Natural Resource Damage Assessment Work Plan

Reed Point Bridge Derailment

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Acronyms

CECRA	Comprehensive Environmental Cleanup and Responsibility Act
DSAYs	Discounted Service Acre-Years
EPA	U.S. Environmental Protection Agency
FAS	Fishing Access Site
FWP	Montana Fish, Wildlife, and Parks
HEA	Habitat Equivalency Analysis
MCA	Montana Code Annotated
MRL	Montana Rail Link, Inc.
NPS	National Park Service
NCP	National Contingency Plan
NOI	Notice of Intent
NRDA	Natural Resource Damage Assessment
NRDP	Natural Resource Damage Program
OPA	Oil Pollution Act
OWCN	Oiled Wildlife Care Network
SCAT	Shoreline Cleanup and Assessment Technique
USFWS	U.S. Fish and Wildlife Service

1. Introduction

On June 24, 2023, a train operated by Montana Rail Link, Inc. ("MRL") traversing the Twin Bridges Road railroad bridge approximately 40 miles west of Billings, Montana, derailed (Exhibits 1-1, 1-2, and 1-3). A total of 17 railcars derailed, 10 of which entered the Yellowstone River. Of those entering the river, 6 contained asphalt liquified petroleum ("asphalt"), 3 contained molten sulfur, and 1 contained scrap aluminum. The incident also involved the partial collapse of the railroad bridge.

Exhibit 1-1. The Twin Bridges Road railroad bridge after the derailment.

Photo credit: Kaylene Ritter, Abt, July 1, 2023.

Approximately 420,000 pounds of asphalt ("oil" as defined by 33 U.S.C. § 2701(23)) were released and an estimated 236,714 pounds of asphalt have been recovered to date. The shoreline and aquatic habitats of the Yellowstone River where the incident took place support a diversity of terrestrial and aquatic biota, as well as recreational activities such as boating and fishing, that were impacted by the incident.

Exhibit 1-2. Side view of the Twin Bridges Road railroad bridge after the derailment.

Photo credit: Kaylene Ritter, Abt, July 1, 2023.

Exhibit 1-3. Train derailment location.

The Montana Natural Resource Damage Program (NRDP) is working on behalf of the Trustee of state natural resources at the site, the Governor of the State of Montana, to assess natural resource damages resulting from the spilled asphalt. When used in this Work Plan, "Trustee" generally refers to NRDP acting on behalf of the Trustee, although this Work Plan also describes the legal authority that the Governor has as the natural resource trustee for Montana. The Trustee is authorized under the Oil Pollution Act (OPA) to act on behalf of the public to (1) assess natural resource injuries resulting from a discharge of oil or the substantial threat of a discharge, as well as response activities associated with clean-up of the oil, and (2) develop and implement a plan for restoration, rehabilitation, replacement, or acquisition of the equivalent, of such injured resources [OPA, 33 U.S.C. § 2706 *et seq*.]. Regulations outlining a process for conducting natural resource damage assessments (NRDAs) for the release of oil have been established under OPA [15 C.F.R. § 990 *et seq*.].

Following the OPA regulations, the Trustee conducted a preliminary review of existing data and published a Notice of Intent (NOI) to Conduct Restoration Planning [15 C.F.R. § 990.44]. The Trustee made the determination to proceed with an NRDA, concluding that the incident discharged asphalt into the Yellowstone River, natural resources are likely to have been exposed to and injured by the discharged asphalt, and the data required to perform an assessment can be obtained at a reasonable cost (NRDP, 2023a).

To ensure that the assessment is performed in a planned and systematic manner, and that the methodologies chosen to assess injury are cost-effective, the Trustee has prepared this Work Plan. This Work Plan, which was made available for public comment, describes the Trustee's proposed plan, consistent with 15 C.F.R. § 990.14(d), for determining and quantifying injury to natural resources and services resulting from the discharged asphalt and response activities associated with the incident.

The Trustee refers to this incident as the Reed Point Bridge Derailment. It is also known as the Stillwater Train Derailment.

1.1 Public Review and Comment

The Trustee intends for this Work Plan to communicate the assessment approach to the public, so that the public can become engaged and actively participate in, or comment on, assessment activities. Public input may also provide the Trustee with new information and ideas that may be incorporated into the assessment. Though not required by OPA, NRDP presented the draft Work Plan at a public meeting in Columbus on June 26, 2024, in response to public interest. The public meeting was advertised in display advertisements in the Billings Gazette and the Stillwater County News. On June 10, 2024, NRDP sent notices of the draft Work Plan comment opportunity to 32 individuals and entities on its mailing list.

The public comment period lasted for 32 days, from June 10 to July 12, 2024. All comments received by the Trustee, together with responses to those comments, are included as Attachment A and Attachment B, respectively, to this final version of the Work Plan.

The Work Plan may be modified at any stage of the assessment as new information becomes available. Any significant modification to the Work Plan may be made available for additional public comment and review.

1.2 Potentially Responsible Parties

Pursuant to OPA under 33 U.S.C. § 2701 (32)(B), MRL has been identified as a Responsible Party for this incident. MRL is also identified as a potentially liable person pursuant to Montana Code Annotated (MCA), Section 75-10-715. The OPA regulations specify that natural resource trustees should invite the responsible party to participate in the damage assessment process [15 C.F.R. §§ 990.14(c) and 990.44(d)]; additionally, if trustees decide to proceed with an NRDA, they must prepare an NOI to Conduct Restoration Planning. Accordingly, on November 20, 2023, the Trustee invited MRL to participate in an NRDA and concurrently provided MRL with an NOI to Conduct Restoration Planning (NRDP, 2023a). Federal regulators approved MRL's petition to discontinue rail service along the former Northern Pacific main line between Huntley, Montana, and Sandpoint, Idaho, and BNSF Railway Company resumed operations along this line starting January 1, 2024. Accordingly, this NOI was also provided to BNSF Railway Company.

MRL and the Trustee had previously signed an agreement on July 26, 2023, for the Trustee to conduct preassessment screening activities with funding from MRL. MRL accepted the invitation to participate in the NRDA process, and the agreement was modified on March 8, 2024, to provide funding to prepare the Work Plan cooperatively, with the opportunity to meet and confer with MRL at defined points throughout the development. If the Parties did not agree, final decisions on the Work Plan and incorporation of comments were made by NRDP. MRL and NRDP will also evaluate potential early restoration projects for the site and share new data or information collected by either party. The agreement does not include implementation of the Work Plan; an additional agreement or modification to the agreement would be needed to fund implementation.

1.3 Trusteeship Authority

Pursuant to OPA under 33 U.S.C. § 2706(c)(2), the State Trustee for natural resources is authorized to (1) assess natural resource injuries resulting from a discharge of oil or the substantial threat of a discharge, as well as response activities associated with clean-up of the oil, and (2) develop and implement a plan for restoration, rehabilitation, replacement, or acquisition of the equivalent, of such injured resources. As noted previously, the Governor of the State of Montana is the natural resource Trustee for State resources and acts through NRDP, in accordance with 40 C.F.R. § 300.605 and 33 U.S.C. § 2706(b)(3). In addition to acting as a Trustee for this incident under OPA, the State of Montana is also acting pursuant to its applicable state laws and authorities, including, without limitation, the Comprehensive Environmental Cleanup and Responsibility Act (CECRA), § 75-10-701, MCA, *et seq*.

1.4 Natural Resource Damage Assessment Process

The primary goal of NRDA under OPA is to make the environment and public whole for injuries to natural resources, and services provided by those resources, resulting from incidents involving an oil discharge or substantial threat of an oil discharge [15 C.F.R. §990.10]. Restoration activities under OPA are intended to return injured natural resources and services to their baseline conditions, and to compensate the public for interim losses from the time of the incident until the time resources and services recover to baseline conditions. To meet these goals, the restoration activities need to produce benefits that are related to or have a nexus to the natural resource injuries and service losses resulting from the spill.

To the extent practical, the OPA regulations state that an NRDA should be conducted in coordination with investigations undertaken as part of National Contingency Plan (NCP) response actions [15 C.F.R. §990.21]. The goals of this coordination are to avoid duplication, reduce costs, and achieve dual objectives where practical.

The Trustee intends to follow the guidance provided in the OPA regulations for conducting this NRDA, which the Trustee has called the Reed Point NRDA. The three major phases in the OPA NRDA process are the “preassessment phase,” the “restoration planning phase,” which includes injury determination and quantification and restoration selection, and the “restoration implementation phase.”

The Trustee has completed the preassessment phase for this incident. This Work Plan focuses on the next phase, in particular, injury assessment (injury determination and quantification steps) of the restoration planning phase. Below we provide a brief overview of the three NRDA phases, and in Section 4, we summarize the Trustee’s approach for injury determination and quantification.

1.4.1 Preassessment Phase

The preassessment phase of an NRDA is the first step described in the OPA regulations. In the preassessment phase, natural resource trustees first determine if they have jurisdiction to pursue restoration under OPA [15 C.F.R. § 990.41]. If it is determined a trustee has jurisdiction to pursue restoration under OPA, the trustee then makes a determination on restoration planning [15 C.F.R. § 990.42]. During this phase, natural resource trustees determine if (1) injuries have resulted, or are likely to result, from the incident; (2) response actions have not adequately addressed, or are not expected to address, the injuries resulting from the incident; and (3) feasible primary and/or compensatory restoration actions exist to address the potential injuries. If it is determined that all of the conditions listed above are met, natural resource trustees may then proceed with issuing an NOI to Conduct Restoration Planning.

In June 2023, NRDP, on behalf of the Trustee, began the preassessment phase of the Reed Point NRDA in accordance with 15 C.F.R. Part 990, Subpart D, to determine if the Trustee had jurisdiction to pursue restoration under OPA, and, if so, whether it was appropriate to do so. The Trustee, with NRDP acting on

the Governor's behalf, has determined that the State has jurisdiction to pursue restoration under OPA and CECRA, including § 75-10-715(2)(b), MCA.

Pursuant to 15 C.F.R. § 990.42(a), the Trustee prepared an NOI to Conduct Restoration Planning in the fall of 2023. The NOI stated the Trustee's determinations that (1) injuries to natural resources and natural resource services have resulted from the incident; (2) the response actions did not address and are not expected to address all injuries resulting from the discharge of asphalt; and (3) feasible restoration actions exist to address the natural resource injuries and losses, including lost human uses, resulting from the discharges of asphalt.

Based upon these determinations, the Trustee concluded that restoration planning for the incident should proceed. The Trustee provided MRL with the NOI and also made it available to the public pursuant to 15 C.F.R. § 990.44(c) on November 20, 2023.

1.4.2 Restoration Planning Phase

The restoration planning phase of an NRDA is the second step described in the OPA regulations. The purpose of this phase is to provide the trustees with a process to evaluate and quantify potential injuries (injury assessment) and use that information to determine the need and scale of restoration (restoration selection) [15 C.F.R. §990.50].

Injury Assessment

After issuing an NOI to Conduct Restoration Planning, natural resource trustees then determine if injuries to natural resources and/or services have resulted from the incident (injury determination) [15 C.F.R. § 990.51]; if so, they then quantify those injuries (injury quantification) [15 C.F.R. § 990.52]. The goal of injury assessment is to determine the nature, extent, and degree of any injuries to natural resources and services that resulted from the incident. This information will provide a basis for evaluating restoration actions.

Injury Determination

Natural resource trustees must determine if injuries to natural resources and/or services have resulted from the incident. To make this determination, trustees need to determine that natural resources have been exposed to discharged oil and must establish a pathway from the discharge to the natural resources. The trustees also identify injury, establish exposure and pathway, identify injuries resulting from response actions, and select injuries to include in the assessment [15 C.F.R. § 990.51].

The Trustee's approach to injury determination for the Reed Point Bridge Derailment is described in Section 4.1.

Injury Quantification

Natural resource trustees then quantify the degree and spatial and temporal extent of such injuries relative to baseline and may translate that adverse change to a reduction in services provided by the natural resource, or the amount of services lost as a result of the incident [15 C.F.R. §990.52].

The Trustee's approach to injury quantification for the Reed Point Bridge Derailment is described in Section 4.2.

Restoration Selection

If the injury determination and quantification justify restoration, natural resource trustees may proceed with restoration selection. The goal of restoration selection is to consider a reasonable range of restoration alternatives that address one or more specific injury(ies) associated with the incident before selecting their preferred alternative(s). During the restoration selection, the trustees must develop restoration alternatives [15 C.F.R. §990.53], must evaluate the alternatives [15 C.F.R. §990.54], and must develop a restoration plan [15 C.F.R. §990.55].

1.4.3 Restoration Implementation Phase

The restoration implementation phase is the final step in the NRDA process. After the assessment is complete, natural resource trustees close the administrative record [15 C.F.R. §990.61]. A written demand is then presented to the responsible parties [15 C.F.R. §990.62].

As noted above, this Work Plan focuses on the injury assessment – injury determination and quantification steps – of the restoration planning phase.

1.5 Organization of the Work Plan

The remainder of this Work Plan is organized as follows. Section 2 provides an overview of the incident and response. Section 3 describes the Assessment Area and the natural resources within the Assessment Area. Section 4 presents the proposed assessment approach that the Trustee will use to determine and quantify injury to natural resources and service loss. The final section contains references cited in the text.

2. Description of the Incident and Response

In this section we provide an overview of the incident, information on the resulting emergency closure, a description of observed asphalt downstream of the train derailment site, and a summary of wildlife mortalities observed in the field.

2.1 Overview

As a result of the derailment about 420,000 pounds of asphalt were released into the river (NRDP, 2023a; EPA, 2024a), and asphalt was observed on the Yellowstone River's banks more than 130 miles downstream from the incident (NRDP, 2023a; EPA, 2024a; MRL, 2023a). Observed asphalt deposits ranged from deposits spanning multiple feet of shoreline (Exhibit 2-1) to deposits a few centimeters in diameter (Exhibit 2-2). A portion of the river bottom, rocky shorelines (Exhibit 2-3), riparian vegetation (Exhibit 2-4), some backwater quiescent fish nursery habitats, and the surface water (Exhibit 2-5) were affected by the spilled asphalt. In addition, some nearshore habitats were affected by response activities (e.g., staging grounds for the response).

On June 25, the Unified Command (consisting of EPA, MRL, Montana Department of Environmental Quality, and Stillwater Department of Emergency Services) began work to remove the 10 rail cars from the river. All railcars were removed from the river by July 2, and from the east side of the bridge by July 3. The bridge was then reconstructed, with rail transportation resuming after bridge construction completion on July 22 (EPA, 2023h,m).

2.2 Emergency Closures and Staging Areas

On June 24, Stillwater County Department of Emergency Services (DES) directed the Sheriff's department to close all public access to the Stillwater River and Yellowstone River in Stillwater County and have campers leave all sites with direction to not access the waters (DES, 2024). Montana FWP enforcement staff assisted, along with the Sweet Grass County Sheriff's office, to reach all of the Stillwater County sites as quickly as possible to prevent people from floating into the site or the river downstream of the incident (DES, 2024). By mid-morning of June 24, 2023, the public was notified through agency social media posts that the Stillwater River was closed from White Bird Fishing Access Site (FAS) to the confluence of the Yellowstone River, and the Yellowstone River was closed from Pelican FAS to Buffalo Mirage to boaters and floaters and from Twin Bridges Road to Buffalo Mirage for all water and shoreline access (FWP, 2023f; DES, 2024; see Section 3).

Once Unified Command was established, Stillwater DES and Unified Command staff worked with FWP staff to establish the work site, safety zones, and public access restrictions based on conditions. Late on June 25, 2023, the portion of the Stillwater River from Jefferies Landing to White Bird FAS was reopened, and the Yellowstone River from the Stillwater County and Sweet Grass County line downstream to include Indian Fort FAS was reopened. White Bird FAS to the confluence remained closed to downstream boating and floating under these emergency closures from June 24 to June 27, 2023 (FWP, 2023f; DES, 2024). Of note, Swinging Bridge FAS on the Stillwater River was previously closed from flood damage and underwent restoration work from June 16, 2022, through August 23, 2023.

Exhibit 2-1. Asphalt deposits along shoreline. Photos taken approximately 1.5 miles downstream of the train derailment site, on the lee side of an island.

Photo credits: Kaylene Ritter, Abt, July 2, 2023.

Exhibit 2-2. Asphalt deposits a few centimeters in diameter. Top photo taken near Worden, Montana (coordinates 45.97984 N, 108.23328 W); bottom photo taken at Dover, Montana.

Photo credits: Whitewater Rescue Institute, June 27, 2023 (top), U.S. Fish and Wildlife Service, August 22, 2023 (bottom).

Exhibit 2-3. Asphalt deposits along rocky shoreline. Photo taken near Worden, Montana (coordinates 45.97984 N, 108.23328 W).

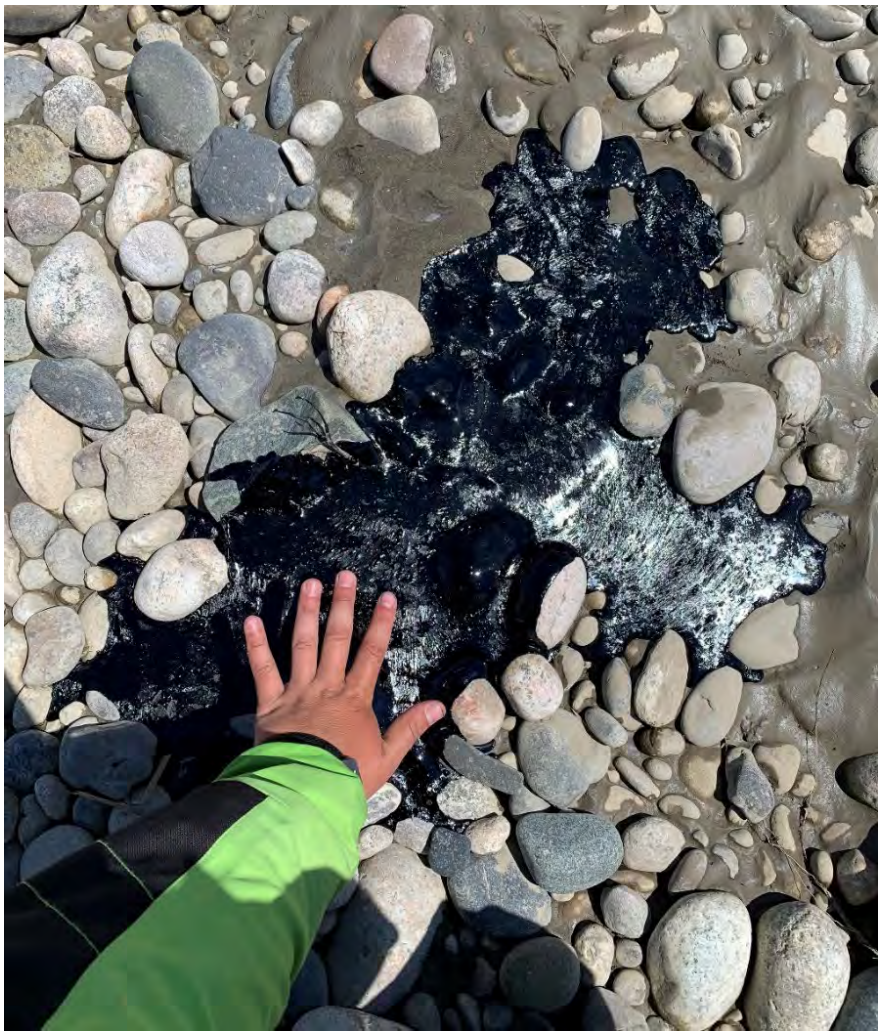


Photo credit: Kaylene Ritter, Abt, July 2, 2023.

