. Additionally, the NPFC finds that the Trustees did not provide sufficient evidence to prove that the model-based procedures used were appropriate to determine the type and scale of injuries nor that the application of the procedures were reliable and valid for the particular incident. The NPFC has determined that the oil trajectory and fate modeling is not persuasive for shoreline oiling and subsurface sediments. Also, although the biological effects model generally includes the type of biological resources within the area that may have come in contact with oil, the model fails to consider the artificial nature of the oiled marsh habitat and the implication to baseline productivity. Similarly, although the type of restoration proposed is appropriate to compensate for the types of injuries generally caused by oil spills into an estuarine environment, the Trustees failed to provide the HEA to support their scaling, nor evidence as to the length and appropriateness of the discounting period. As such, the NPFC denies the Trustees damages of $275,392.23 to restore natural resources injured by the 1999 Trinity Bay oil spill.

Request for Reconsideration

Through this determination, the NPFC denies the $275,392.23 claim. The Trustees may make a written request for reconsideration of this determination. The reconsideration request must be received by the NPFC within 60 days after the date of this determination or 30 days after receipt, whichever is sooner. The request for reconsideration must be in writing and must

[54] AI Request November 18, 2021
[55] AI Received January 14, 2022
[56] 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.

include the factual or legal basis of the relief requested, providing any additional support for the claim. Reconsideration will be based upon the information provided, and a claim may be reconsidered only once. Disposition of the reconsideration will constitute final agency action. All correspondence should include the corresponding claim number T07001-TX02.

On reconsideration, the Trustees should provide additional available evidence to address deficiencies noted above. More specifically, the Trustees should provide, if available, evidence as to the appropriateness of the fate and trajectory model including a discussion of the anomaly in Day 11 including whether the model outputs would significantly differ assuming the quantity of product discharged included condensate and gas (as indicated in the TGLO incident report); evidence to support the level of productivity applied to the injured marsh; evidence to support that the recovery period modeled for injured marsh vegetation and invertebrates is appropriate given the time of year and degree of oiling; the HEA; and justification for the length of the discounted period applied.