

# **FY 2021 Hanford Natural Resource Damage Assessment**

## **Activity and Accomplishment Report**

**Prepared by the Hanford Natural Resource Trustee Council, March 2022**

### **Summary**

This report provides a summary of the Hanford Natural Resource Damage Assessment (NRDA) activities and accomplishments during fiscal year 2021. The Hanford Natural Resource Trustee Council (HNRTC or Council), composed of the State of Oregon, State of Washington, Nez Perce Tribe, Yakama Nation, Confederated Tribes of the Umatilla Indian Reservation (CTUIR), U.S. Fish and Wildlife Service, NOAA, and U.S. Department of Energy (DOE), is implementing the NRDA process at Hanford.

Council work in FY 2021 focused on continuing the injury determination phase of the assessment process. Most of the ongoing or newly-implemented studies are based on the Injury Assessment Plan (IAP), approved by the HNRTC in 2013.

Trustee organizations established four distinct teams, which have submitted reports (below): 1) Terrestrial Working Group coordinates and advances injury assessment in upland habitats; 2) Terrestrial Restoration Planning (18b Team) advances restoration crediting methods and planning for shrub-steppe recovery; 3) Aquatic Working Group coordinates and advances the injury assessment in riparian and aquatic habitats; and 4) Hanford Aquatic Restoration Planning (HARP) Team advances restoration crediting methods and planning for aquatic habitat. Other technical trustee teams meet as needed, such as the Data Management Team and teams working on individual scopes of work, studies, or administrative tasks. In addition, trustee attorneys convene as an Attorney Working Group, and senior-level decision makers meet as a Senior Trustee Council.

In FY 2021, HNRTC made progress in these major areas:

- The HNRTC had a series of discussions and penned several revisions to a scope of work (SOW) for contracting NRDA expertise to help with injury assessment and case management.
- The HNRTC updated its Project Execution Plan (PEP), which lays out how the NRDA will be managed, provides a general timeline, and is where the IAP studies are numbered and prioritized.
- The Aquatic Working Group created a work plan, drafted two SOWs (groundwater to surface water evaluation; aquatic baseline research), and HNRTC approved funding for the groundwater to surface water evaluation SOW.
- The HARP Team completed a review of aquatic restoration activities in the Columbia River basin and worked with a consultant to identify species-specific restoration benefits.
- The Terrestrial Working Group created a work plan, drafted two SOWs (data management; data compilation), worked with HNRTC's data management contractor to identify upland aquatic areas on Hanford Site, and had a series of discussions about how to move terrestrial disturbance from determination to quantification.
- The 18b Team worked with HNRTC's GIS analyst to obtain spatial data layers pertinent to restoration planning and piloted a draft method for identifying priority areas (aka geographic focus areas) for shrub-steppe restoration.

**Terrestrial Working Group:** coordinates and advances injury assessment in upland habitats, including upland aquatic habitats

A Terrestrial Working Group (aka Terrestrial Team) formed in February 2020 to focus on a strategic and cohesive approach to assessing terrestrial injury. The working group meets approximately monthly to review information and make decisions needed for execution of injury assessment studies. In order to comply with our bylaws, the Council approved a resolution (2021-R-12) to establish the working group.

As part of Council's work planning effort and implementation of the HNRTC PEP, the working group conducted meetings and work using its draft Terrestrial Work Plan. However, the plan was not approved by consensus because there were differences in opinion on what types of content the plan should contain and which studies should be the near-term focus. The plan will be revised and is expected to be finalized and approved in early FY 2022.

### *Terrestrial Data Compilation (Studies 55 and 56)*

The purpose of this work is to evaluate and compile existing Hanford soil and tissue data and to upload NRDAR-relevant, quality data into the HNRTC database, Project Portal.

#### Council Resolution

2021-R-02: This resolution rescinded Resolution 2020-R-03 from the prior fiscal year because DOE is no longer approving pass-through funding to trustees for NRDAR study contracting. Resolution 2020-R-03 had approved an amount not to exceed \$220,000 to continue to compile and upload terrestrial and aquatic data into Project Portal in FY 2021, and specified that a pass-through mechanism would be used.