Exhibit 2-4. Asphalt deposits along riparian vegetation.

Photo credits: Kaylene Ritter, Abt, July 2, 2023.

Exhibit 2-5. Asphalt deposits in water. Image displays the asphalt breaking into small pieces and spreading downstream. Photo taken near Worden, Montana (coordinates 45.97984 N, 108.23328 W).

Photo credit: Whitewater Rescue Institute, June 27, 2023.

Beginning on June 27, 2023, at 12 p.m., FWP declared an emergency closure on a portion of the Yellowstone River between Reed Point and Columbus, spanning 3.5 river miles (Montana Administrative Register 12-605, 2023a). FWP's emergency closure of the Yellowstone River spanned 2.5 river miles downstream to 1 river mile upstream of the Twin Bridges Road railroad bridge where the derailment occurred (Montana Administrative Register 12-605, 2023a). This portion of the Yellowstone River was deemed unsafe for downstream boating, floating, and shoreline use due to debris from the partial collapse of the Twin Bridges Road railroad bridge and the train derailment into the river (FWP, 2023b; Montana Administrative Register 12-605, 2023a). The closure created a safe upstream distance to prevent accidental boating or floating into the active work site. All prior temporary restrictions and closures related to this incident ceased with the formal closure on June 27 (DES, 2024). This river closure effectively closed the Yellowstone River from Indian Fort FAS to Holmgren FAS for all non-motorized watercraft while allowing motorized watercraft to use areas that were not within the closure area. The closure was rescinded July 29, 2023, and the river was opened for public use (EPA, 2023b).

On June 30, 2023, FWP declared an emergency closure to the public at the Holmgren Ranch FAS (FWP, 2023a), which was used as a worksite and staging area by the assessment and cleanup crew members for the spilled material, resulting in hazardous conditions for the general public (this situation constituted an imminent peril to public health, safety, and welfare; Montana Administrative Register 12-608, 2023b). A special use permit, signed on June 30, 2023, was in place for Holmgren FAS (FWP, 2023e). Thus, public access was not allowed at this location during the closure from June 30 through July 21, 2023 (FWP, 2023c; Montana Administrative Register 12-608, 2023b). Exhibits 2-6 and 2-7 were taken at and upriver of the Holmgren Ranch FAS.

Exhibit 2-6. Signage at the Holmgren Ranch FAS indicating river closure at Twin Bridges (train derailment site).

Photo credit: Kaylene Ritter, Abt, July 2, 2023.

Exhibit 2-7. Signage on the Yellowstone River indicating river closure.

Photo credit: Kaylene Ritter, Abt, July 2, 2023.

Cleanup teams also used the boat ramp at Itch-Kep-Pe Park during the incident response to access the river, closing the ramp to the public on July 8, 2023 (MRL, 2023b). The hand-launch boat ramp near the Highway 78 bridge remained open to watercraft (MRL, 2023b). Itch-Kep-Pe Park boat ramp was reopened to the public on July 21, 2023 (FWP, 2023g). On July 10, 2023, crews began improvement work with heavy machinery at Buffalo Mirage FAS near Laurel in advance of extending cleanup and assessment efforts downstream (MRL, 2023b). Buffalo Mirage was not closed to public use and was used as a transitional area for shoreline cleanup and assessment technique (SCAT) and clean-up boat access (MRL, 2023b). A special use permit, signed on July 17, 2023, was in place for Buffalo Mirage FAS (FWP, 2023d).

Cleanup teams relocated their base of operation from Holmgren FAS downstream to Riverside Park in Laurel on July 19, 2023 (EPA, 2023a). MRL leased a portion of Riverside Park (the campground) but did not close the boat ramp or the Park to public use. MRL used boat launches for on-river crews and used the Park as a staging area for asphalt material collection (EPA, 2023a; FWP, 2023g). On July 21, 2023, the Holmgren FAS was reopened for public use, though some cleanup resources continued to be staged there for the duration of the response (FWP, 2023c). The stretch of the Yellowstone River that had been closed from 1 mile upstream to 2.5 miles downstream of the derailment was reopened on Saturday, July 29, 2023, by FWP (EPA, 2023b).

Other FWP sites were utilized by SCAT and clean-up teams as staging areas but were not closed to the public during the initial clean-up. Those sites include Duck Creek, Blue Creek, East Bridge, Voyagers Rest, and Captain Clark FASs on the Yellowstone River. The access trail to the gravel bar boat launch area in Voyagers Rest FAS was slightly widened and a limited amount of gravel was added at the transition from the site to the gravel bar. No special use permits were determined to be necessary for use of these sites as the total number of boats and vehicles was expected to be minimal and no overnight use or temporary staging equipment was anticipated to be needed.

2.3 Observed Asphalt Downstream

On June 27, 2023, an initial rapid assessment for asphalt in the river and along shorelines began, with teams observing asphalt material up to 110 miles downstream of the bridge (EPA, 2023j). The rapid assessment extended over 240 miles downstream from the derailment site. Following this rapid assessment, SCAT surveys began on July 2, 2023 (Washington Corporations, 2024a). Recovery operations included 50 river response vessels and over 200 responders. Responders traveled over 50,000 river miles from the derailment site (river mile 0) downstream below the confluence with the Big Horn River (river mile 136; Washington Corporations, 2024a). SCAT teams surveyed 827 sites from the derailment location to river mile 136. The SCAT crews searched for asphalt, observed the shores and islands in the river for mats and other asphalt material, and mapped the identified locations (EPA, 2023c). These crews documented and reported areas of removable asphalt, as well as areas where asphalt was observed, but removing the asphalt was determined to cause more environmental harm than good (e.g., wildlife nesting locations). Following the SCAT assessment, a cleanup group removed the asphalt material by hand and bagged it for collection. Lastly, a third group transported the collected waste material back to the central staging location (EPA, 2023c).

MRL launched the rpderailment@mtrail.com email on June 27, further allowing the public to report observations. A press release by Unified Command the same day (10:00 a.m.) advised the public of this additional method of reporting observed asphalt. MRL first received a public report on June 27. MRL monitored the email and responded to reports. Emergency asphalt cleanup operations extended into August 2023 (EPA, 2024a). On July 1, 2023, United Command approved guidelines for the removal of actionable asphalt; these guidelines stated, “actionable asphalt on land is defined as an accessible patty or mat that can be efficiently removed by manual techniques with less than approximately 30% entrained in rock and sediment. The objective is to remove as much asphalt as possible without removing native sediment and rock. Actionable asphalt in water is defined as asphalt patties and mats that are visible and accessible where it is efficiently retrieved in one piece with no entrained sediment or rock” (EPA, 2023o). The guidelines also stated that if actionable asphalt cannot be safely removed, it would be left in place to weather naturally and “will be broken and mixed with sediment to enhance weathering and degradation and to reduce the contact risk for wildlife and recreators” (EPA, 2023o). These guidelines were updated in the Proposal for Future SCAT and Shoreline Recovery Guidelines (EPA, 2023e), which was approved by the Unified Command on August 3, 2023. The type and size of asphalt deposits that would be removed by the cleanup crews were defined in this document as:

- deposits that were 50 cm or larger on pebbles

- deposits that were 15 cm or larger on sand
- deposits on vegetation or root balls were only removed if the asphalt was extremely thick, sticky, and/or dripping (EPA, 2023e).

On August 7, cleanup crews reached an initial river cleanup end point at 136 miles downstream from the incident site, just below the confluence with the Bighorn River (MRL, 2023a). The Proposal for Future SCAT and Shoreline Recovery Guidelines (EPA, 2023e) document states that cleanup efforts will wind down when three or fewer actionable asphalt areas are found within a "rolling" ten-mile stretch of the river. A single actionable asphalt area was identified in the final 10 miles of cleanup, triggering wind down (MRL, 2023a). Additionally, river operations were scaled down at this time due to low water levels preventing safe boat access to cleanup areas (MRL, 2023a). There may have been asphalt deposited beyond this point that did not trigger the actionable asphalt criteria.

On September 4, the Unified Command approved a Transition Plan (EPA, 2023d), indicating that cleanup had progressed from an emergency response to maintenance operations. The transition plan also included a potential additional cleanup effort in the summer of 2024 (EPA, 2023d).

As noted above, not all observed asphalt was removed from shorelines by the cleanup crews. The intent of the removal criteria was to balance the effects of the released material on the environment against labor efficiencies and the effects of the removal work, such as the increased foot traffic along the shorelines, and removal of native materials from local habitats, such as removal of natural sediment and vegetation. However, this also meant that not all the spilled asphalt was cleaned up, and asphalt remained in the environment, exposing natural resources.

As water levels fell, additional actionable and accessible asphalt became exposed and was reported by NRDP and members of the public. MRL responded to these reports and conducted additional removal operations under the Transition Plan; these operations recovered approximately 3,600 additional pounds of asphalt in 2023 (EPA, 2023f).

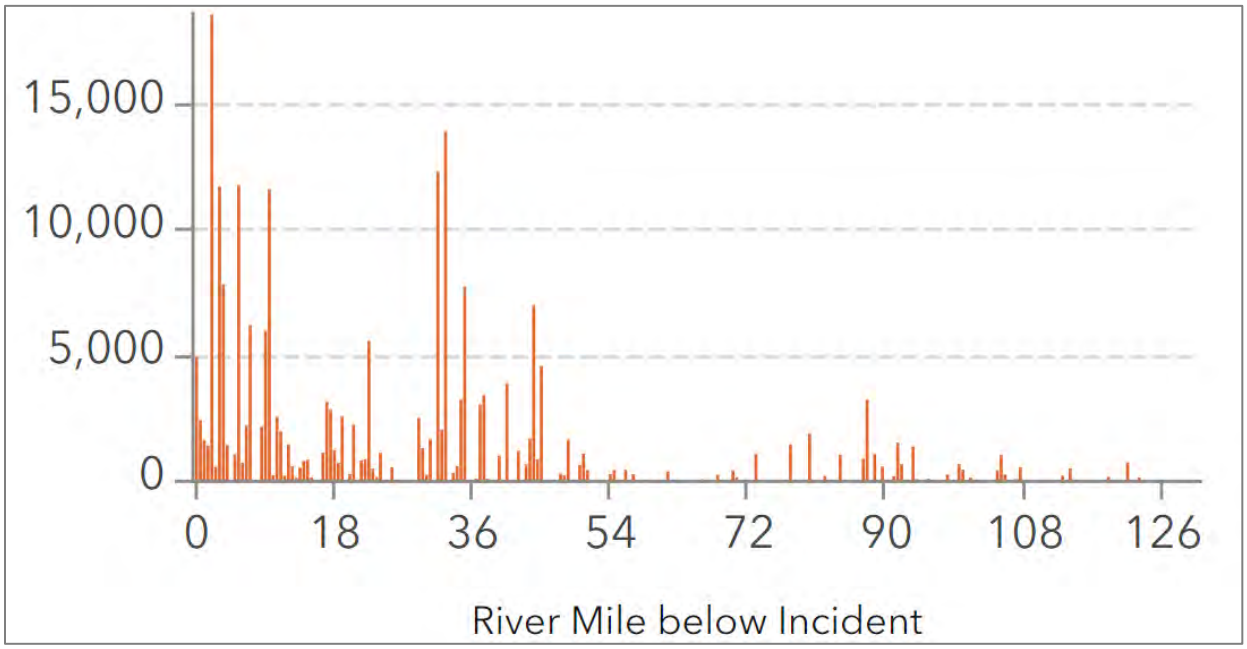
By completion of 2023 cleanup activities, an estimated 236,385 pounds of asphalt were recovered, from ~136 river miles (Exhibit 2-8; EPA, 2024a,b; MRL, 2023a). This represents an approximate 60% recovery of the estimated 420,000 pounds spilled into the Yellowstone River at the time of the incident with more than 40% unrecovered at the end of cleanup activities in 2023. This asphalt may represent a combination of observed asphalt that did not meet "actionable" criteria, asphalt that was present within the 136 river miles but not observed by cleanup crews, and any asphalt that may have been transported even farther downstream. The weight of the collected asphalt was estimated by weighing bags of asphalt, followed by visually inspecting the material in the bags to determine a percentage of various debris (e.g., wood, rocks, etc.) in the bags (EPA, 2023d). This percentage was deducted from the overall weight to account for the weight of the various debris that was not asphalt (EPA, 2023d).

On February 16, 2024, the Unified Command released the Phase 2 cleanup plan. According to the Phase 2 cleanup plan, after ice, debris, and water levels permit safe access in the spring, the Phase 2 plan would begin. The Phase 2 cleanup plan also described an early rapid assessment to evaluate the riverbanks and remove any accessible asphalt that may have become visible by shifting river conditions, including shifting sandbars. The rapid assessment was completed in April 2024 and MRL provided NRDP daily updates. Sixty-one pounds of asphalt were recovered during the rapid assessment (Polaris Applied Sciences, Inc., 2024).

On June 4, 2024, the Unified Command revised the Phase 2 SCAT resurvey plan (EPA, 2024c) and cleanup crews returned to the river on June 17, 2024, to collect actionable asphalt (Polaris Applied Sciences, Inc., 2024). During Phase 2, the SCAT teams surveyed 60 zones over approximately 95 river miles and removed approximately 267 pounds of asphalt, for a total of approximately 236,714 pounds of

asphalt removed throughout the cleanup (EPA, 2024d). The Unified Command was dissolved and the emergency phase of the cleanup ended on June 30, 2024, with asphalt recovery continuing on a notification-response basis (EPA, 2024d).

Exhibit 2-8. Cumulative weight of collected asphalt (in pounds) by river mile.



Source: EPA, 2024b.

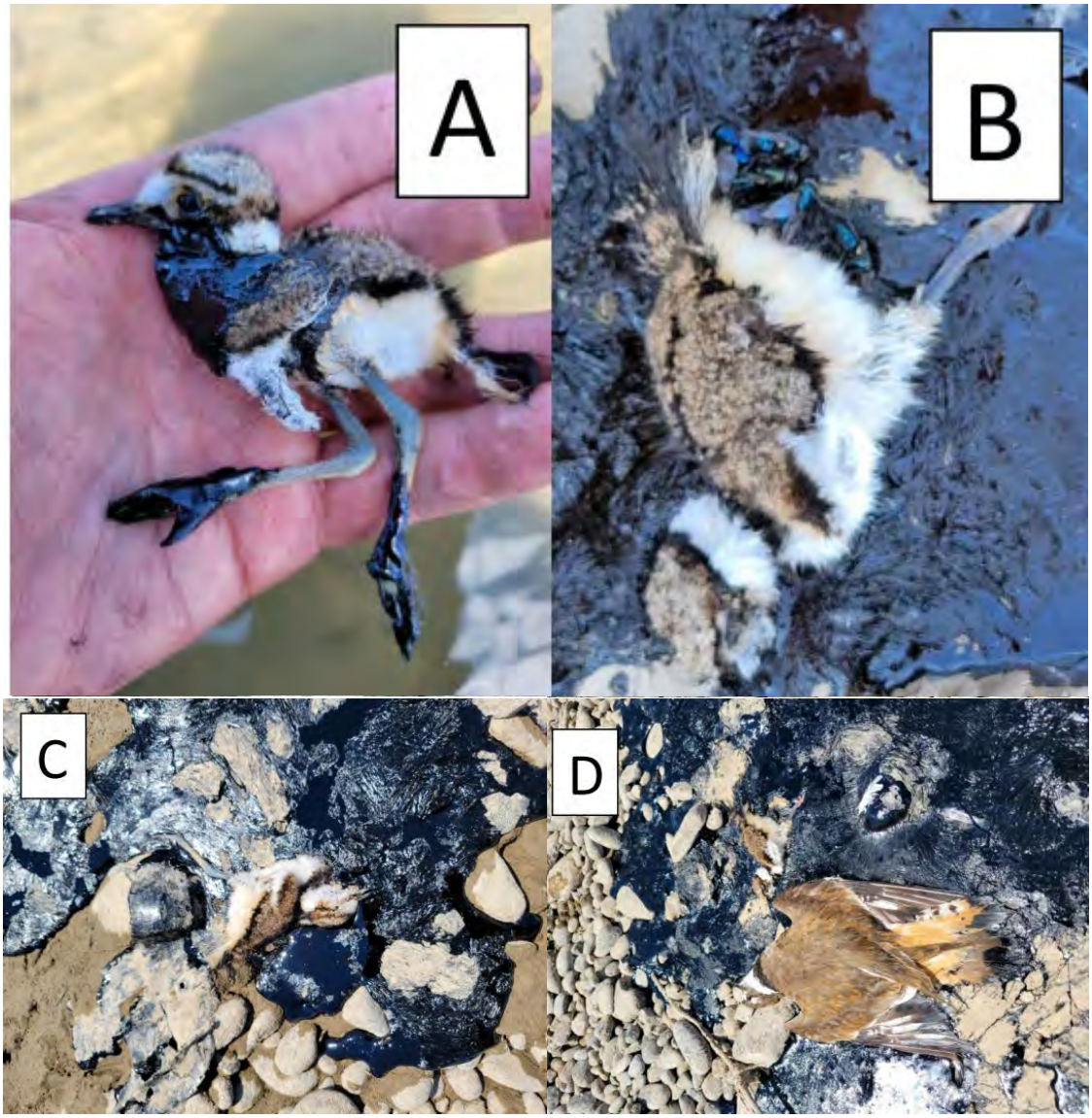
2.4 Wildlife Mortality and Impacts

During response activities, wildlife deaths resulting from asphalt exposure and entrapment were recorded. As part of the assessment, the Trustee will review this information to assess potential injury resulting from the incident. Unified Command received an initial report of a bird affected by asphalt material on July 2, 2023. The Oiled Wildlife Care Network (OWCN) investigated the location and found the bird deceased (EPA, 2023h). Additional dead animals were found and recorded through August 3, 2023. These included garter snakes, bull snakes, killdeer, yellow warbler, and spotted sandpiper. On July 10, 2023, four killdeer heavily coated in asphalt were discovered, three of which were dead and one of which was alive (Exhibit 2-9; EPA, 2023l). The live killdeer chick was taken to the Montana Raptor Conservation Center in Bozeman, but had reportedly died by July 12 (EPA, 2023c). On July 12 and 13, 2023, two possible spotted sandpiper mortalities/scavenging cases were reported in which the birds' feathers remained affixed to a tar mat (Exhibit 2-10; Ostovar, 2023). The precise location of the July 13 observation (45.705518, -108.603698) was southwest of downtown Billings on a gravel bank of the Yellowstone River. Adult spotted sandpipers and chicks near the tar mat on the gravel island were reported, in addition to the possible mortality and scavenging, indicating the potential for additional wildlife exposures to the asphalt. As of August 3, the total documented mortalities were eleven snakes (EPA, 2023m) and nine birds, though these counts are still being verified (Washington Corporations, 2024b). In addition, there was one snake that was found alive and successfully cleaned and released (EPA, 2023n), and the two potentially scavenged spotted sandpipers discussed above.

Estimating avian mortalities from the number of recovered dead carcasses is difficult and requires consideration of the following issues: (1) search coverage; (2) carcass detection rate (Byrd et al., 2009); and (3) carcass removal related to scavenging and other losses (Ford and ZaFonte, 2009; Ostovar, 2023).

Searcher efficiency rates for avian carcasses can be highly variable depending on numerous parameters including the spatiotemporal extent of a given stressor, season, habitat, and environmental conditions.

Exhibit 2-9. (A) Asphalt coated alive, (B and C) Asphalt coated deceased killdeer chicks, and (D) Asphalt coated deceased killdeer adult.



Source: Ostovar, 2023.

Exhibit 2-10. Tar mat with potential spotted sandpiper mortality/scavenging. The top image displays the tar mat, and the bottom image displays a zoomed in view of the remaining feathers. Location 45.705518, -108.603698 was on a gravel bar southwest of Billings, Montana, on the Yellowstone River.

Source: Ostovar, 2023.

Hundreds of tiger beetles, stoneflies, spiders, crayfish, and other invertebrates were found entrapped in the asphalt mats (Ostovar, 2023). Spiny softshell turtles use the same gravel/sandbar habitat as killdeer and spotted sandpipers. Because the incident and response occurred during the nesting season for spiny softshell turtles, MRL retained Professor Kayhan Ostovar to conduct rapid on-the-ground assessments to identify and mark nesting habitat of turtles to mitigate potential negative impacts of cleanup activities. There were no observations of turtles entrapped in asphalt. Four dead turtles were found downstream of the incident site. However, there were no visual observations of asphalt on the turtles (Ostovar, 2023).

Assessments and sampling of fish near the derailment site were done after the incident to investigate whether there were any impacts to fish. There were no reports of dead fish by survey or SCAT teams. On June 29, 2023, FWP conducted a fish assessment in two locations immediately downstream of the derailment to assess several fish species for physical anomalies (e.g., lesions, abrasions). Lesions and abrasions were found on multiple fish species (FWP Fisheries, 2023). Later, in July, 2023, FWP collected and analyzed fish tissue samples for a number of hazardous substances. Many fish collected during this sampling effort had abrasions and/or lesions by visual observations (FWP Fisheries, 2023). The results from the analytical sampling showed elevated levels of phenanthrene, a polycyclic aromatic hydrocarbon (PAH), in the muscle tissue of the mountain whitefish sample collected downstream of the train derailment site, triggering a fish consumption advisory for this species (MT DEQ, 2023a).

In August 2023, FWP conducted additional fisheries testing both upstream and downstream of the derailment (MT DEQ, 2023b). The sampling results showed elevated levels of various PAHs in multiple fish species, warranting the Fish Consumption Advisory Board to expand the fish consumption advisory to all species in this area (MT DEQ, 2023b).

In September 2023, FWP conducted another fish sampling event. FWP collected fish tissue samples upstream and downstream of the derailment site. PAHs were not detected in these fish tissue samples (Energy Laboratories, 2023). The fish consumption advisory for this stretch of the Yellowstone River was lifted in May 2024 (MT DPHHS, 2024). FWP conducted additional fish tissue sampling in June 2024 but the results are not yet available.

There are several potential sources of PAHs and NRDP has not reached a conclusion as to whether the derailment is the source of the PAHs and abrasions/lesions found in the fish that were sampled during these fish sampling events. As part of the assessment, the Trustee will review appropriate baseline information and fish data to assess if there is any potential injury resulting from the incident.

3. Description of the Assessment Area

This chapter provides an overview of the Assessment Area. For the purposes of this Work Plan, the Assessment Area is defined by where asphalt (oil) released as a result of the incident may have come to be located and response activities have caused injuries and service losses. This includes upstream areas that were affected by river closures, the location of the incident, and downstream areas affected by the spilled asphalt and response activities, potentially extending approximately 136 miles, and potentially including tributaries, such as the Stillwater River (NRDP, 2023a; MRL, 2023a; DES, 2024; Exhibit 3-1).

Exhibit 3-1. Incident location and furthest downstream observation of asphalt.

3.1 Yellowstone River

The Yellowstone River is a 692-mile-long (1,114 km) tributary of the Missouri River in the Western United States (flowing through northwestern Wyoming, southern and eastern Montana, and northwestern North Dakota; Discovering Montana, 2023). The drainage basin's elevations vary from 1,850 feet at the Yellowstone River's mouth to roughly 13,780 feet in the mountains south of Yellowstone National Park (Zelt et al., 1999). Much of the water stored in the snowpack in the Yellowstone River watershed falls throughout the winter and flows into the river once it melts in late spring and early summer. This results in a low variability in daily mean discharge throughout the year, and an early spring peak (Zelt et al., 1999). The river is characterized as having three broad reaches – upper (cold-water fishery), middle (transition), and lower (warmwater fishery) reaches (Exhibit 3-1). The incident occurred in the upper reach of the river, near the town of Reed Point, Montana; however, actionable asphalt was found up to

136 miles downstream, extending into the middle reach of the river (NRDP, 2023a; MRL, 2023a; Exhibit 3-1). Below, we describe the reaches where asphalt was observed.

3.1.1 Upper Reach (Cold-water Fishery)

The Reed Point NRDA bridge derailment site is located within the cold-water fishery reach of the Yellowstone River. From the Montana/Wyoming border to the confluence of the Clarks Fork of the Yellowstone, the upper cold-water fishery reach is 180 miles long, with the incident site located in the lower part of the reach, in Stillwater County (Exhibit 3-1). This stretch of the river is predominately braided (supporting split flow channels around open gravel bars) and anabranching (supporting long side channels divided from the main channel by wooded islands; DTM and AGI, 2009). The riparian cover types of shrub, open timber, and closed timber together account for between 10% and 50% of the cover in the upper reach (DTM and AGI, 2008). Between Columbus and Laurel, there is a comparatively high cover (>35%) on the right bank. The river in this area closely follows a steep bedrock valley wall to the south (DTM and AGI, 2008).

The upper reach provides a cold-water fishery in a largely intact habitat (see Section 3.3). There are no dams or structures that divert water across the Yellowstone River; it flows freely. This reach is the most well-known stretch for trout fishing. The cool, clear, and fast-moving water provides ideal conditions for a variety of trout fishing scenarios (Discovering Montana, 2023). The drainage's flowing waters, which sustain trout populations, are regulated as wild trout fisheries with a focus on natural reproduction and habitat preservation. The Yellowstone River's tributaries are essential for sustaining natural reproduction, giving young trout a place to grow, and supplying cool summer streamflow. In addition to trout species, the Yellowstone River sustains and nurtures a vast array of both native and introduced fish species due to its free-flowing character, inherent hydrograph, and natural habitat conditions.

3.1.2 Middle Reach (Transition)

The upper section of this reach (the upper transition reach) of the Yellowstone River has a low gradient, and the rocky bottoms common in the upstream portions of the river gradually give way to sand and mud (FWP, 2021a). This section begins at the confluence of the Clarks Fork with the Yellowstone River and flows west to east for approximately 27.4 river miles to the Huntley Dam (or about 10 miles east of Billings; Exhibit 3-1). The transition reach signifies the area where a cold-water river with a trout predominance gives way to a warmwater river. In low water years, the reach above Billings can reach temperatures in the mid-70s °F, while the lower end of the reach above the Bighorn River (warmwater fishery) can reach temperatures in the mid- to high-80s °F (FWP, 2021a). While the number of cool-water and warmwater fish increases (e.g., catfish, bass, and sauger), the number of trout begins to decline along this reach. There is a healthy mountain whitefish, brown trout, and rainbow trout fishery in this reach (see Section 3.3; FWP, 2021a).

The lower section of this reach (the lower transition reach) begins at the Huntley Dam and flows east to Ranchers Ditch Diversion Dam, which is about 2.5 miles downstream of the mouth of the Bighorn River (i.e., the furthest downstream observation of asphalt; MRL, 2023a; FWP, 2021a). This section of the Yellowstone River is variable, ranging from straight to braided (DTM and AGI, 2009). The river is mostly contained by high sandstone bluffs that enclose the entire stretch as it flows through a broad valley. The substrate of the channel is largely made up of gravel and cobbles, which create numerous islands and bars. The river in this section features a dynamic channel that continuously redistributes sediments from the floodplain (FWP, 2021a). Sediment is transported by all tributaries that enter this section of the Yellowstone River. As a result, the turbidity of the middle Yellowstone River is naturally high (FWP, 2021a).

Below the Huntley Dam, the river begins the transition into a warmwater fishery, and native channel catfish, sauger, and burbot coexist with non-native smallmouth bass and walleye (see Section 3.3). FWP staff have, on occasion, seen other game species, such as largemouth bass, crappie, and northern pike.

There are some nongame species that offer fishing opportunities, like freshwater drum and goldeye (see Section 3.3; FWP, 2021a). As the middle and lower sections of this reach merge, the river flow becomes slower and murkier (Discovering Montana, 2023).

3.2 Habitat

The Assessment Area has both aquatic and shoreline (including vegetated and unvegetated) habitats. The river provides aquatic habitats for multiple fish and wildlife species (described further below). Vegetated and unvegetated shorelines provide various habitat functions to aquatic and terrestrial food webs (NRDP, 2023a). For example, vegetated habitats are essential for providing food, shade, and shelter to fish and other aquatic species. In the river, riparian vegetation contributes to the geomorphic complexity, which draws a variety of biota and maintains water quality by lowering the quantity of sediments and nutrients that enter the river from overland flow. The Yellowstone River provides food and water for terrestrial wildlife, including birds, mammals, and amphibians. These species also utilize the riparian habitats that the river supports. The vegetation is an overstory of riparian forests dominated by narrowleaf cottonwood (*Populus angustifolia*) and plains cottonwood (*Populus deltoides*) along the river (Jones and Hansen, 2009).

3.3 Biota

The Assessment Area contains various terrestrial and aquatic biota, including fish, birds, reptiles, native mussels, and benthic invertebrates (NRDP, 2023a). Below is a description of fish, birds, and reptiles found in the Assessment Area.

3.3.1 Fish

The upper reach of the Yellowstone River (i.e., cold-water fishery; see Section 3.1.1) is known for its popular sport fishery, including rainbow trout, brown trout, and native Yellowstone cutthroat trout (FWP, 2021b; National Park Service [NPS], 2024). Mountain whitefish, burbot, smallmouth bass, and several species of native and non-native nongame fish are also found in this reach (FWP, 2021b; NPS, 2024).

The middle reach of the Yellowstone River (see Section 3.1.2) is a transition zone from the trout-dominated cold-water fishery to the warmwater fishery (FWP, 2021a). This reach of the river is highly diverse and contains approximately 40 fish species, 28 of which are native (FWP, 2021a). The upper parts of the middle reach include a rainbow trout, brown trout, and mountain whitefish fishery (FWP, 2021a,b). Below the Huntley Dam, the river begins to transition into a warmwater fishery where the community shifts to native channel catfish, sauger, and burbot and non-native smallmouth bass and walleye with the occasional sighting of northern pike, largemouth bass, and crappie (FWP, 2021a). This reach also includes nongame species such as goldeye and freshwater drum (FWP, 2021a).

3.3.2 Birds

The Assessment Area is home to numerous species of birds and their habitats, including the bald eagle (federally protected by the Bald and Golden Eagle Protection Act), ospreys, waterfowl, shorebirds, riparian songbirds, and raptors (NRDP, 2023a). Bald eagles were previously listed as an endangered and threatened species, and therefore have been monitored since their delisting. The osprey is also monitored because of the decline of one of their primary food sources (the cutthroat trout; NPS, 2019). The Yellowstone River is home to resident aquatic, migratory, and semiaquatic birds from spring through summer. These species breed and nest in riverine and floodplain habitats, forage for food in the river, raise their young, and then migrate out of the region in the fall. Consequently, it is likely that these species were present when the spill occurred.

3.3.3 Reptiles

Reptiles, including snakes and turtles and their habitats, are also found in the Assessment Area. Some species of snakes that have been observed in the Assessment Area include bullsnakes and garter snakes (EPA, 2023i,j,k). Bullsnakes are found in open areas at lower elevations (NPS, 2020a), whereas garter snakes are associated with water (NPS, 2020b; NPS, 2023).

The Yellowstone River within the Assessment Area is also home to turtles such as the spiny softshell turtle (*Apalone spinifera*; NPS, 2015). Large rivers and river impoundments are two of the habitats preferred by spiny softshell turtles. They are found in soft or muddy bottoms with submerged brush, as well as open banks of sand or mud. Spiny softshell turtles can stay underwater for up to five hours and exchange gases with the water through their skin. Depending on their home range, they can be active from April to October, and burrow into the ground for the winter. These turtles can live to the age of 50 (NPS, 2015). Spiny softshell turtles and their nesting sites were observed in the Assessment Area (Ostovar, 2023).

3.3.4 Sensitive Species

Several sensitive species may also be present in the Assessment Area. In Stillwater County, the Montana National Heritage Program identifies 72 species of concern: 10 mammals, 45 birds, 5 reptiles, 3 amphibians, 7 fish, and 2 invertebrates (Montana National Heritage Program, 2024). The USFWS has identified five threatened species in Stillwater County (Table 3-1).

Table 3-1. Listed threatened species of conservation concern in Stillwater County.

Common Name	Scientific Name	Status
Grizzly Bear	*Ursus arctos horribilis*	Listed threatened
Canada lynx	*Lynx canadensis*	Listed threatened
North American wolverine	*Gulo gulo luscus*	Listed threatened
Red knot	*Calidris canutus rufa*	Listed threatened
Whitebark pine	*Pinus albicaulis*	Listed threatened

Source: USFWS, 2024; Center for Biological Diversity, 2024.

3.4 Recreation Use in the Assessment Area

The Assessment Area provides a variety of recreational opportunities. In addition to fishing, other popular boating activities that occur within the Assessment Area include drift boating, rafting, jet boating, kayaking, canoeing, and recreational floating. Shoreline activities include shoreline fishing, swimming, hiking, bird watching, rock hounding, and other activities.

FASs and other recreational access areas in the potentially affected sections of the Yellowstone and Stillwater Rivers are presented in Table 3-2. FASs on the Yellowstone and Stillwater Rivers were closed for varying time periods related to the incident, as described in greater detail in Section 2.2. The FASs are utilized by anglers, as well as many other types of recreators (e.g., rafters, floaters, hikers, birders, rock hounds, etc.) to access the water and shorelines for recreational activities. In addition to official access points, other locations are used by the public to access the river (the incident site).

Table 3-2. Yellowstone and Stillwater River fishing and recreational access sites.

Riverfront Fishing and Recreational Access Sites	River Section	Coordinates/Location	Recreation Facilities
Yellowstone River			
Otter Creek (FWP)	Section 6B (Reed Point Bridge to Boulder River)	45.85508 -109.91574	Toilet, primitive campsites, concrete boat ramp
Pelican (FWP)		45.75276 -109.76764	Toilet, primitive campsites, concrete boat ramp
Bratten (FWP)		45.71669 -109.63017	Toilet, primitive campsites, gravel boat ramp
Indian Fort (FWP) and Reed Point		45.71537 -109.54857	Toilet, primitive campsites, gravel boat ramp
Twin Bridges (where derailment occurred)	Section 6A (Stillwater River to Reed Point Bridge)	45.686823 -109.438606	Popular access point for boating and angling
Holmgren Ranch (FWP)		45.66329 -109.34832	Concrete boat ramp
Itch-Kep-Pe-Park (City of Columbus)	Section 5 (Clarks Fork Fiver to Stillwater River)	45.628437 -109.250976	Tent and trailer camping, restrooms, drinking water, boat launch
Homestead Isle (FWP)		45.60623 -108.87823	No facilities
Buffalo Mirage (FWP)		45.61277 -108.84205	Toilet, gravel boat ramp
Riverside Park (City of Laurel)		45.65378 -108.75728	RV and tent camping, toilets, showers, picnic area
Duck Creek (FWP)[1]	Section 4 (Huntley Diversion to Clarks Fork River)	45.68696 -108.64225	Toilet, concrete ramp
Riverfront Park (City of Billings)		7332 S Billings Blvd, Billings, Montana	Barbeque grills, horseshoe courts, jogging trails, natural area, picnic sites and shelters, and restrooms
South Hills (FWP)		45.74304 -108.50976	No facilities
Coulson Park (City of Billings)		Chelene St., Billings, Montana	Historic site, jogging trails, natural area, and boat ramp
East Bridge (FWP)		45.79656 -108.46824	Concrete ramp
Two Moon Park (Yellowstone River Parks Association)		850 Two Moon Park Rd, Billings, Montana	Toilet, trails
Stillwater River			
Buffalo Jump (FWP)	Section 2 (Headwaters to Nye)	45.43636 -109.79713	Toilet, hand launch, primitive campsite
Moraine (FWP)	Section 1 (Nye to Confluence with Yellowstone River)	45.46296 -109.75635	Toilet, hand launch, primitive campsite
Castle Rock (FWP)		45.47303 -109.74104	Toilet, hand launch, primitive campsite
Cliff Swallow (FWP)		45.51492 -109.63208	Fishing pier/platform, toilet, hand launch primitive campsite
Absaroka		45.52867 -109.46833	Toilet, hand launch
Jeffrey's Landing (FWP)		45.53753 -109.41899	Toilet
Whitebird (FWP)		45.57523 -109.33702	Toilet, primitive campsite, ramp (gravel)
Swinging Bridge (FWP)[2]		45.58431 -109.33162	Toilet, hand launch, primitive campsite
Fireman's Point (FWP)		45.61715 -109.29626	Raft slide launch, toilet

Source: FWP, 2024b,c; Google Maps.
Note: The FAS and recreation areas are presented in order from upstream to downstream.
[1] Duck Creek FAS was not closed or damaged in the 2022 flood; however, the river channel at this site prior to 2022 had been migrating away from the boat launch. The boat launch area is currently closed to motorized vehicles as it no longer provides sufficient access to the river, although walk-in access is allowed beyond the boat launch area. The closure is expected to remain in place until the river stage increases.
[2] FAS had remaining damage in 2023 after a 2022 flood and was closed until August 2023; all other FWP FASs were operational and in use prior to the incident.

3.4.1 Recreational Angling

Based upon information collected by FWP, the Yellowstone and Stillwater Rivers draw considerable anglers within river reaches potentially affected by the incident. FWP collects information on monthly fishing pressure (angler days) through surveys generally conducted in alternating years (Exhibits 3-2 and 3-3). FWP reports the following information based upon data collected in the surveys: the number of anglers by month and section of the river; whether anglers are resident or non-resident; how the river is accessed for fishing (boating or shoreline); angler satisfaction and crowding; and percent of anglers that use outfitter services.