2021-R-03: Trustees recommended the U.S. Department of Energy spend up to \$220,000 to procure new contracting in FY 2021 for the completion of terrestrial and aquatic data compilation and upload into Project Portal. This work scope will complement the original terrestrial data compilation effort (Phase 1) approved by the Council in 2018 as Resolution 2018-R-01 (NTE \$460,000), which was completed at the end of FY 2020.

#### FY 2021 Accomplishments

The working group decided which existing Hanford terrestrial data to compile and wrote a SOW to continue the contracted data compilation effort into FY 2021. This scope was approved and funded by Council but the work was not actually completed because it was still in the contracting phase at the end of the fiscal year. Therefore, there was very little progress on terrestrial data compilation. The working group tasked the HNRTC's data management contractor with locating soil depths for certain records missing soil depths in Project Portal. In addition, there were discussions regarding whether HNRTC should acquire any of the data deemed not useable for the River Corridor Baseline Risk Assessment (it's possible some of that data would be informative for the NRDA); nothing had been decided as of the end of the fiscal year. Finally, the Washington State trustee gave two presentations on types of Hanford sampling data available from WIDS sites and compared what is in Project Portal with what is in HEIS, demonstrating that what HNRTC has collected so far is incomplete.

#### Remaining Work, Deliverables, Milestones for FY 2022

A new contract should be awarded for Phase 1 (data review) sometime in FY 2022. The contractor will be reviewing a number of reports for data utility, and those reports largely represent non-WIDS data. Concurrently, a terrestrial task team will be meeting regularly to discuss other terrestrial data compilation

needs in order to complete Phase 1. Phase 2 and Phase 3 of the terrestrial data compilation project were initiated in FY 2019 and will continue through at least FY 2023. The objective of Phase 2 is to address the formal acquisition process to search for, obtain, or extract original sources of analytical data; including GIS layers, project metadata, maps, images, and other information, that will require any form of manipulation and configuration management to be submitted to the HNRTC data management system in Project Portal. Phase 3 of this project focuses on submitting the acquired data and information into the HNRTC Case User Library within Project Portal. This work and process will resume once a data compilation contractor is hired.

### *Data Analysis SOW (Studies 14, 15a, 16, 17, and 50)*

The purpose of this SOW is to evaluate existing/compiled media and biota data to: 1) compare measured and/or modeled concentrations of HNRTC contaminants of concern (COCs) to site-specific effects thresholds for soil previously developed by HNRTC; 2) identify tissue thresholds in the literature for COCs and compare to measured and/or modeled concentrations at Hanford; 3) identify COCs and terrestrial receptors that may be most strongly associated with potential injuries (e.g., by virtue of having a greater magnitude and/or exceedance of effects thresholds); and 4) identify locations with higher or lower levels of exposure to hazardous substances, to help inform site selection in potential future injury studies.

### Council Resolution

2021-R-07: This resolution recommended that DOE spend up to \$2M for the Pacific Northwest National Laboratory (PNNL) to complete terrestrial and aquatic data analyses.

### FY 2021 Accomplishments

HNRTC worked with PNNL to finalize the Data Analysis SOW. There were several drafts and several rounds of comments with meetings, leading to a total of 10 discrete tasks in the final SOW. Once the scoping was agreed upon, HNRTC approved a funding resolution and DOE initiated contracting; as of the end of the fiscal year, contracting was still underway.

In order for PNNL to conduct analyses of terrestrial data using relevant records, the maximum soil depth of the terrestrial injury assessment must be determined. The Terrestrial Working Group, through a working level agreement (WLA), recommended that this depth be 15 feet, representing the biologically active zone (2020-WLA-1).

### Remaining Work, Deliverables, Milestones for FY 2022

PNNL was awarded funding to initiate work early in fiscal year 2022. As PNNL works through the tasks over the course of the 2+ year contract, their staff will engage with HNRTC for feedback and decision-making; these touchpoints were specified in the scoping and will be clarified in a project schedule. Consequently, trustees will be participating in a number of meetings and reviewing a number of products, which may take a significant amount of time.