Fishing pressure data from recent survey years for the Yellowstone and Stillwater River leading up to the incident, including 2013, 2015, 2017, 2019, 2020, and 2021, are provided in Table 3-3. The year of the incident was also a data collection year, and FWP is currently processing the 2023 data. Exhibits 3-2 and 3-3 show FWP's river sections used in the surveys that correspond to the data in Table 3-3.

Data from FWP also show the proportion of shore anglers, boating anglers, and both for the Yellowstone River for the years 2017, 2019, 2020, and 2021 for all months. Boating anglers are more prevalent in the upstream sections 6A and 6B than shore anglers, while shore anglers are more prevalent in the downstream sections (4 and 5) than boating anglers (Table 3-4). Many outfitters provide services in these reaches of the Yellowstone River, including guided fishing and whitewater rafting trips. The most recent data available on guided trips from the FWP biannual survey for these sections of the Yellowstone River is from 2013. Yellowstone River sections 4, 5, 6A, and 6B indicate that outfitters accounted for 1%, 2%, 0%, and 22% of the angling trips, respectively, in 2013 for these sections of the Yellowstone River (FWP, 2023h).

Exhibit 3-2. Yellowstone River sections used for FWP angler surveys.

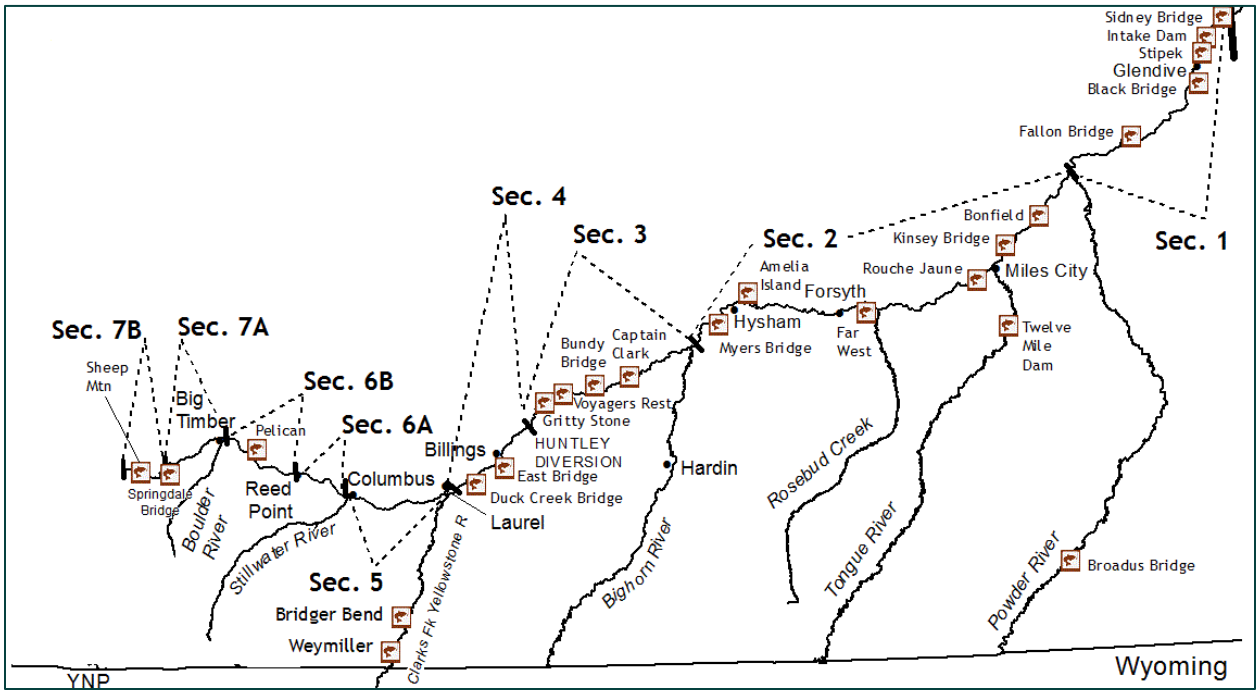


Exhibit 3-3. Stillwater River sections used for FWP angler surveys.

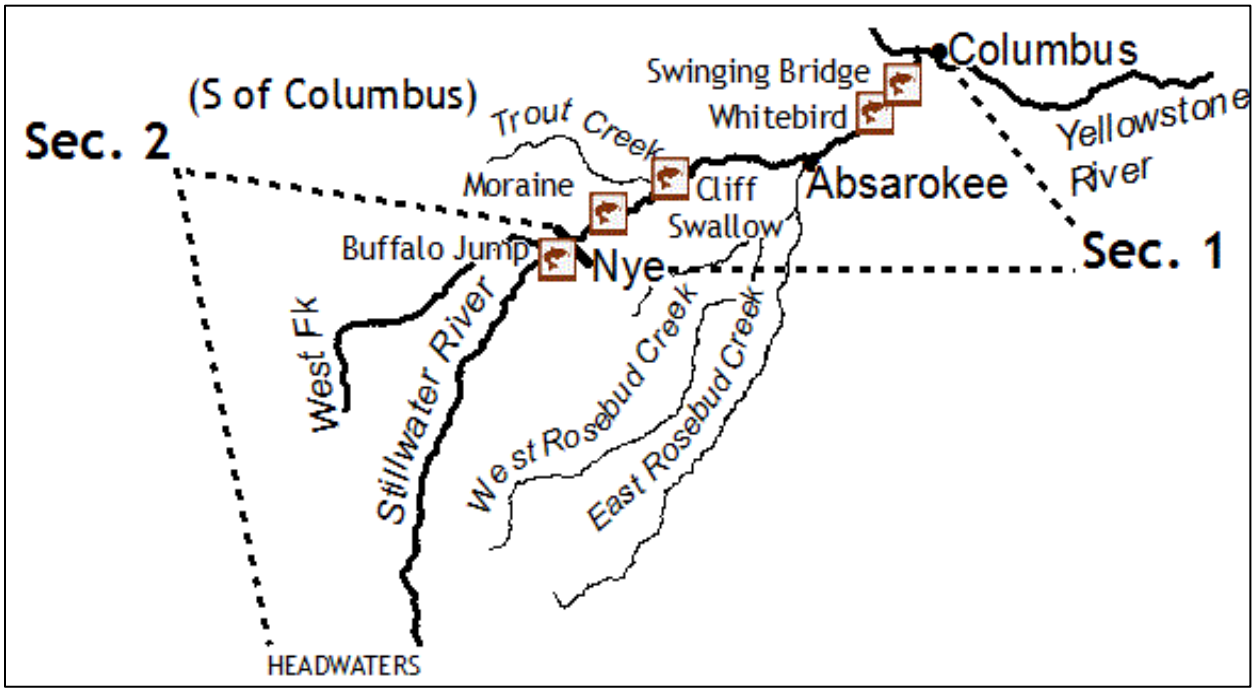


Table 3-3. Yellowstone River monthly fishing pressure (angler days).

River Section	Month	2013	2015	2017	2019	2020	2021	Average Monthly Fishing Pressure*	Percent Resident Anglers*
Yellowstone River									
Section 6B (Reed Point Bridge to Boulder River)	June	1,935	608	-	-	191	743	869	87%
	July	4,590	1,187	1,567	1,989	1,400	4,820	2,592	54%
	August	4,883	1,632	1,929	978	5,118	1,331	2,645	64%
	September	2,142	1,789	3,421	1,120	2,771	3,304	2,425	57%
	October	1,694	739	744	1,218	2,039	-	1,287	68%
	November	718	-	-	-	729	251	566	64%
Section 6A (Stillwater River to Reed Point Bridge)	June	2,197	696	653	84	861	809	883	100%
	July	2,899	2,122	1,056	2,246	1,885	371	1,763	75%
	August	4,684	1,389	5,816	3,986	1,776	1,857	3,251	80%
	September	2,092	1,114	2,218	423	3,339	1,207	1,732	74%
	October	603	296	1,858	601	773	269	733	103%
	November	193	190	3,122	1,694	-	-	1,300	100%
Section 5 (Clarks Fork Fiver to Stillwater River)	June	863	957	816	253	1,795	793	913	93%
	July	2,063	2,285	1,195	2,295	915	3,160	1,985	94%
	August	2,463	1,237	1,149	2,030	1,964	1,078	1,654	81%
	September	4,584	2,064	1,390	2,071	3,080	402	2,265	71%
	October	3,128	-	1,115	412	493		1,287	61%
	November	579	-	-	1,271	1,063	515	857	93%

River Section	Month	2013	2015	2017	2019	2020	2021	Average Monthly Fishing Pressure*	Percent Resident Anglers*
Section 4 (Huntley Diversion to Clarks Fork River)	June	2,397	3,218	3,122	2,442	6,033	5,054	3,711	94%
	July	3,200	969	1,394	5,272	2,484	2,445	2,627	97%
	August	1,765	937	-	1,634	5,016	3,234	2,517	88%
	September	2,712	1,219	1,004	2,430	3,171	836	1,895	86%
	October	273	1,434	1,486	-	839	-	1,008	90%
	November	193	570	-	-	-	1,292	685	76%
Stillwater River									
Section 2 (Nye to Headwaters)	June	1,020	1,477	4,465	2,404	2,397	2,313	2,346	81%
	July	2,633	4,354	4,847	2,559	2,855	3,740	3,498	49%
	August	2,853	1,494	5,186	3,620	4,046	757	2,993	78%
	September	881	1,647	1,436	435	3,778	3,618	1,966	40%
	October	1,047	-	1,115	378	3,077	575	1,238	112%
	November	-	1,468	-	830	1,458	-	1,252	75%
Section 1 (Nye to Confluence with Yellowstone River)	June	4,165	3,992	1,305	4,028	3,422	1,503	3,069	88%
	July	6,084	2,285	8,087	6,876	8,438	4,858	6,105	75%
	August	10,410	5,300	8,785	7,925	8,890	5,344	7,776	75%
	September	5,824	5,873	2,475	1,610	4,276	1,529	3,598	69%
	October	273	200	3,346	1,373	1,399	2,283	1,479	67%
	November	324	1,987	365	2,753	2,392	3,408	1,872	109%

Source: FWP, 2023h,j. *Note: Fishing pressure data were averaged using the following years: 2013, 2015, 2017, 2019, 2020, and 2021. Due to averaging, some percentages add to greater than 100%.

Table 3-4. Portion of shore, boat, and shore and boat Yellowstone River anglers.

Yellowstone River Section	Shore	Boat	Shore and Boat
Section 6B (Reed Point Bridge to Boulder River)	22%	51%	27%
Section 6A (Stillwater River to Reed Point Bridge)	30%	48%	22%
Section 5 (Clarks Fork Fiver to Stillwater River)	51%	34%	15%
Section 4 (Huntley Diversion to Clarks Fork River)	83%	9%	7%

Source: FWP, 2023i. Note: Totals may not add to 100% due to rounding.

3.4.2 Other Recreational Activities

As noted above, in addition to fishing, other popular boating activities that occur within the Assessment Area include non-angling boating such as rafting, jet boating, kayaking, canoeing, and recreational floating. Non-angling shoreline activities include swimming, hiking, bird watching, rock hounding, picnicking, camping, and other activities. A substantial proportion of the public access to FASs is for these other non-angling boating and shoreline activities (Grau and Schultz, 2018; Nickerson and Grau, 2020; Skaar and Oschell, 2018).

4. Approach to the Injury Assessment

This section describes the Trustee's proposed approach to conducting the injury assessment. In Section 4.1, we describe how the Trustee proposes to determine if injuries to natural resources and/or services have resulted from the incident (injury determination) [15 C.F.R. §990.51]. In Section 4.2, we describe how the Trustee proposes to quantify those injuries (injury quantification) [15 C.F.R. §990.52]. The goal of injury assessment is to determine the nature, extent, and degree of any injuries to natural resources and services that resulted from the incident. The information will provide a basis for evaluating restoration actions, including to determine the need for and scale of restoration actions (restoration selection). See 15 C.F.R. § 990.50. The assessment will utilize assessment procedures that meet the requirements of 15 C.F.R. § 990.27.

4.1 Injury Determination

This section describes how the Trustee proposes to determine if injuries to natural resources and/or services have resulted from the incident (injury determination) [15 C.F.R. §990.51]. Consistent with 15 C.F.R. § 990.51(b), the Trustee will determine that an injury has occurred and will evaluate whether: (1) the definition of injury has been met, i.e., whether there is "…an observable or measurable adverse change in a natural resource or impairment of a natural resource service. Injury may occur directly or indirectly to a natural resource and/or service" [15 C.F.R. § 990.30]; and (2) (i) An injured natural resource has been exposed to the discharged oil, and a pathway can be established from the discharge to the exposed natural resource; or (ii) An injury to a natural resource or impairment of a natural resource service has occurred as a result of response actions. The Trustee anticipates focusing on injury to public services (recreational) and ecological injuries in this assessment. The steps in the injury determination process that the Trustee intends to implement are described below, in the order presented in the OPA regulations:

- Identifying Injury [15 C.F.R. § 990.51(c)]
- Establishing Exposure and Pathway [15 C.F.R. § 990.51(d)]
- Injuries Resulting from Response Actions or Incidents Involving a Substantial Threat of a Discharge [15 C.F.R. § 990.51(e)]
- Selection of Injuries to Include in the Assessment [15 C.F.R. § 990.51(f)]

4.1.1 Identifying Injury

Under 15 C.F.R. § 990.51(c), natural resource trustees determine whether an injury, as defined in § 990.30, has occurred. If so, trustees then identify the nature of the injury. Potential categories of injury include, but are not limited to, adverse changes in survival, growth, and reproduction; health, physiology and biological condition; behavior; community composition; ecological processes and functions; physical and chemical habitat quality or structure; and public services.

Injury to Public Services (Recreational Use)

The Trustee intends to determine the degree to which injuries to public services (recreational use) occurred as a result of the incident and response activities. Types of recreational uses within the Assessment Area that may have been injured include fishing, boating, rafting, kayaking, floating, swimming, and other recreational activities. As described in Section 2, 3.5 river miles of the river were closed to the public immediately after the train derailment, due to safety concerns as a result of the incident. In addition, the Holmgren Ranch FAS, which is the only FAS between the derailment location and Columbus (4.3 river miles downstream), was used as a staging ground during the incident response and was also closed to the public. The boat ramp at Itch-Kep-Pe Park in the city of Columbus was also closed to the public after the incident to accommodate the launching of boats for the assessment and clean

up teams. In addition, the Stillwater River was closed from the Whitebird FAS to the Fireman's Point FAS for a number of days after the incident, ensuring boaters would not access the Yellowstone River. These closures and response activities limited access to the affected reaches for recreational use. Further, recreators may have continued to avoid the area even after the closed reach and Holmgren Ranch FAS were reopened, due to concerns over the potential impacts of asphalt remaining in the environment.

To make a determination of injuries to public services, the Trustee anticipates relying primarily on existing data. For example, the Trustee intends to utilize fishing pressure data collected by FWP to determine recreational fishing injuries. As noted in Section 3, approximately every two years the State of Montana conducts a fishing survey and produces estimates of fishing pressure by water body and month (FWP, 2024b). Table 3-3 provides these data for sections of the river within the Assessment Area for years prior to the incident (2013–2021). FWP also conducted the survey in 2023; processing of the data is ongoing. The Trustee intends to compare data from pre-incident years to the incident year to help make a determination of recreational fishing injuries. The Trustee will evaluate which pre-incident years are appropriate to use in comparison, based on variability of the data, recent regional trends in use, river conditions, etc.

If necessary to determine injury, the Trustee may also collect additional qualitative data to supplement the FWP fishing effort data. For example, the Trustee may conduct a qualitative survey targeting anglers and other recreators residing in areas near the Yellowstone River to determine whether potential Yellowstone River anglers would identify the incident as a factor in their choice of fishing locations during the summer and fall of 2023. The survey may also seek to obtain information on non-angling boaters, recreational floaters, and swimmers who also would have been affected by the incident and for which state quantitative data is not available. The Trustee may also seek to conduct interviews with outfitters who guide trips on the affected sections of the Yellowstone River.

The survey would likely be administered through an online platform, and the State of Montana would contact a sample of anglers in the State via email who recently visited the Yellowstone River to provide a link to the survey. The Trustee would seek to obtain a sample of anglers to ensure that survey responses are representative of the population of anglers using these sections of the Yellowstone River.

Injury to Ecological Resources

Potential categories of injury to natural resources that the Trustee anticipates assessing include, but are not limited to, adverse changes in survival, reproduction and growth of biological resources; ecological processes and functions; and physical and chemical habitat quality or structure. The Trustee may also consider additional categories of injury as the assessment proceeds, if warranted by analysis of the data and information collected after the incident.

Trustees may confirm injury using multiple approaches. The Trustee plans to develop an estimate of the total footprint that was physically covered by the asphalt along the river, thus degrading the physical habitat quality. The Trustee would estimate this footprint based on the total amount of asphalt spilled into the river; SCAT observations, including consideration of the estimated amount of asphalt removed during response operations; and other physical measurements of the asphalt (deposit thickness on different surfaces, etc.). Specifically, ephemeral data has already been collected on the thickness of asphalt found on various surfaces (sand, rocks, etc.) and the weight of various thicknesses of the asphalt (NRDP, 2023b). These data can be used to convert the pounds of asphalt unrecovered by response and thus remaining in the environment into an area covered by the asphalt. The Trustee may develop these estimates for the different affected reaches of the Yellowstone River (cold-water, transition, warmwater reaches), and by habitat type, such as shoreline/riparian areas and in-river aquatic areas.

The Trustee also anticipates assessing response-related injury. This will include, but may not be limited to, assessing impacts to habitat at the incident site due to heavy equipment use, use of nearby areas as

staging grounds, and channel excavation at Buffalo Mirage FAS that has resulted in increased gravel deposition and made the new channel wider and shallower, limiting powerboat access at low water. It will also include assessment of impacts to habitat at the Holmgren Ranch FAS, which was also used as a staging ground, and any other response-related ancillary injury to natural resources. The Trustee will evaluate available information to determine the baseline condition of areas potentially impacted by response prior to response activity, such as FWP site visit notes dated June 28, 2023 (FWP, 2023k).

Additionally, after the derailment, extensive riprap was placed on approximately 1,000 feet of riverbank above the derailment site; it contained materials that are not allowed in riprap, such as metal from the incident and rebar (FWP, 2024a). MRL is working with the Stillwater Conservation District to remove the metal and meet 310 permit conditions, though final approval from the Conservation District has not yet been issued. As part of the assessment, the Trustee will review appropriate documentation and information to determine how response actions may have resulted in additional injuries to ecological resources.

A limited number of environmental samples (surface water, sediment, soil, fish tissue) were collected as a part of the incident response and preassessment activities; these samples were analyzed for asphalt constituents. The Trustee plans to review these data as a part of the injury assessment. If appropriate, the Trustee may compare any measured concentrations of asphalt constituents in the Assessment Area to reference concentrations, relevant standards, and adverse effects levels to assess injury for potentially affected natural resources (e.g., aquatic and terrestrial biota). If this approach is taken, appropriate reference sites will be selected that have similar characteristics as the affected reaches, but for the spill.