### *Terrestrial Disturbance (Study 18a)*

The purpose of this study is to assess the nature and extent of injury caused by remedial activities at Hanford Site. This is a complex, multi-year study to assess when and where physical disturbance of terrestrial habitat occurred as a result of cleanup, and to evaluate how long there will be effects into the future where baseline services have not been restored.

## Council Resolution

There were no resolutions in FY 2021.

## FY 2021 Accomplishments

During FY 2021, the working group moved closer to initiating injury quantification by having a number of critical discussions and evaluating past and new work products. Early in the fiscal year, the working group identified four areas to work on: 1) look at the disturbance inventories produced for the NRDA to frame what additional information is still needed; 2) explore how the chemical injury assessment relates to the disturbance injury assessment; 3) work with the Attorney Working Group on compensability and baseline; and 4) begin developing methods to define habitat conditions.

Several activities were conducted related to the four work areas. A small team produced a review document of the disturbance inventories and identified what the team members considered to be data gaps and concerning methodology. The document was not a consensus work product but will be useful to the contactor performing injury quantification. DOE undertook an independent study with contractor IEC to produce a pilot Habitat Equivalency Analysis (HEA) for the 100-BC Area; this HEA analysis was shared with the HNRTC and members of the working group had several conversations with IEC about their methods and assumptions. The trustee attorneys also reviewed the IEC report and used it to initiate conversations about baseline and compensability. The working group likewise had communications about these topics but as presentations, to review examples of what may or may not be compensable and to set the stage for the attorneys to discuss specific disturbances. Finally, in order to establish common understanding among trustees about the types of chemical samples collected from remediated waste sites, Washington gave two educational presentations to the working group.

## Remaining Work, Deliverables, Milestones for FY 2022

A SOW for terrestrial disturbance injury quantification will be drafted in FY 2022. Because of the complexity of this analysis, a fair amount of pre-work will be required of the contractor to coordinate with trustees and get buy-in on the methodology and inputs. For example, recommendations made in the aforementioned disturbance inventory review paper should be evaluated to see if they warrant followthrough. Prior to moving forward with procurement, the technical trustees would like the Attorney Working Group to provide guidance about how to proceed with the disturbance assessment; relevant legal issues include determination of terrestrial baseline, the categorization of disturbances for purposes of determining terrestrial resource restoration obligations, and how best to address the temporal component of injury quantification across the disturbed areas.

## *Institutional Controls (Study 38)*

The purpose of this study is to: 1) define the geography and nature of institutional controls at Hanford; 2) determine the extent to which these controls are related to contaminant release; and 3) describe the impacted human uses.

## Council Resolution

There were no resolutions in FY 2021.

## FY 2021 Accomplishments

Although the study was not actively worked on by the terrestrial working group because of other priorities, a status summary was appended to the original report on Institutional Controls that was approved in FY 2018. The status summary described both the work on the study so far and the data gaps that still need to be addressed by HNRTC. In addition, the trustees included Institutional Controls as a legal topic for the attorneys to work on in the future.

### Remaining Work, Deliverables, Milestones for FY 2022

The terrestrial working group is unlikely to work on this study in FY 2022 because of higher priorities.

### Upland Aquatic Resources (Study 60)

Upland aquatic habitats occur outside of the Columbia River floodplain on the Hanford Site. They consist of natural and man-made surface waters. The purpose of this study is to determine where these habitats are located, to identify the resources associated with these habitats, to identify contaminant releases to these habitats, and to identify available environmental sampling data relevant to the NRDA. Because many upland aquatic habitats are ephemeral and/or have seasonal inhabitants, the approach to assessing injury may be unique and different from the rest of the terrestrial contaminant injury assessment.

#### Council Resolution

There were no resolutions in FY 2021.

#### FY 2021 Accomplishments

The working group tasked Freestone Environmental with developing an inventory and maps of upland aquatic habitat on Hanford Site. Freestone produced the inventory as a report ("*Upland Aquatic Feature Identification and Visualization*") with a geodatabase.

### Remaining Work, Deliverables, Milestones for FY 2022

In FY 2022, a small team will advance the study by attempting to fill data gaps identified in the Freestone report and by searching for Hanford reports with sampling data.

**Terrestrial Restoration Planning (18b Team):** advances terrestrial restoration crediting methods and planning

### Terrestrial Habitat Restoration Planning (Study 18b)

The purpose of this study is to identify terrestrial habitat restoration metrics and services, develop a crediting framework, and create a process for selecting restoration projects.

#### Council Resolution

There were no resolutions in FY 2021.

#### FY 2021 Accomplishments

The Study 18b team continued working on the second of two phases of shrub-steppe restoration planning, having completed Phase 1 in FY 2017. Following its development of recommendations for terrestrial restoration and preservation crediting in a 2019 report ("*Framework for Terrestrial Restoration Planning at Hanford*"), the team focused on Tasks 8 and 9 in its Phase 2 funding proposal:

Task 8 – Identify potential terrestrial restoration areas and develop crediting templates;

Task 9 – Identification of priority geographic focus areas for NRDA shrub-steppe restoration.

As part of Task 8, it was important to identify areas of the Hanford Site in need of restoration and the team is using plant species cover as an indicator. Using the findings of its fall 2020 field trip to seven locations on Central Hanford, the team worked with CTUIR's botanist to compare what was found in 2020 to available vegetative cover and habitat quality maps (which were based on older data). The report was still in the process of being written at the end of FY 2021. Another Task 8 work product was a HEA crediting spreadsheet based on the shrub-steppe habitat types, values, and recovery trajectories identified in the team's 2019 report. The spreadsheet can be used by trustees to walk through the exercise of applying habitat values and recovery trajectories to areas identified for potential restoration.

For Task 9, the team worked with HNRTC's GIS analyst to develop potential geographic focus areas for shrub-steppe restoration. The analysis was limited to areas within Central Hanford because relatively more ecological data is available there. The team identified key attributes considered important for identifying restoration areas. The analyst used these attributes, available GIS data, and a simple weighting method to identify polygons or geographic focus areas. While not a consensus product or final selection, it was a valuable exercise for understanding what different trustees consider important.

#### Remaining Work, Deliverables, Milestones for FY 2022

In FY 2022, the team will work with the full Council to finalize Phase 2 work products before pausing work on the study so that trustees can focus on injury assessment. Future work that could be done to complete the study is identified in a note-to-file saved in the team's folder on Project Portal.

**Aquatic Work Group:** coordinates and advances injury assessment in riparian and aquatic habitats along the Columbia River

The Aquatic Team focuses on a strategic and cohesive approach to assessing aquatic injury. The team met approximately monthly for discussion of progress and to make decisions needed for the execution of injury assessment studies. As part of Council's work planning effort a new Aquatic Work Plan was finalized in FY 2021 and incorporated NOAA's Hanford Aquatic Administrative Record Structure (HAARS) document for near term and short term planning. The structure of the planning tables in the workplan have become more detailed to include the phases needed to initiate work on studies and work items.

The major aquatic work items for FY 2021 included:

- Complete Hanford Sediment and Pore Water Toxicity Study Review (Study 4)
- Finalize the Groundwater to Surface Water Evaluation SOW
- Continue work on aquatic data acquisition (electronic CRCIA data were acquired)
- Input into the PNNL data analysis work
- Development of an aquatic workshop for FY 2022
- Development of the Aquatic Baseline Conditions SOW
- Continue development of the Chinook Spawning Habitat Evaluation SOW
- Complete the Hanford Aquatic Restoration Planning Phase 1.

### *Hanford Sediment and Pore Water Toxicity Studies Review (Study 4)*

The goal of this technical memo is to evaluate results of aquatic-oriented bioassay toxicity studies for use in the injury assessment. The River Corridor Baseline Risk Assessment used some data from these bioassay reports to draw conclusions for a risk assessment; these data in conjunction with others must be assessed for appropriate use in a natural resource damage assessment. The Trustees will apply the study results during injury determination and quantification.

#### Council Resolution

There were no resolutions in FY 2021.

#### FY 2021 Accomplishments

The review of original bioassay reports and summaries of other bioassays was accomplished this year, and a draft technical memo was completed in FY 2021 but is undergoing revisions. It was initially identified as a potential review/study in the IAP, however the Aquatic Team agreed individual trustees could develop a technical memo in an efficient manner.