If the implementation of these approaches demonstrates that they do not adequately determine and quantify injury, the Trustee may develop additional assessment approaches.

4.1.2 Establishing Exposure and Pathway

Under 15 C.F.R. § 990.51(d), natural resource trustees establish if natural resources were exposed to asphalt (oil) from the incident and estimate the amount and spatial and temporal extent of the exposure. In this step, natural resource trustees also determine whether there is a pathway linking the incident to the injuries. According to 15 C.F.R. § 990.51(d), pathways may include, but are not limited to, the sequence of events by which the discharged oil was transported from the incident and either came into direct physical contact with a natural resource or caused an indirect injury.

SCAT data, photographic documentation, wildlife mortality observations, environmental samples, and other information collected during the preassessment phase and incident response (see Section 2) confirm that natural resources were exposed to the spilled asphalt. The Trustee intends to utilize these data and observations, along with reasonable assumptions to fill any gaps in information, to estimate the amount, as well as the spatial and temporal extent of the exposure. The Trustee anticipates utilizing these data and observations to link the incident to the injuries. For example, photographic documentation and incident reports (see Section 2) confirm that asphalt was spilled from the derailed train cars into the Yellowstone River and transported downstream and deposited onto the riverbed and onto the shoreline. SCAT data and wildlife mortality observations link the spilled asphalt to injuries to vegetation, wildlife, and ecological habitats that were coated and injured by the asphalt.

4.1.3 Injuries Resulting from Response Actions or Incidents Involving a Substantial Threat of a Discharge

Consistent with 15 C.F.R. § 990.51(e), the Trustee will incorporate the effects of response actions into the assessment and determine if an injury or impairment of natural resources and services has occurred as a result of the incident. For example, as described above, the Trustee intends to determine injury to recreational use as a result of the incident and response actions. The Trustee also intends to determine injury to natural resources as a result of response actions. Amongst other impacts from response, the Trustee intends to assess the impacts of staging grounds.

4.1.4 Selection of Injuries to Include in the Assessment

Consistent with 15 C.F.R. § 990.51(f), the Trustee has selected potential injuries to include in the assessment. The Trustee anticipates focusing on public service (recreational) and ecological injuries in this assessment. The Trustee has considered the factors in 15 C.F.R. § 990.50, in identifying these:

- The natural resources and services of concern
- The procedures available to evaluate and quantify injury, and associated time and cost requirements
- The evidence indicating exposure
- The pathway from the incident to the natural resource and/or service of concern
- The adverse change or impairment that constitutes injury
- The evidence indicating injury
- The mechanism by which injury occurred
- The potential degree, and spatial and temporal extent of the injury
- The potential natural recovery period
- The kinds of primary and/or compensatory restoration actions that are feasible.

The Trustee will continue to evaluate the above factors as part of performing the assessment, to ensure that the injuries finally selected for assessment are consistent with the regulations.

4.2 Injury Quantification

In addition to determining whether injuries have resulted from the incident, the OPA regulations specify that trustees need to quantify the degree and spatial and temporal extent of such injuries relative to baseline [15 C.F.R. §990.52].

The regulations further state that natural resource trustees may quantify injuries by (1) the degree, and spatial and temporal extent of the injury to a natural resource; (2) the degree, and spatial and temporal extent of injury to a natural resource, with subsequent translation of that adverse change to a reduction in services provided by the natural resource; or (3) the amount of services lost as a result of the incident [15 C.F.R. §990.52]. The Trustee plans on quantifying public services (recreational uses) and ecological injuries in this assessment, through a combination of (1), (2), and (3). The Trustee will also look at natural recovery, quantitatively or qualitatively. This will include an estimate of the time for natural recovery without restoration, but including all response actions already taken and to be taken in the summer of 2024, which is anticipated to be the last phase of response. The Trustee will evaluate all available information in determining baseline conditions.

4.2.1 Public Services (Recreational Use)

The Trustee plans to quantify public services injury and damages using a “benefits transfer” approach. Benefits transfer can be defined as “the transfer of existing economic values estimated in one context to estimate economic values in a different context… In the case of natural resource and environmental policies and projects, benefits transfer involves transferring value estimates from a ‘study site’ to a ‘policy site’ where sites can vary across geographic space and or time” (Bergstrom and De Civita, 1999, p. 79).

The advantage of the benefits transfer methodology is that the costs of conducting an original study are avoided, and thus it can be a cost-effective methodology. It is a widely used methodology in the field of economics, and there is a well-developed base of scientific literature on the topic (Rosenberger and

Loomis, 2001; Loomis, 2005; Rosenberger et al., 2017). Benefits transfer is an accepted methodology under Federal regulations, where it is referred to as the "valuation scaling" method [15 C.F.R. §990.53].

To conduct a benefits transfer, a unit dollar value (e.g., dollars per day of recreational fishing) from studies in the literature is applied to the lost recreational days that occurred at the site as a result of the incident. The studies estimate the values of recreation use (i.e., dollars per day) by type of activity; these are estimates of what economists call consumer surplus. Consumer surplus is the economic value of a recreation activity above what must be paid by the recreationist to enjoy the activity. Consumer surplus values are generally estimated through revealed preference data (for example, travel cost methods) or directly using stated preference methods (i.e., where people state their maximum net willingness to pay within constructed market conditions; Rosenberger et al., 2017).

To quantify recreational fishing injuries and damages due to the train derailment using a benefits transfer approach, the Trustee anticipates basing the number of lost fishing days on the FWP fishing effort survey data (see Section 4.1.1 above) and multiplying this number by a value per day derived from the literature, such as from Rosenberger et al. (2017). Rosenberger et al. (2017) developed economic values of recreation benefits for 14 outdoor recreational activities, including fishing, at a regional level (Montana is in Region 1). These values use a meta-analysis approach of 342 studies (2,709 estimates of recreational activity values) from the Recreation Use Value Database, which includes recreation economic value studies spanning 1958 to 2015 conducted in the United States and Canada. The Trustee may adjust the average fishing values reported in Rosenberger et al. (2017) into current dollars and may further adjust them to account for any site-specific factors, such as the use of outfitters and anglers traveling from out of state, which may increase the value per day.

The Trustee will also evaluate other categories of recreational use, such as non-angling boating/rafting, and may take a similar benefits transfer approach to quantify injury and damages if there is sufficient data and information. The analysis will account for the fact that some FASs were damaged and closed due to flooding in 2022. However, all FASs were reopened in 2023 with the exception of Swinging Bridge FAS on the Stillwater River, which was closed at the time of the derailment incident.

4.2.2 Ecological

The Trustee plans to quantify ecological injury, service loss, and damages using a service-to-service equivalency approach. Specifically, the Trustee plans on using a Habitat Equivalency Analysis (HEA) to quantify losses and damages resulting from the incident. HEA is commonly used to quantify losses resulting from oil spills or impacts from response activities (Allen et al., 2005; Cacela et al., 2005; NOAA, 2006). The implicit assumption of HEA is that the public can be compensated with direct service-to-service scaling, where the services provided by proposed restoration actions are of similar type, quality, and value as the services lost because of the injury (Allen et al., 2005; NOAA, 2006).

Because it is not possible to measure every service that habitats provide, certain quantifiable metric(s) are selected to determine service loss from injuries and equivalent service gain from restoration. Metrics can be based on biological data, such as the density of certain animals or plants; or toxicological data, such as the magnitude of exceedance of a toxic threshold. In this case, the Trustee anticipates basing service loss on degraded habitat quality and function, due to smothering by the spilled asphalt, but appropriate metric(s) for evaluating service losses and gains will be finalized as part of the assessment.

HEA also considers the value of natural resources and services over time. The value to the public of natural resources and services in the past is not equivalent to the value in the future. In HEA, future years are discounted, placing a lower value on benefits that take longer to accrue. When scaling in HEA, a discount rate is used to ensure that injuries and restoration that occur at different points in time are compared on an equal basis.

The information required to quantify the ecological loss (or "debit") includes:

- Time period of injury, including an evaluation of the effect of response activities and consideration of natural recovery of the resources
- Spatial extent of injury
- Quantification of lost services (based on specific service metrics) over space and time compared to baseline conditions
- A discount rate (typically 3% per year).

The Trustee currently plans on using existing data and information collected during the response, including all response data that may become available as the assessment is implemented (e.g., available data from Phase 2 SCAT activities), and preassessment to develop inputs for the HEA.

Debits are commonly expressed in units that describe space, time, and the discount rate. For each year of injury to a habitat, the injured area is calculated (e.g., in acres), multiplied by the service loss (using the selected metric), and converted to a present value by applying the discount rate. This results in an estimate of habitat injury for each year in discounted service acres. Then the discounted service acres for all years are summed to calculate a single estimate of injury over time in discounted service acre-years (DSAYs).

Quantifying habitat service gain (or "credit") from restoration is similar to quantifying debit, except that service *increases* from habitat restoration are estimated (using the same metric used to calculate debit), rather than service *losses* from injuries. Service increases are typically measured per unit of restoration (e.g., per acre). For each year of restored habitat services provided, the restored habitat is multiplied by the service increase and the present value factor is based on a 3% annual discount rate. The discounted service acres per year are summed to provide a total estimate of service gains in units of DSAYs per acre of restored habitat. The debit (DSAYs) is divided by the unit credit of restored habitat (DSAYs per acre) to determine the total quantity of restoration required (acres) to offset the injuries. The Trustee may multiply the acres of restoration required by a unit cost of restoration to determine natural resource damages in dollars.

4.3 Incorporation of Response Data

The Trustee recognizes that additional response data (e.g., Phase 2 SCAT information) may become available while this draft Work Plan is being finalized or after it is finalized while the Assessment is being performed. The Assessment will incorporate available response data into the injury determination and quantification.

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Attachment A

Public Comments Received on the Draft Work Plan

Comments annotated with where they are addressed in the Response to Comments

Comment #1

From: Kayhan Ostovar
To: Natural Resource Damage Program; Stewart, Sydney
Subject: [EXTERNAL] Reed Point Draft NRDA Work Plan
Date: Tuesday, June 18, 2024 9:40:32 AM

Hi NRDP,

I have reviewed your draft work plan. I noticed the detailed accounts of dead animals found during surveys last summer.

I noticed the report mentioned one scavenged/predated spotted sandpiper in addition to the 5 killdeer mortalities my team documented.

1a

However, I reported two locations with scavenged spotted sandpipers plus one dead spotted sandpiper that was collected and submitted as evidence. I think it would be helpful to mention spotted sandpiper mortalities in addition to killdeer mortalities in the report since they use very similar habitats as killdeer and nesting turtles.

I have attached a picture of the collected dead sandpiper (I have a couple more pics). In the first site overview image the dead sandpiper can be seen if you zoom in to the bottom left in the asphalt below the large stick.

Can you please confirm that all three of these spotted sandpiper mortalities are in your summary data.

Thank you.

The locations and dates on these three data submissions to MRL are as follows:

7/12/2023	45.623888	-108.811497	Globules 9 sq ft. Spotted sandpiper feathers (escaped)

.

7/13/2023	45.70266	-108.61167	Globules, 1 sq ft. Spotted sandpiper feathers in glob

07/27/2023	Below Voyagers	45.998763	-108.137773	Globules, 10 sq. ft. + lots more, dead spotted sandpiper in goo

2a

I think the cleanup crew missed a lot of tar at this Voyagers spot last year - it is just above Voyagers rest on the large sandy Island. Probably should be checked this year.

State server data limits require sending the two images separately - I have a few more pictures if needed.

--
Kayhan Ostovar
Professor Environmental Science and Fish and Wildlife Conservation
Director - Yellowstone River Research Center [yellowstoneriver.weebly.com]
Rocky Mountain College
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406.657.1175

Comment #2

Montana Rail Link must be held accountable for the injuries it caused to the Yellowstone River regional environmental system, many of which are chronic and may not be known for decades to come. At this time, there has been no investigation of the effects of the spill of asphalt and sulfur resulting from the collapse of the MRL-owned bridge and rupture of 10 railway tank cars into the river a year ago. 7c

2b The Natural Resource Damage Assessment (NRDA) workplan dated June 10, 2024, prepared for the Montana Natural Resources Damage Program (NRDP) by Abt Global does not address chronic effects and does not provide for a four-season, field-based data driven investigation of the entire area affected by the contamination of the Yellowstone River. In February, YRPA and others wrote to the NRDP requesting the direct participation of the public at large and the inclusion of a representative from our network in the development of the NRDA and the subsequent performance of any assessment. They denied our request. 7a

5b The Abt Global NRDA workplan does not provide any meaningful information about the scientific research required to evaluate the results of its investigation according to generally acceptable methods of environmental impact assessment developed since 1970. No qualified scientists who will be involved with the investigation and analysis phases of the NRDA workplan have been identified. The Abt Global NRDA workplan lacks any substantial credible scientific support.

2c Any meaningful Natural Resources Damages Assessment under the Oil Protection Act should follow the established standards for any kind of environmental impact assessment, most of which have been established by the Council on Environmental Quality, interpreted over the last 50 years by the EPA, and affirmed by the courts.

2b To be of any value to the people of Montana who are entitled to the full benefit, use, and enjoyment of the Yellowstone River regional environmental system, this NRDA must collect data on the Yellowstone River, its plants, animals, and other elements of the system over all four seasons using sound scientific methods, followed by an analysis of that data to assess the feasibility of rehabilitation and restoration. With this information, the NRDP can determine the economic damage to the region and what should be fair compensation for the people of Montana. 5a

6 YRPA urges the Montana Department of Justice to use settlement funds to study the cumulative and chronic effects of these environmental disasters on the Yellowstone River regional environmental system. It must take these effects into consideration during settlement negotiations with MRL and require it to pay for the ongoing research that is required by state agencies and others to study and monitor these effects. 2b

The Yellowstone River Parks Association is a 501 (c) (3) not-for-profit.
PO Box 1201, Billings, MT 59103
yrpa@yrpa.org (406) 255-7619

Comment #3

2d

YELLOWSTONE RIVER RESEARCH CENTER

ROCKY MOUNTAIN COLLEGE

Sentinel Species Monitoring to Assess Acute and Long-Term Effects of the Reed Point Trail Derailment Asphalt Spill

Introduction

Polycyclic Aromatic Hydrocarbons (PAHs) have been well documented as toxic contaminants related to petroleum hydrocarbon emissions and spills (Lee et al. 2017, Honda and Suzuki 2020). Ageing refineries and transportation infrastructure has led to an increase in frequency and magnitude of petroleum related disasters (Marsh JLT 2020). In a recent 6-year period, there were 2,671 train accidents which involved hazardous chemicals, 92 of which had chemical releases (Federal Rail Road Admin.). Until recently, little was known about long-term chronic PAH effects, but new research on the Exxon Valdez, Deep Water Horizon and other locations have documented long-term population demographic effects up to 25 years (Moreno et al. 2013, Esler et al. 2018, Barron et al. 2020). While well documented in marine ecosystems, the long-term effects of petroleum spills in freshwater ecosystems are understudied (Otten e tal. 2023) and even less is known about liquid asphalt spills (Kinner and Merten 2009). It is imperative that the impacts of the recent Reed Point train derailment spill are carefully studied to understand the long-term effects of liquid asphalt spills in rivers (Kinner and Merten 2009, Helm et al. 2015). Often chronic effects extend for decades after a spill with population level impacts that far exceed acute mortalities (Monson et al. 2011, Esler et al. 2018, Barron et al. 2020).

The majority of studies on the effects of petroleum related spills focus on the acute wildlife effects, but there is an abundance of significant long-term effects (Peterson et al. 2003, Esler et al. 2018, Barron et al. 2020). These effects have been well documented and include: changes in trophic feeding breadth (Luiselli et al. 2004), changes in predator/prey relationships (Moreno et al. 2014), creation of population sinks (Monson et al. 2011), long-term exposure to residual petroleum products in benthic substrates (Esler et al. 2010), population demographics (Esler et al. 2018, Otten et al. 2023), limited metabolism in molluscan invertebrates (Fukuyama et al. 2000, Rust et al. 2004), failed recruitment (Barron et al. 2020), premature death (Monson et a. 2011), delayed toxic effects (Leighton 1993), demographic lags (Matkin et al. 2008), complex food web disruptions (Peterson et al. 2003), endocrine disruption (Lee et al. 2017), and declines of prey availability (Golet et al. 2002).

After Phase 1 of the Reed Point derailment asphalt cleanup there remains approximately 231,700 lbs of asphalt material in the river (Unified Command 2023). PAHs are hydrophobic and readily bind with particles in water and accumulate in sediment where they become available to the benthic community (Hussar et al. 2012, Pulster et al. 2020). The presence of Naphthalene in fish tissue samples (Unified Command 2023), likely indicates a petrogenic (fossil fuel source) compared to pyrogenic (organic matter combustion) (Neff et al. 2005, Honda and Suzuki 2020, Pulster et al. 2020). In sediments, petrogenic PAHs are generally more toxic, soluble and bioavailable than pyrogenic sources as they contain more alkyl-substituted PAHs (Balmer et al. 2019). As these products degrade and weather more APAHS can be created (Lee et al. 2017, Qian et al. 2022).

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A number of PAHs and APAHs produce toxic effects, endocrine disruption and are known carcinogens (Fernando et al. 2019, Honda and Suzuki 2020). Bioaccumulation of PAHs has been documented across taxonomic groups, particularly benthic organisms or those which feed on benthos (Allan et al. 2012, Esler et al. 2018, Honda and Suzuki 2020). A number of studies have identified high rates of bioaccumulation in mollusks (Fukuyama et al. 2000, Rust et al. 2004), and other invertebrates, which is likely due to lower metabolic rates (Honda and Suzuki 2020). Esler et al. (2010) summarizes studies of vertebrate molluscan predators, demersal fish, sea otters, diving marine birds and other benthic fish that had elevated hepatic CYP1A (a biomarker used to evaluate chemical exposure) even 20 years after the Exxon Valdez disaster.

Generally, metabolic processes result in low levels of bioaccumulation in fish, (Allan et al. 2012) but long-term exposure can lead to increased alkylated metabolites and increased toxicities (Pampanin 2017, Pulster et al. 2020). In the Gulf of Mexico, Pulster et al. (2020) documented sexual differences in how PAHs accumulate in fish, with higher PAH levels in males across all marine species. The wildlife review by Honda and Suzuki (2020) conclude that low-molecular weight compounds such as naphthalene and other three-ring PAHs bioaccumulate in fish and invertebrates and result in toxicity. Even in areas with low PAH readings, alkylated PAHs can cause toxicity (Honda and Suzuki 2020), are environmentally mobile and often more abundant than the parent PAHs (Neff et al. 2005) particularly in sediments (Esler et al. 2018).

Long-lived animals with relatively lower metabolic rates and asymptotic growth (i.e. alligators and turtles), may be particularly vulnerable to contaminant bioaccumulation (Chappell 1992, Rowe 2008). Production of metabolites in reptiles may lead to continued toxic exposure, which could be exacerbated during times of fasting/brumation or reproduction (Debeir et al. 2006, Rowe et al. 2008). Maternal transfer of a host of contaminants has been well documented in reptiles such as alligators (Milnes et al. 2005, Raushenberger et al. 2007) and snapping turtles (Bishop et al 1998, de Solla et al. 1998). Depuration of contaminants and exposure of eggs to contaminated soils are two pathways linked to developmental and reproductive deformities in hatchlings and skewed sex ratios (Guillette et al. 1999, Bishop et al. 1998, Rowe 2008). These factors combined with long-generation times may result in population-level changes that are difficult to detect since it may be decades before the cohort affected by contaminants is of reproductive age (Congdon et al. 2001).

Species with life history traits that result in higher rates of PAH exposure, toxicities and population level effects

1) Use of near shore habitats/non-migratory
2) Sedentary lifestyle, less active than fish
3) Predation on benthic invertebrates/plants
4) Likelihood of consuming weathered petroleum
5) Digging in sediments - increased dermal absorption rates
6) Long-lived with long generation times
7) Lower metabolic rates
8) Seasonal fasting/hibernation may remobilize stored contaminates
9) Often survive acute phase of petroleum contact
10) Maternal transfer of contaminants (depuration)
11) Delayed demographic impacts

Turtles as Sentinels

All of the conclusions listed above apply to freshwater turtles, yet they are frequently a neglected component in petroleum related disaster assessments and monitoring (Sab and Spotilla 2003, Meyer et al. 2016, Otten et al. 2023). Snapping turtles (*Chelydra serpentina*) have long been considered as useful bioindicators of contaminants in both field and laboratory studies (Albers et al. 1986, Golet and Haines 2001, Pagano et al. 1999), including PAHs (Bell et al. 2006). The effects of petroleum spills on sea turtles have been studied (Camacho et al. 2012, Mitchelmore et al. 2017) but there is little data on the long-term effects of PAH exposure in freshwater turtles (Byrd et al. 2002, Luiseli et al. 2004, Otten et al. 2023).

Fish and bird mortality are often the focus for surveys during the acute phase of petroleum disasters, even though the life history traits of turtles make them particularly susceptible (Rowe 2008, Kinner and Merten 2009, Ostovar et al. 2021). The effects on turtles are similar to that observed in other reptiles and birds during exposure to PAHs. These include impaired adrenal gland function, corticosteroid level changes (Mitchelmore et al. 2017) and shifts in habitat use and diet (Luiselli et al. 2004). Growing evidence supports the need for long-term monitoring and assessment of turtles after petroleum related disasters (Otten et al. 2023).

The Reed Point Unified Command team should be commended for their receptivity to support efforts to conduct acute impact surveys for turtles following the spill in 2023. This was not the case with previous petroleum disasters on the Yellowstone River (ExxonMobil Silvertip pipeline 2011 and Bridger Pipeline 2015). Turtles were barely mentioned in assessments of both of these disasters and no reclamation funds have been allocated for turtle recovery or assessments (Montana NRD). Ostovar et al. (2021) documented demographic gaps in the population of turtles on the Yellowstone River that likely correlate with young or hatchling turtle cohorts of the 2011 ExxonMobil spill. Young turtles and eggs laid during petroleum related events often suffer high mortality (Fritz et al. 1982, Loehefener et al. 1989, Witherington 1994, Byrd et al. 2002), and serious embryo/hatchling deformities and mortality have been documented in turtles exposed to PAHs (Bell et al. 2006). Turtle hatchlings often spend time in shallow warmer water areas which may result in contact with small particles of asphalt or dissolved constituents. Loehefener et al. (1989) found hatchling exposure to oil residues resulted in acute toxicity and physical impairments in loggerhead sea turtles.

The case for using turtles as bio-sentinels of historic, recent and ongoing PAH exposure is strong (Rowe 2008, Meyer et al. 2016). Turtles are likely much better indicators than fish or migratory birds since they are more sedentary, longer lived with low metabolism, and have multiple routes of exposure, such as absorption from water and sediment from respiration (cloacal, cutaneous, and pharyngeal), ingestion of particles or contaminated food sources, egg contact with soils, and maternal transfer (Bell et al. 2006, de Solla 2010, Meyer et al. 2016). It is vital that noninvasive techniques (such as blood and serum samples) be evaluated, as sacrificing adult turtles is often not a viable option due to longevity of individuals and the conservation status of many species (Keller et al. 2004, Camacho et al. 2012, Meyer et al. 2016).

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Rapid Assessment Nesting Surveys 2023

Our team conducted rapid surveys on every gravel bar and island immediately above (upstream to Indian Fort FAS) and 136 miles below the train derailment just below the Bighorn River confluence. We located nest sites and identified a population of spiny softshell turtles immediately below the derailment site at the westernmost edge of their native distribution and thus the population is patchily distributed and particularly at risk of anthropogenic related mortality events. Nesting turtles are vulnerable to physical entrapment in asphalt or likely to ingest small particles of asphalt (Kinner and Merten 2009). We did a small amount of trapping in this area but there was so much cleanup boat traffic that it made our success limited. We did notice sloughing skin on the carapace of one of the turtles we caught close to the train derailment site. This has been observed with sea turtles exposed to PAHs (Mitchelmore et al. 2017) and was also seen in fish examined by MFWP. Nesting began just a few days after the train derailment on June 24, 2023. Softshell turtles generally nest just after peak spring flows in late June or early July (Tornabene et al. 2018).

We located 229 discrete nesting areas identified on 109 gravel bar/islands. At each of these sites the survey team recorded mats of asphalt and searched for dead or entrapped turtles and other wildlife. We suspect overall nesting activity and possibly success, particularly in the upper river section down to Columbus, might have declined since this species is sensitive to noise and activity near nests sites and primarily nests during the day when cleanup crews and boat traffic occurred. The cleanup response teams worked from the train derailment site downstream, so upper river sections experienced more disturbances and potentially less nesting success since cleanup efforts coincided with the peak nesting period. Only one nest site was documented immediately above the bridge derailment and four others above Holmgren FAS. No other nest sites were located until about 10 miles above Buffalo Mirage FAS. Turtle nest sites occurred on gravel/sandbar habitat, very similar to that used by killdeer *(Charadrius vociferous)* and spotted sandpipers *(Actitis macularius)* which were found dead and entrapped in the asphalt in these areas.

Our team reported more than 124 sites with large asphalt mats. At these sites we recorded seven dead birds (which is more than 50% of the dead/entrapped birds recorded by all survey teams), as well as hundreds of dead tiger beetles, stoneflies, spiders, crayfish and other invertebrates entrapped in the asphalt. We found a large number of dead crayfish in the section of river between Holmgren FAS and the train derailment site. We did not document any asphalt entrapped turtles though other crews recorded eight snakes that died from asphalt entrapment. We found four dead softshell turtles, which were not entrapped in asphalt, and thus we did not associate these mortalities directly to the asphalt spill, but can't preclude they died from asphalt ingestion or toxicity.

Need for Additional Research

The recent report by the Montana Fish Consumption Advisory Board regarding the presence of various PAHs in multiple species of fish, regardless of our current knowledge of the source, warrants further investigation and monitoring of the spiny softshell turtle population in this area. We know that the population of spiny softshell turtles in the immediate area of the train derailment site is likely a disjunct population, based on the nest distribution pattern we recorded. The population is probably not biologically well connected to other populations further down river near Buffalo Mirage FAS. The population may also be small, since we only recorded a limited

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number of nest "digs" and tracks, and only captured two turtles in this area. Assessing the types of PAHs, and maybe more importantly APAHs, in the Yellowstone River should be a priority in order to determine petrogenic or pyrogenic origins and the potential for chronic population level effects on vulnerable vertebrates, such as turtles.

Proposal

We propose a three tiered approach to assess the impacts on spiny softshell turtles after the Reed Point train derailment and liquid asphalt spill. Assessing rare petroleum accidents, with bio-sentinel species should be a high priority based on the abundance of studies which have documented long-term effects of other petroleum related disasters.

I. Year 1: (Acute Phase) Baseline Assessment on Year Post-spill

1. Capture a minimum of 25 turtles in July and August above and below the train derailment site to take blood plasma samples for PAH/APAH monitoring. Establish post-spill baselines and potentially chemical forensic "fingerprinting" of the PAH source. Utilize Principle Component Analysis (PCA) techniques (Neff et al. 2005, Qian et al. 2022) for determination of petrogenic or pyrogenic sources (Balmer et al. 2019, Pulster et al 2020) and potentially the parent source depending on chemical composition.
2. Population assessment/index of abundance, catch per unit effort (CPUE) and health conditions examinations (length/weight) ratios, visual inspections, compared to other river reaches and pre-spill data. Use external and internal tags for mark recapture and survival estimates.
3. Affix radio tags on 10-25 turtles. Regular radio-tracking by plane (Rocky Mountain College aviation program has a tracking plane) and by boat. Assess seasonal movements and potential for exposure to lingering asphalt in upper river reaches. Assess survival of turtles near the train derailment site. Determine degree of connectivity to adjacent populations near Buffalo Mirage FAS.
4. Tests 2-3 eggs per located nest for PAHs, below and above the derailment site.

II. Year 2: (Chronic Phase)

Continue with radio-tracking and recapture study to assess population. Bimonthly tracking for approximately 7 months per year during the active season until turtles enter hibernacula. No blood work or testing of eggs in year 2. Monitor nesting activity near train derailment site.

III. 5 Year Post Spill Assessment

Mark/Recapture study to examine survival rates of previously tagged turtles near the derailment site. Sample turtle blood and eggs in order to assess continued exposure to PAHs. Determine if continued long-term monitoring is needed.

Qualifications

For the past nine years, the Yellowstone River Research Center, at Rocky Mountain College has conducted a long running study of spiny softshell turtles on the Yellowstone River and other tributaries. This involved assessing population demographics, nesting habitat, blood draws, and movements with radio-telemetry. We have the majority of necessary equipment to capture, weigh and measure, draw blood, and track turtles. This includes a jet boat and plane with radio-

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telemetry gear. We have turtle trapping and handling permits and the local experience of many years navigating the Yellowstone River. We have connections and collaborative agreements with labs to test the blood we draw and statistical support for analyzing our data.

Methods

A more detailed proposal and budget will be provided once the exact scope of the turtle assessment and monitoring is decided by MT DEQ and/or NRD.

Please let me know if you have any questions.

Kayhan Ostovar

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Environmental Science Professor
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DRAFT

Comment #4

Natural Resource Damage Assessment Work Plan
Montana Natural Resources Damage Program
1720 9th Street
Helena, MT 59601

June 30, 2024

Dear NRD,

Please find comments below related to the Draft Natural Resource Damage Assessment Work Plan released June 10, 2024.

9 I have some general comments regarding concerns related to the chronic effects of three petroleum related disasters on the Yellowstone River since 2011. It is unacceptable for a world class iconic river to repeatedly experience such major accidents. State agencies should work with the corporations responsible for these spills to establish ongoing research to monitor and study the cumulative and chronic effects and to further develop emergency response capabilities to more efficiently manage the disasters when they occur. In my opinion these disasters are often preventable; however, when disasters occur, the corporations and government agencies in our community should be adequately prepared to make every effort to mobilize a rapid and sophisticated response to mitigate the ecosystem level effects. 2b

We need comprehensive baseline studies to determine the hydrocarbon "fingerprints" of each of these disasters in comparison to other anthropogenic (refineries and runoff) and naturally occurring sources of Polycyclic Aromatic Hydrocarbons (PAHs) in the Yellowstone River . We need to understand the cumulative and chronic impacts related to each of these spills. There is a wealth of research that has documented chronic effects of petroleum related disasters up to 25 years after they occurred (Exxon Valdez in Alaska, and the BP Deep Water Horizon in the Gulf of Mexico). See citations and more details provided in a proposal for Sentinel Species Monitoring (Ostovar 2024). Summaries of some of that content are also provided here in context of comments for sections of the Draft Work Plan. 2e

2b

6 From my observations of outcomes related to the past two disasters on the Yellowstone River, MT Natural Resource Damage Program tends to focus on the acute impacts related to each of these disasters, While this is important, the state should also use funds from previous disasters to study the cumulative and chronic effects of new disasters. Without such studies we can't adequately assess the full "damages" related to chronic effects. The challenge with assessing chronic impacts is that it requires follow up research and to date the vast majority of settlement funds have only been assessed on the acute effects.

More specific comments on the draft work plan are as follows:

From Draft Work Plan 2.4 Page 19
"In August 2023, FWP conducted additional fisheries testing both upstream and downstream of the derailment (MT DEQ, 2023b). The sampling results showed elevated levels of various PAHs in multiple fish species, warranting the fish consumption advisory to be expanded to all species in this area. In September 2023, FWP conducted another fish sampling event. FWP collected fish tissue samples upstream and downstream of the derailment site. PAHs were not detected in these fish tissue samples (Energy Laboratories, 2023). The fish consumption advisory for this stretch of the Yellowstone River was lifted in May 2024 (MT DPHHS, 2024). FWP plans to conduct additional fish tissue sampling in the summer of 2024. The source of the PAHs is currently unknown. As part of the assessment, the Trustee will review appropriate baseline information and fish data to assess if there is any potential injury resulting from the incident"

3a

Comment: PAHs are known to bioaccumulate differently in male and female organisms. Which sexes of each fish species were sampled? Are the sample sizes of males of each species large enough to assess the contaminant loads, or are you taking a mean of each species or pooling all fish sampled? This information hasn't been provided to the public so it is very hard to interpret the fish results that have been presented.

After the BP disaster in the Gulf of Mexico, Pulster et al. (2020) documented sexual differences in how PAHs accumulate in fish, with higher PAH levels in males across all marine species. The wildlife review by Honda and Suzuki (2020) conclude that low-molecular weight compounds such as naphthalene and other three-ring PAHs bioaccumulate in fish and invertebrates and result in toxicity. Even in areas with low PAH readings, alkylated PAHs can cause toxicity (Honda and Suzuki 2020).

From Draft Work Plan 4.1.1. Page 29
"Specifically, ephemeral data has already been collected on the thickness of asphalt found on various surfaces (sand, rocks, etc.) and the weight of various thicknesses of the asphalt (NRDP, 2023b). These data can be used to convert the pounds of asphalt unrecovered by response and thus remaining in the environment into an area covered by the asphalt. The Trustee may develop these estimates for the different affected reaches of the Yellowstone River (cold-water, transition, warmwater reaches), and by habitat type, such as shoreline/riparian areas and in-river aquatic areas."

2f

Comment: This is a great first step; however, the area covered (smothered) is not the most injurious impact. This might be the easiest to assess but far more injurious is the breakdown of the petroleum products and their passage through the food chain and ecosystem.

In sediments, petrogenic PAHs are generally more toxic, soluble and bioavailable than pyrogenic sources as they contain more alkyl-substituted PAHs (Balmer et al. 2019). As these products degrade and weather more APAHS can be created (Lee et al. 2017, Qian et al. 2022). A number of PAHs and APAHs produce toxic effects, endocrine disruption and are known carcinogens (Fernando et al. 2019, Honda and Suzuki 2020).

From Draft Work Plan 4.1.1. Page 30
A limited number of environmental samples (surface water, sediment, soil, fish tissue) were collected as a part of the incident response and preassessment activities; these samples were analyzed for asphalt constituents. The Trustee plans to review these data as a part of the injury assessment. If appropriate, the Trustee may compare any measured concentrations of asphalt constituents in the Assessment Area to reference concentrations, relevant standards, and adverse effects levels to assess injury for potentially affected natural resources (e.g., aquatic and terrestrial biota). If this approach is taken, appropriate reference sites will be selected that have similar characteristics as the affected reaches, but for the spill. If the implementation of these approaches demonstrates that they do not adequately determine and quantify injury, the Trustee may develop additional assessment approaches.

2d

Comment: This is a good approach but the limited number of samples collected from a very limited taxonomic group of organisms (fish) elides ecosystem level effects. Fish are not necessarily the best organism to sample. Far better would be continuous samples from suitable sentinel species as determined from other petroleum related disasters. Generally, metabolic processes result in low levels of bioaccumulation in fish, (Allan et al. 2012) but long-term exposure can lead to increased alkylated metabolites and increased toxicities (Pampanin 2017, Pulster et al. 2020). Why are fish the only taxonomic group to be sampled?

Bioaccumulation of PAHs has been documented across taxonomic groups, particularly benthic organisms or those which feed on benthos (Allan et al. 2012, Esler et al. 2018, Honda and Suzuki 2020).A number

of studies have identified high rates of bioaccumulation in mollusks (Fukuyama et al. 2000, Rust et al. 2004), and other invertebrates, which is likely due to lower metabolic rates (Honda and Suzuki 2020).

Have any invertebrates or mollusks been sampled for PAH exposure?

The literature identify suitable species to sample in PAH exposure studies as: 1) long lived, 2) upper trophic levels, and 3) those which live in aquatic benthos, burrow in benthos, and/ or eat aquatic benthic organisms.

Long-lived animals with relatively lower metabolic rates (i.e. alligators and turtles), may be particularly vulnerable to contaminant bioaccumulation (Chappell 1992, Rowe 2008). Production of metabolites in reptiles may lead to continued toxic exposure, which could be exacerbated during times of fasting/brumation or reproduction (Debeir et al. 2006, Rowe et al. 2008). Depuration of contaminants and exposure of eggs to contaminated soils are two pathways linked to developmental and reproductive deformities in turtle hatchlings and skewed sex ratios (Guillette et al. 1999, Bishop et al. 1998, Rowe 2008). These factors combined with long generation times may result in population-level changes that are difficult to detect since it may be decades before the cohort affected by contaminants is of reproductive age (Congdon et al. 2001).

Life history traits of species that result in higher rates of PAH exposure, toxicities and population level effects are as follows:

1) Use of near shore habitats/non-migratory
2) Sedentary lifestyle, less active than fish
3) Predation on benthic invertebrates/plants
4) Likelihood of consuming weathered petroleum
5) Digging in sediments - increased dermal absorption rates
6) Long-lived with long generation times
7) Lower metabolic rates
8) Seasonal fasting/hibernation may remobilize stored contaminates
9) Often survive acute phase of petroleum contact
10) Maternal transfer of contaminants (depuration)
11) Delayed demographic impacts

All of the conclusions listed above apply to freshwater turtles, yet they are frequently a neglected component in petroleum related disaster assessments and monitoring (Sab and Spotilla 2003, Meyer et al. 2016, Otten et al. 2023). Snapping turtles (*Chelydra serpentina*) have long been considered as useful bioindicators of contaminants in both field and laboratory studies (Albers et al. 1986, Golet and Haines 2001, Pagano et al. 1999), including PAHs (Bell et al. 2006). The effects of petroleum spills on sea turtles have been studied (Camacho et al. 2012, Mitchelmore et al. 2017) but there is little data on the long-term effects of PAH exposure in freshwater turtles (Byrd et al. 2002, Luiseli et al. 2004, Otten et al. 2023).

Fish and bird mortality are often the focus for surveys during the acute phase of petroleum disasters, even though the life history traits of turtles make them particularly susceptible (Rowe 2008, Kinner and Merten 2009, Ostovar et al. 2021). The effects on turtles are similar to that observed in other reptiles and birds during exposure to PAHs. These include impaired adrenal gland function, corticosteroid level changes (Mitchelmore et al. 2017) and shifts in habitat use and diet (Luiselli et al. 2004). Growing evidence supports the need for long-term monitoring and assessment of turtles after petroleum related disasters (Otten et al. 2023). I have provided a proposal to conduct such research on spiny softshell turtles in the Yellowstone River.

From Draft Work Plan 4.1.4 Page 31
The potential degree, and spatial and temporal extent of the injury
The potential natural recovery period

2d Comment: How will you assess these points without a long term monitoring plan of sentinel species?

From Draft Work Plan 4.2 Page 31 Injury Quantification In addition to determining whether injuries have resulted from the incident, the OPA regulations specify that trustees need to quantify the degree and spatial and temporal extent of such injuries relative to baseline [15 C.F.R. §990.52]. The regulations further state that natural resource trustees may quantify injuries by (1) the degree, and spatial and temporal extent of the injury to a natural resource; (2) the degree, and spatial and temporal extent of injury to a natural resource, with subsequent translation of that adverse change to a reduction in services provided by the natural resource; or (3) the amount of services lost as a result of the incident [15 C.F.R. §990.52]. The Trustee plans on quantifying public services (recreational uses) and ecological injuries in this assessment, through a combination of (1), (2), and (3). The Trustee will also look at natural recovery, quantitatively or qualitatively. This will include an estimate of the time for natural recovery without restoration, but including all response actions already taken and to be taken in the summer of 2024, which is anticipated to be the last phase of response. The Trustee will evaluate all available information in determining baseline conditions.

2b Comment: These are very important points to address, particularly the temporal aspect of the injuries. How do you plan to assess the temporal injuries, what is the proposed work plan for this assessment? As stated above fish are not the most suitable species to sample.

Though well documented in marine ecosystems, the long-term effects of petroleum spills in freshwater ecosystems are understudied (Otten e tal. 2023) and even less is known about liquid asphalt spills (Kinner and Merten 2009). It is imperative that the impacts of the recent Reed Point train derailment spill are carefully studied to understand the long-term effects of liquid asphalt spills in rivers (Kinner and Merten 2009, Helm et al. 2015). Often chronic effects extend for decades after a spill with population level impacts that far exceed acute mortalities (Monson et al. 2011, Esler et al. 2018, Barron et al. 2020).

The majority of studies on the effects of petroleum related spills focus on the acute wildlife effects, but there is an abundance of significant long-term effects (Peterson et al. 2003, Esler et al. 2018, Barron et al. 2020). These effects have been well documented and include: changes in trophic feeding breadth (Luiselli et al. 2004), changes in predator/prey relationships (Moreno et al. 2014), creation of population sinks (Monson et al. 2011), long-term exposure to residual petroleum products in benthic substrates (Esler et al. 2010), population demographics (Esler et al. 2018, Otten et al. 2023), limited metabolism in molluscan invertebrates (Fukuyama et al. 2000, Rust et al. 2004), failed recruitment (Barron et al. 2020), premature death (Monson et a. 2011), delayed toxic effects (Leighton 1993), demographic lags (Matkin et al. 2008), complex food web disruptions (Peterson et al. 2003), endocrine disruption (Lee et al. 2017), and declines of prey availability (Golet et al. 2002).

4.2.2
Because it is not possible to measure every service that habitats provide, certain quantifiable metric(s) are selected to determine service loss from injuries and equivalent service gain from restoration. Metrics can be based on biological data, such as the density of certain animals or plants; or toxicological data, such as the magnitude of exceedance of a toxic threshold. In this case, the Trustee anticipates basing service loss on degraded habitat quality and function, due to smothering by the spilled asphalt, but appropriate metric(s) for evaluating service losses and gains will be finalized as part of the assessment.

The information required to quantify the ecological loss (or “debit”) includes:
Time period of injury, including an evaluation of the effect of response activities and consideration of natural recovery of the resources
Spatial extent of injury
Quantification of lost services (based on specific service metrics) over space and time compared to baseline conditions

2d and 2f

Comment: I have serious concerns that “smothering” will likely be the basis for which to determine the majority of damages. Understandably, this is the most straightforward metric but the ecosystem level effects related to PAH exposure are sure to result in chronic level effects that have been documented in many other studies.

Toxicity thresholds should be the metric for a chemical related disaster not smothering. NRD should make every effort to adequately collect and assess toxic exposure across a variety of taxonomic groups. Costs to conduct these tests should be assessed as damages.

Thank you for your time to consider my comments,

Kayhan Ostovar

Professor, Environmental Science. Rocky Mountain College
Director, Yellowstone River Research Center

Comment #5

From: Kevin Mitchum
To: Natural Resource Damage Program
Subject: [EXTERNAL] Reed Point Draft NRDA Work Plan
Date: Friday, July 5, 2024 9:57:52 AM

Good Morning,

Thanks to Doug and Sydney for presenting the information at the public meeting on June 26, 2024 in Columbus, MT regarding the train derailment and the Natural Resource Damage Program. I would like to make the following comments for considerations:

4a
- Calculations for the impact lost to recreation should only consider data from the last several years. As you are aware, recreational uses have greatly increased over the last few years.

5c
- Sulfur should be considered for the impacts to the Yellowstone River. No different than removing other unnatural debris from the river such as railroad ties, steel, etc. The "yellow" sulfur in this form is not natural to the environment and while floating this stretch of river after the train derailment, it was apparent that the "yellow" sulfur was located in various locations that could be cleaned up. I am not sure why there has been zero focus on the sulfur cleanup or impact. I understand that most of this is visual but it still has an impact.

6
- Damaged dollars **should/must** go back into the community/county where this impact occurred. Even though the asphalt was found 130 miles downstream, the impacts were mainly in Stillwater County. The damaged dollars should be used to add another fishing access site near Columbus. Specifically, one between Columbus MT and Park City. This area needs another fishing access given the distance between current fishing access sites.

7b
- Question regarding the Natural Resource Damage Program - why does the program not include someone in the impacted community when negotiation for the damages is reviewed. I would think this could help with a balance from the regulatory body and the company that created the incident/impact. Obviously, in this situation MRL wants to keep the cost to a bare minimum while the impacted community should have some say in regards to this calculation.

Please include me on any future meeting notifications or correspondence.

Respectfully Submitted,

Kevin Mitchum
Stillwater County Resident
(406) 321-0027

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July 12, 2024

Attn: Reed Point NRDA Work Plan
Montana Natural Resource Damage Program ("NRDP")
P.O. Box 201425
Helena, MT 59620-1425

Re: Reed Point NRDA Work Plan

Dear Sydney:

On June 10, 2024, NRDP issued a draft Natural Resource Damage Assessment Work Plan ("Work Plan") for the natural resource damage assessment ("NRDA") of the Reed Point Derailment for public comment. Montana Rail Link, Inc. ("MRL") appreciates the continued coordination with NRDP and the opportunity to provide these comments on the Work Plan.

Last month MRL requested that NRDP provide MRL certain additional information and data referenced in the Work Plan. The request included information related to the multiple fish sampling events by the Department of Fish Wildlife and Parks ("FWP"). MRL appreciates the additional information it received from FWP on July 5th and July 9th concerning the four sampling events and is reviewing those documents. 3a We note that during the fall sampling (9-29-2023) stomachs were removed from fish to assess if any product was being consumed by the fish and there was no evidence of asphalt material found. This FWP information and data does not appear to be considered or reflected in the Work Plan. Based on initial review of the additional information and data provided to MRL by FWP, it is likely that MRL may offer additional comments in the coming weeks when its review of those material is complete. 8

For purposes of this letter, there are three main elements to the Work Plan addressed in these comments which supplement prior information and comments provided by MRL to NRDP during NRDP's development of the Work Plan. These primary elements are discussed below in additional detail.

Section 2.2 Emergency Closures and Staging Areas

4b MRL reiterates comments previously provided to NRDP regarding the closure of the Stillwater River. Closing access to this river was not necessary for the derailment response.

Section 2.4 Wildlife Mortality and Impacts

For ease of review, MRL has broken this section into two categories, both of which are discussed in further detail below.

3a *Physical Anomalies in Fish*:

The Work Plan does not acknowledge, or appear to take into consideration, that fish with physical anomalies (e.g., lesions, abrasions) were observed upstream of the derailment site as well as downstream. The two fish sampling events mentioned in the Work Plan that discuss anomalies in fish (June 29, 2023 and "later in July", 2023) did not include any upstream or reference sampling. As currently written, the Work Plan implies that all physical anomalies observed were caused by the derailment. This is not supported by the information reviewed so far by MRL. MRL respectfully requests that this section be revised to reflect conclusions and observations reliably based on sampling data for upstream and downstream locations for all fish sampling events and, in particular, consideration of data collected by

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FWP in areas it identified as control sampling.

PAH and TPH Detected in Fish:
MRL appreciates that NRDP acknowledges and reiterates prior public representations from FWP that the source of PAH detected in fish is unknown. PAH compounds are ubiquitous in the environment.[1] They originate from many sources which can be broadly classified as biogenic, petroleum-derived (petrogenic), or combustion-derived (pyrogenic). Because of the prevalence of PAH compounds in the environment, the analysis of PAHs, TPH and other organic contaminants of concern in fish tissue require highly specialized sample cleanup techniques to separate chemicals of concern from lipid material and other non-petroleum hydrocarbons that are naturally found in fish tissues. The confounding effects of biogenic lipids on measurement of PAHs, TPH and other chemicals of concern have been recognized for over 30 years. FWP relied upon the MA-EPH Method for their fish tissue sampling. However, this method has only been validated soil and aqueous matrices and has not been validated for the measurement of TPH in tissue. The Work Plan should note that the analytical method used may not accurately measure PAH or TPH in fish tissue.

Neither the Work Plan nor the original fish consumption advisory (MT DEQ 2023a) indicates how the state officials determined that the concentration of phenanthrene detected in the mountain whitefish sample was "elevated" or how they determined that the levels of PAHs detected in various fish tissue samples were elevated. During the July 2023 sampling event, fish tissue samples were collected downriver of the derailment site, but not from upriver reference locations (i.e., there were no control samples). Additionally, the concentration of phenanthrene reported for the single mountain whitefish sample [0.16 milligrams per kilogram dry weight (mg/kg-dw)] was lower than concentrations that would warrant a fish consumption advisory from a human health standpoint based on USEPA (2000) and USFDA (2010) risk assessment guidance and current regulatory toxicity reference values (USEPA 2024a,b)[2].

The August sampling event included a sampling location that was upstream of the derailment (Indian Fort FAS near Reed Point) and a second sampling location that was downstream of the derailment (Holmgren Ranch FAS). In contrast to the July sampling event, phenanthrene was not detected in any fish tissue samples in the August 2023 sampling event. And, during this August sampling event, naphthalene was detected in ***upstream and downstream*** fish tissue samples at nearly identical concentrations:

Site	Indian Fort FAS	Holmgren Ranch FAS
Location relative to derailment	Upstream	Downstream
Longnose sucker	1 of 3 samples, 0.16 mg/kg-dw	0 of 3 samples
Rainbow trout	1 of 3 samples, 0.21 mg/kg-dw	0 of 3 samples
Brown trout	2 of 3 samples, 0.18 and 0.45 mg/kg-dw	1 of 3 samples, 0.21 mg/kg-dw

[1] ATSDR 1995. Toxicological Profile for Polycyclic Aromatic Hydrocarbons. Agency for Toxic Substances and Disease Registry Division of Toxicology/Toxicology Information Branch, Atlanta, Georgia.

[2] Reference toxicity values are not available for phenanthrene (USEPA 2024a). Consistent with USFDA (2010), the oral toxicity values for anthracene (a 3-ring structural analog of phenanthrene) were used as surrogates for phenanthrene.

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Mountain whitefish	0 of 3 samples	3 of 3 samples, 0.18 to 0.47 mg/kg-dw
Shorthead redhorse	0 of 3 samples	1 of 3 samples, 0.17 mg/kg-dw

Across all August fish tissue samples, 1-methylnaphthalene, 2-methylnaphthalene, and acenaphthylene were detected in only one sample (all in the same mountain whitefish sample) collected from Holmgren Ranch with individual concentrations ranging from 0.18 to 0.25 mg/kg-dw (Energy Laboratories 2023)[3] The concentrations of these substances were lower than concentrations that would warrant a fish consumption advisory from a human health risk assessment standpoint based on USEPA (2000) and USFDA (2010) guidance and current oral toxicity reference values (USEPA 2024a,b).

This information taken together with the recognized environmental ubiquity of phenanthrene and other low molecular weight PAHs (e.g., from natural seeps from petroleum-containing rock outcroppings, fires, combustion of petroleum products, paved roadways, etc.) and long-known analytical challenges of accurately identifying and quantifying PAHs in fish tissue samples, calls into question the conclusion in the Work Plan that "The sampling results showed elevated levels of various PAHs in multiple fish species, warranting the fish consumption advisory be expanded to all species in this area." The referenced data do not support this conclusion. MRL requests that NRDP revise the text to accurately reflect the conclusions that can be made from this data from the July 2023 and August 2023 sampling events.

3b

Section 4.1.1 Identifying Injury

MRL requests that NRDP reevaluate the statement at the bottom of page 29 "…and channel excavation at Buffalo Mirage FAS which limited powerboat access". The purpose of the excavation completed at Buffalo Mirage FAS was to allow powerboat access for the response activities. Please refer to the Special Use Permit (FWP. 2023d), fourth and fifth bullets for clarification. The work completed by MRL to support access to the river by powerboat at this location to aid in the response efforts also supported public access by powerboat at this location.

4c

MRL also requests that NRDP update its information related to the riprap material that was placed upstream of the derailment location. On January 9, 2024, the Stillwater Conservation District (CD) issued its 310-permit decision for application 23-084 for the riprap that was placed upstream of the derailment. The decision was "approval w/modification" with the notation "must remove metal from riprap. We will inspect after 5/15/2024." In compliance with the approval decision, on or about April 3, 2024, an MRL representative and contractor removed the metal from the riprap and recycled it. The CD was notified that the metal removal work was complete, and an inspection took place on June 10, 2024. Attached are photos taken on July 9, 2024, which show the riprap free of metal.

1b

MRL looks forward to continue working with NRDP in a cooperative and science-based approach to determine the extent of natural resource damages that resulted from the June 24, 2023 train derailment.

[3] Energy Laboratories 2023, Work Order H23080545. MRL Yellowstone Spill.

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Sincerely,

Devin Clary
Director of Environmental Projects
Washington Corporations
On behalf of Montana Rail Link, Inc.
Devin.Clary@washcorp.com

Attachment:
Bridge 51 Riprap Photos

References:
MT DEQ. 2023a. State agencies issue mountain whitefish consumption advisory on Yellowstone River near train derailment. Montana Department of Environmental Quality. August 11, 2023. Available: https://deq.mt.gov/News/pressrelease-folder/news-article100#:~:text=Results%20from%20the%20mountain%20whitefish,result%20of%20the%20train%2derailment.
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USEPA. 2024b. Regional Screening Levels (RSLs) – User's Guide (May). Available online: https://www.epa.gov/risk/regional-screening-levels-rsls-users-guide.
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Bridge 51 riprap facing upstream (north-west) July 9, 2024.

Bridge 51 riprap facing downstream (south-east) July 9, 2024.

Attachment B

Response to Comments on the Draft Work Plan

Response to Public Comments on the

Draft Natural Resource Damage Assessment Work Plan for the Reed Point Bridge Derailment

Prepared by the Montana Natural Resource Damage

September 2024

Introduction

On June 10, 2024, the State of Montana Natural Resource Damage Program (NRDP), on behalf of the Governor of Montana, solicited public input on preparation of a draft Natural Resource Damage Assessment Work Plan for the Reed Point Bridge Derailment (NRDA Work Plan). Public comments were accepted from June 10, 2024, until 11:59 PM on July 12, 2024. NRDP posted a public comment announcement on the NRDP website, sent notices of this opportunity for public comment to approximately 32 individuals or entities on the NRDP mailing list via email, and placed legal notices in two newspapers: the Stillwater County News (June 20, 2024) and the Billings Gazette (June 20, 2024). NRDP also held a public meeting at 6:00 PM on June 26, 2024, at the Stillwater County Civic Center.

The Trustee received a total of six comment letters during the public comment period. See Attachment A for a list of commenters and copies of the comment letters.

This response to comments summarizes the public comments received and provides the Trustees' responses to those comments. Where appropriate, these comments were incorporated into the final NRDA Work Plan.

Comments and Response

1. Additional information provided by the public

a. One comment (#1) stated that two locations of potentially scavenged spotted sandpipers had been reported during the response and one dead spotted sandpiper had been found. The commenter requested confirmation that these spotted sandpiper mortalities are included in the Wildlife Mortality and Impacts section of the NRDA Work Plan.

***Response**:* The NRDA Work Plan has been updated to reflect that two potentially scavenged spotted sandpipers and one dead spotted sandpiper were reported in Ostovar, 2023. NRDP confirmed with Montana Rail Link (MRL) that there were nine dead birds recorded during the response operations. MRL's count includes the spotted sandpiper mortality reported by Professor Ostovar but does not include the potentially scavenged spotted sandpipers. Section 2.4 has been edited to clarify this.

b. MRL (Comment #6) asked that additional information about the riprap be included in the NRDA Work Plan. They stated that the Stillwater Conservation District (Conservation District) issued a 310-permit decision for the riprap placed upstream of the derailment. In compliance with the approval decision, MRL and their contractor removed the metal from the riprap and an inspection was completed on June 10, 2024.

***Response**:* NRDP confirmed with the Conservation District that it had issued the 310-permit decision. However, the Conservation District stated that the June 10, 2024, inspection was inconclusive because water levels were too high. The Conservation District will perform another inspection when the water levels are lower. NRDP has requested that MRL provide NRDP with a copy of the letter or email they receive from the Conservation District once the inspection is complete. The text in the NRDA Work Plan reflects that the Conservation District's June inspection was inconclusive and another inspection will be completed at lower water levels.

2. Comments and suggestions for the ecological injury assessment

a. Comment #1 stated that additional asphalt surveying should be done at Voyagers Rest.

***Response**:* According to reports from the Shoreline Cleanup Assessment Technique (SCAT) operations, two areas near Voyagers Rest were evaluated for asphalt on June 21, 2024, during Phase 2 of the cleanup: 87.0-MC-E and 87.5-MC-B. The SCAT teams removed a total of 22.8 pounds of asphalt from these two locations. The Montana Department of Environmental Quality's (DEQ's) site report stated:

> The DEQ SCAT team surveyed mile 87.5MCB island (high priority). Observed 11 various size patties on sand all of which were removed and 2 on cobble below actionable asphalt which were picked up removing as much of the substrate from the deposit as possible. On island mile

87MCE observed one 75cm patty on cobble, was picked up removing as much of the substrate from the deposit as possible. Residual asphalt did remain on some cobbles. The remaining residual asphalt was disturbed/agitated using rakes and then a light coating of sand was scattered over the remaining asphalt.

NRDP may conduct additional asphalt surveying as part of the assessment if necessary and this request will be considered when planning that effort. NRDP has also shared this comment with DEQ and EPA.

b. Two comments (Comment #2 and 4) expressed concern about long-term impacts from the asphalt spill and requested long-term studies over all four seasons of the chronic and cumulative effects of petroleum spills in the Yellowstone River. One Comment (#4) included citations to multiple studies demonstrating various long-term impacts from petroleum spills.

***Response**:* Long-term monitoring related to a specific spill is typically required or performed by agencies overseeing the cleanup (the Environmental Protection Agency [EPA] and DEQ) in order to ensure that the cleanup actions are protective of human health and the environment. These agencies have enforcement authority and can require additional actions from the responsible party if long-term monitoring shows unacceptable risk from the spill or that material remains in the environment that must be legally removed. NRDP does not have this authority and is not responsible for long-term monitoring for the purpose of ensuring an adequate cleanup of the asphalt. NRDP has shared this comment with DEQ and requested that they share with the public their plans for long-term monitoring of the asphalt for the purpose of identifying additional cleanup needs.

NRDP agrees that it is important to understand long-term and chronic impacts to the environment from petroleum spills in order to adequately assess and restore injuries. Under the Oil Pollution Act (OPA), the purpose of natural resource damage assessments is to "promote expeditious and cost-effective restoration of natural resources and services injured as a result of an incident." 15 CFR §990.10. To accomplish this work expeditiously and cost-effectively, natural resource trustees often rely on existing toxicity studies, when possible, to understand chronic impacts to the environment. If existing data are not adequate, original studies can be conducted. However, long-term studies take time and can slow down the assessment process, delaying any restoration actions and increasing the overall time to recovery. We appreciate the studies referenced in the comments and will consider those as we conduct the assessment. If we determine that additional site-specific data are needed to assess injuries, we will develop study plans to collect that data.

NRDP also recognizes that the Yellowstone River has experienced multiple oil spills and there may be cumulative effects from these spills. This NRDA Work Plan, pursuant to OPA NRDA regulations, is specific to the 2023 asphalt spill. NRDP must consider prior oil spills when establishing baseline conditions (or the conditions the natural resources would be in if the asphalt spill had never happened). A long-term

study on the cumulative effects of multiple oil spills is outside the scope of the NRDA Work Plan. Please see response #6 (use of settlement funds) for further information on potential future studies using recovered damages.

c. Comment #2 stated the NRDA should follow environmental impact assessment standards established by the Council on Environmental Quality.

***Response**:* OPA, 33 U.S.C. 2701 *et seq*., and its associated natural resource damage regulations at 15 C.F.R Part 990 (NRDA regulations) provide the relevant legal framework for assessing injuries to natural resources and services from oil spills. The NRDA Work Plan is consistent with OPA and the NRDA regulations. The goal of following OPA and its NRDA regulations is to make the environment and public whole for injuries to natural resources and services resulting from an oil spill like this one. Conducting the natural resource damage assessment in accordance with the NRDA regulations also allows NRDP to recover our reasonable assessment costs and obtain a rebuttable presumption. *See* 15 C.F.R. §§ 990.13 & 990.30.

As provided in the NRDA regulations, "[t]he National Environmental Policy Act (NEPA), 42 U.S.C. 4321 et seq. and Council on Environmental Quality (CEQ) regulations implementing NEPA, 40 CFR chapter V, apply to restoration actions by federal trustees… Where state NEPA-equivalent laws may apply to state trustees, state trustees must consider the extent to which they must integrate this part with their NEPA-equivalent laws. The requirements and process described in this section relate only to NEPA and federal trustees." 15 C.F.R. 990.23. NRDP will comply with the Montana Environmental Policy Act as NRDP continues to move through the natural resource damage assessment and restoration action implementation.

d. Two comments (Comment #3 and 4) stated that very limited sampling of organisms has been done in response to the derailment (only fish). Additional organisms like invertebrates, mollusks, and turtles should be studied as well for reasons related to varying bioaccumulation, life history traits, PAH exposure, toxicities, and population level effects. NRDP received a proposal to study turtles as sentinel species. There was concern that degree and extent of the injury and potential for natural recovery cannot be assessed without long-term monitoring of sentinel species.

***Response**:* Under OPA and the associated NRDA regulations, natural resource damage assessment procedures must meet several requirements, including, "the additional cost of 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." 15 C.F.R. § 990.27.

Based on the data collected to date, NRDP believes the habitat equivalency analysis presented in the NRDA Work Plan will allow NRDP to evaluate impacts to the ecosystem using habitat covered by the asphalt as a proxy to encompass the wider ecosystem (the vegetation and water as well as the services the habitat provides to wildlife). However, we appreciate the additional studies referenced in the comments and will consider those as we conduct the assessment. If NRDP determines that

additional site-specific data are needed to assess injuries and that the additional costs are reasonably related to an increase in quantity or quality of the assessment information, we will develop study plans to collect that data.

e. Comment #4 stated that baseline studies are needed to determine hydrocarbon "fingerprints" of each petroleum spill in comparison to other anthropogenic and naturally occurring sources of polycyclic aromatic hydrocarbons (PAHs).

***Response**:* Forensic chemical analysis or "fingerprinting" can be applied in some cases to distinguish between different sources of petroleum hydrocarbons. However, once hydrocarbon mixtures are released into the environment, the composition begins to change due to abiotic and biotic factors that may break down or alter some of the hundreds or even thousands of chemical constituents in the released material. Therefore, fingerprinting may not always be useful or necessary to determine sources of petroleum constituents that may cause harm to natural resources. Due to the dynamic nature of the weathering process, it also isn't feasible to have a static fingerprint of past spills that can be used to distinguish between different releases. Also, if various sources become co-mingled, fingerprinting may have limited utility in terms of quantifying inputs from multiple sources. However, in spills or releases in rivers, where the point source is known, analyzing petroleum hydrocarbon concentrations in environmental media collected upstream (i.e., reference) and downstream of the release can be used to quantify concentrations of contaminants in the environment due to the spill/release. This information can then be used—along with other information and data—to determine and quantify injury to natural resources and services resulting from the discharged asphalt, consistent with the NRDA regulations. Therefore, NRDP does not plan to conduct fingerprinting studies in an attempt to differentiate different sources of PAHs. Rather, NRDP plans to rely on existing environmental data collected from upstream and downstream of the spill to understand effects on the environment from this spill.

f. Comment #4 stated that injuries from the breakdown of petroleum products and their passage through the food chain and ecosystem should be considered in the NRDA Work Plan, in addition to the smothering of habitat. Toxicity thresholds should be the metric for a chemical related disaster, not smothering.

***Response**:* NRDP does plan to evaluate the impact of asphalt-related constituents in the ecosystem as part of the assessment. Comparing the concentrations of asphalt constituents in the Assessment Area to adverse effects levels (including toxicity thresholds) for potentially affected natural resources is typically how this evaluation is completed. NRDP plans to rely on existing data for this assessment, including surface water, sediment, soil, and fish tissue samples collected after the incident. Please refer to section 4.1.1 for discussion of adverse effects levels.

3. Requests for additional detail regarding the fish sampling and fish consumption advisory

a. Two comments (#4 and #6) asked for additional detail on the fish sampling conducted following the derailment. This included requests to include sample sizes, fish sex, and details related to the sampling methods; sampling of fish stomachs; upstream and reference sampling; conclusions and observations from all fish sampling events; analytical methods used in the fish sampling and their accuracy in fish tissue. There was concern that the NRDA Work Plan implies all physical anomalies in fish were caused by the derailment and that methods are not adequate to accurately quantify PAHs. Comment #4 also noted that PAHs can accumulate in higher quantities in males and even low levels can cause toxicity.

   ***Response**:* This section of the NRDA Work Plan recounts the fish sampling that was done following the derailment. NRDP does not believe that a detailed account of the sampling methodology and results of the fish sampling is warranted in the NRDA Work Plan, especially because the fish sampling effort is on-going. All results will be evaluated as part of the assessment and the methods used to obtain data will be considered in the evaluation. Some edits were made to section 2.4 Wildlife Mortality and Impacts to clarify that NRDP has not yet reached a conclusion as to whether the derailment is the source of the abrasions and lesions observed during the fish sampling events.

   The information received in both comments is included in the NRDA Work Plan through the comments, which are attached to the NRDA Work Plan. NRDP would refer the interested reader directly to the comments rather than restating them in detail here.

b. Comment #6 stated that the referenced data do not support the statement that sampling results warranted the fish consumption advisory be expanded to all species in the area.

   ***Response**:* The decision to issue a fish consumption advisory was made by Montana Fish, Wildlife, and Parks (FWP), Department of Public Health and Human Services, and DEQ. A citation to the announcement of the expanded fish consumption advisory was added to the discussion in the NRDA Work Plan.

4. Comments and suggestions for the recreational injury assessment

a. Comment #5 stated that calculations for recreational losses should only consider data from the last several years because recreational use of the Yellowstone River has increased drastically in those years.

   ***Response**:* NRDP will consider this suggestion as we complete the assessment. In response to this comment, NRDP has revised section 4.1.1 of the NRDA Work Plan to indicate that the Trustee will evaluate pre-incident recreational data to determine which years are most appropriate to include, based on information like variability of the data, recent regional trends in use, river conditions, etc.

b. Comment #6 stated that closure of the Stillwater River was not necessary for the derailment response and should not be considered in the NRDA.

***Response**:* The decision to enact emergency closures on the Stillwater River as a result of the train derailment was made by Stillwater County. It is not appropriate for NRDP to evaluate the necessity of this decision; it is a fact of the incident response.

c. Comment #6 stated that the work completed at Buffalo Mirage FAS did not limit powerboat access, but supported public access by powerboat.

***Response**:* FWP has indicated that the work completed at Buffalo Mirage increased sediment deposition and shortened the length of time that powerboats can access this FAS. Text in this section has been revised to note that powerboat access was affected *at low water*.

5. General comments on the NRDA Work Plan

a. Comment #2 stated that the NRDA should determine the economic damage to the region and what should be fair compensation for the people of Montana.

***Response**:* NRDP pursues damages for injuries to natural resources held in trust for the State of Montana; this includes injuries to the resources (e.g., injury to vegetation due to asphalt) as well as loss or reduction of services provided by the resources (e.g., inability to access the Yellowstone River for recreational activities during the emergency closure). NRDP does not pursue damages for economic losses. However, the National Pollution Funds Center (NPFC) can provide compensation for different types of claims related to oil spills. Anyone with loss of profits or income (they do not need to own the damaged property or resources) may make a claim for "Loss of Profits and Earning Capacity" due to the injury, destruction of, or loss of property or natural resources. More information on the types of claims and requirements can be found at the NPFC's website: https://www.uscg.mil/Mariners/National-Pollution-Funds-Center/Claims/.

NRDP agrees that the natural resource damages should fairly compensate the people of Montana for the injuries to the natural resources and services. The NRDA Work Plan is intended to assess holistically these injuries.

b. Comment #2 stated that the NRDA Work Plan does not (a) provide meaningful information about the scientific research required to evaluate the results of its investigation according to generally acceptable methods of environmental impact assessment; (b) identify qualified scientists who will be involved with the investigation and analysis phases of the NRDA; and (c) include any substantial credible scientific support.

***Response**:* The NRDA Work Plan is consistent with the regulations for conducting a natural resource damage assessment under OPA, 33 U.S.C. 2701 *et seq*. These regulations can be found at 15 C.F.R. Part 990 (the NRDA regulations). The goal of following OPA and the associated NRDA regulations is to make the environment and public whole for injuries to natural resources and services resulting from oil spills.

The NRDA Work Plan does not identify individual scientists; identifying individual scientists is not the typical practice for this type of plan. Instead, NRDP has retained a qualified consulting firm to provide natural resource damage assessment support. Abt Global is nationally recognized and has provided very good NRDA support to the State of Montana and other federal, state, and tribal natural resource trustees.

c. Comment #5 stated that the impacts of the sulfur spilled in the derailment should be considered.

***Response**:* NRDP works under natural resource damage provisions in the Comprehensive Environmental Responsibility Compensation and Liability Act (CERCLA) and OPA. The asphalt released to the Yellowstone River from the derailment is an oil product, meaning the State of Montana can seek natural resource damages under OPA for injuries to natural resources caused by the release of the asphalt. Sulfur is not an oil product, nor is it a listed hazardous substance (a requirement of seeking natural resource damages under CERCLA), so NRDP does not have the authority to seek damages due to the sulfur release.

NRDP has shared this comment with DEQ for their consideration as they have broader authority to require cleanup and issue penalties for releases into State waterways. DEQ has indicated that some sulfur (and scrap metal) was removed from the derailment site. It is NRDP's understanding from DEQ that all materials related to the spill, including sulfur and scrap metal, can be reported to rpderailment@mtrail.com and these materials should be addressed on a notification-response basis. We recommend that anyone who has additional questions about the cleanup process follow up directly with DEQ.

NRDP has also provided this comment to MRL so that they are aware that the public remains concerned about the presence of the sulfur in the Yellowstone River.

6. Use of settlement funds: Three comments (Comment #2, 4, and 5) made requests regarding how the settlement funds are spent. Two comments (#2 and 4) requested that settlement funds be used to study the cumulative and chronic effects of petroleum spills on the Yellowstone River regional environmental system, including this asphalt spill and previous oil spills. Comment #4 requested that funds from previous disasters be used to study the cumulative and chronic effects of new disasters. Comment #5 stated that damages received should go back into the community and county where the injuries occurred, mainly Stillwater County. Comment #5 also requested that damages be used to add another Fishing Access Site between Columbus and Park City, MT.

***Response**:* The State of Montana has not received natural resource damages for this incident to date and cannot commit to what projects will be funded in the future using any recovered damages. Natural resource damages must be used to restore, replace, rehabilitate, or acquire the equivalent of the injured resources. NRDP will follow the process outlined in 15 C.F.R. §§ 990.53-990.55 to develop, evaluate, and select the restoration alternatives. Restoration actions must have some nexus to the injured resources and actions that are more closely related to the injury are generally more favored.

NRDP recognizes the preference for restoration actions in the injured area, which is consistent with the direction in the NRDA regulations to include "primary restoration" of the injured resources and services where feasible. *See* 15 C.F.R. 990.53.

Upon receipt of natural resource damages for an incident, NRDP prepares a draft restoration plan that describes how the damages will be used. This draft restoration plan is issued for public comment, which will be considered before the restoration plan is finalized by the Trustee.

The State has recovered natural resource damages for two other oil spills on the Yellowstone River, the 2011 Exxon oil spill and the 2015 Bridger Pipeline oil spill. NRDP has developed restoration plans for these two oil spills and is currently implementing restoration actions selected in the plans. Significant changes to the selected restoration actions require revisions to the restoration plans, which are subject to public review and comment and approval by the Governor, as natural resource trustee. NRDP is considering the development of a Regional Restoration Plan for the Yellowstone River and evaluating whether funds from previous oil spills could be allocated in a regional plan in a manner consistent with the specific settlement agreements. As outlined in OPA, a Regional Restoration Plan can identify restoration projects on a watershed basis that may provide appropriate restoration alternatives for consideration in the context of specific incidents, both for past oil spills and future spills. 15 CFR 990.15. A Regional Restoration Plan would include monitoring for effectiveness of the restoration actions and may include additional monitoring to identify the highest priority restoration actions (if necessary and appropriate).

7. Concerns about development of the NRDA Work Plan

a. One comment (#2) stated that NRDP denied the Yellowstone River Parks Association's request that the public at large and a representative from YRPA's network be involved in the development of the NRDA Work Plan.

***Response**:* NRDP received this request in a February 5, 2024, letter from YRPA and others. In NRDP's February 20, 2024, response, NRDP agreed to put the draft NRDA Work Plan out for public comment, which was not otherwise required. This voluntary public comment period was specifically intended to provide the public an opportunity to participate in the development of the NRDA Work Plan. NRDP appreciates YRPA's offer to specifically assist in the Work Plan development, however, the most effective manner to engage all interested public parties is to seek input during a public comment period.

b. Comment #5 stated that someone from the impacted community should be included in negotiations for damages.

***Response**:* Natural resources in Montana are held in trust for the public and the Governor is the trustee for these natural resources. The Governor has assigned natural resource damage work to NRDP, though all final decisions are to be made by him as a representative of the people of Montana. We appreciate the request to include members of the impacted community, but the most effective manner to engage all

interested public parties is to seek input during a public comment period. Any settlement agreement that the State might enter will also go out for public comment.

c. Comment #2 stated that there has been no investigation of the effects of the spill of asphalt and sulfur into the Yellowstone River.

***Response**:* The Unified Command, NRDP, and FWP have conducted sampling efforts to investigate the effects of the derailment on the Yellowstone River surface water, riverbed, floodplain and the biota that reside there. Relevant data collected by the Unified Command related to the asphalt spill can be found at https://response.epa.gov/site/doc_list.aspx?site_id=16083. This includes surface water, soil, and sediment samples analyzed for sulfur and asphalt-related constituents, as well as samples of the asphalt product that was released. FWP has conducted multiple fish health assessments and fish tissue sampling events to investigate whether the spill has impacted fish (see Section 2.4 of the NRDA Work Plan). NRDP collected environmental samples for analysis of asphalt-related constituents, completed riverbed assessments, and evaluated data collected by others. NRDP has relied on these investigations to develop the NRDA Work Plan and will utilize all data collected when performing the assessment.

See comment 5.c. related to effects of sulfur.

8. **Providing additional comments:** Comment #6 stated that additional comments may be provided to NRDP outside of the public comment period.

***Response**:* NRDP will be finalizing the NRDA Work Plan following evaluation and consideration of the public comments received within the public comment period time. Additional public comment received outside of this period will not be incorporated into the final NRDA Work Plan; however, additional information can always be provided and is welcomed by NRDP. NRDP will consider all information received and available as NRDP implements the assessment.

9. **General concern about multiple oil spills into the Yellowstone River*:*** Comment #4 stated it is unacceptable for the Yellowstone River, a world-class river, to experience multiple oil spills. Also, corporations and governmental agencies should be adequately prepared to mobilize a rapid and sophisticated response to mitigate the ecosystem level effects.

***Response**:* Although NRDP recognizes the commenter's concern, the purpose of a natural resource damage assessment is not punitive or to create a deterrent effect. Instead, the purpose of pursuing natural resource damages under OPA and the associated regulations is to make the environment and public whole for injuries to natural resources and services resulting from oil spills.

NRDP is not the state agency charged with responding to cleanup of oil spills and was not part of the Unified Command that was responsible for evaluating and cleaning up the asphalt. However, we agree that it is important to be adequately prepared to assess the injuries to natural resources and services posed by oil spills. NRDP engages in ongoing improvement to better represent the Governor, the trustee for the public on these issues. Amongst other

things, we coordinate with the lead agencies for response (DEQ and EPA) so that we have information needed to assess oil spills, ensure that staff have needed training relate to the Incident Command System and operations around hazardous materials, continue to update our internal procedures to better assess oil spills, and have worked closely with the National Pollution Funds Center to see what resources are available to the State to pursue natural resource damages from oil spills.