#### Remaining Work, Deliverables, Milestones for FY 2022

Additional bioassay results that were missing were obtained through discussions with DOE. Final editing and input on the technical memo is expected to be completed by the second quarter of FY 2022.

### *Aquatic Data Compilation (PEP Study 51)*

The Council initially approved funding for Aquatic Data Compilation in 2017 (Resolution 2017-R-02). Since the completion of Phase 1 of the aquatic data compilation project in FY 2019, work has continued with identification and compilation of data through continued funding of contractors. The purpose of this work was to compile and review analytical data for their utility, quality, and relevance to injury assessment questions. Initial work resulted in the compilation and review of 19 data packages (or data utility assessments) that represent the most significant analytical data sets available for the Columbia River. In the past year, older radiation data in air, soil, water, and biota was sorted so Trustees could decide which parcels of hardcopy data should be digitized and added to the HNRTC electronic database. This effort is about 25% complete and critical for performing time-series contaminant analyses at sampling stations and in selected geographic areas. As part of the data analysis SOW, a deliverable that will display where and when data exist for both terrestrial and aquatic data will help identify any data gaps.

The second phase of the Aquatic Data Compilation continued into FY 2020. The objective of Phase 2 of this work is to address the formal acquisition process to search for, obtain, or extract original sources of analytical data; including GIS layers, project metadata, maps, images, and other information, that will require any form of manipulation and configuration management to be submitted to the HNRTC data management system in Project Portal.

The HNRTC lost the support of its data compilation contractor at the beginning of FY 2021, which is a significant setback for the completion of this task. The HNRTC developed a new scope of work to go out for bids to complete additional data compilation. Two major aquatic related tasks included compiling specific pre-1980 site environmental surveillance (SESP) data and following up on open actions identified in the original data utility assessments already completed.

#### Council Resolution

2021-R-02: The HNRTC approved a resolution rescinding resolution 2020-R-03 due to CTUIR no longer being allowed to contract with Alta Science and Engineering for data compilation.

2021-R-03: The HNRTC approved a resolution for DOE to spend up to \$220,000.00 to procure a new contractor to complete aquatic and terrestrial data compilation.

#### FY 2021 Accomplishments

A new scope of work was developed and approved by the HNRTC for DOE to procure a new contractor for data compilation.

Even without the data compilation contractor the Columbia River Comprehensive Impact Assessment (CRCIA) electronic data were located and obtained through the Hanford administrative record. The data are being acquired under DUA #47 and will be loaded into the project portal environmental database.

#### Remaining Work, Deliverables, Milestones for FY 2022

Contracting is expected to be completed in FY 2022 for the data compilation contract. The aquatic team will continue to work with the HNRTC data management team to finalize DUA #47.

#### *Data Analysis (PEP Studies 1, 2, and 3)*

The Council approved funding for a task order in which PNNL assisted with technical refinements and methods of a draft data analysis SOW, and combined several other studies into one SOW (additional information in the Project Management section of this report).

##### *Aquatic Data Analysis (PEP Studies 1 & 2)*

The purpose of this SOW is to evaluate existing/compiled media and biota data to (1) compare measured and/or modeled concentrations of Hanford Site contaminants of potential concern (COPCs) to site-specific effects thresholds for sediment and water previously developed by HNRTC, (2) identify COPCs and aquatic receptors that may be most strongly associated with potential injuries (e.g., by virtue of having a greater magnitude and/or exceedance of effects thresholds), and (3) identify locations with higher or lower levels of exposure to hazardous substances, to help inform site selection in potential future injury studies.

##### *Comparison of Aquatic Tissue Concentrations to Effects Thresholds (PEP Study 3)*

The purpose of this study is to determine potential past, current, and future injuries to aquatic biota based on comparisons of measured tissue COPC concentrations to literature-based effects thresholds. This effort will also identify COPCs that may be most strongly associated with potential injuries (e.g., by virtue of having a greater magnitude and/or exceedance of effects thresholds). A geospatial analysis will help identify species and/or locations with higher or lower levels of exposure to hazardous substances, which may help inform site selection in potential future field studies of aquatic biota.

#### Council Resolution

2021-R-07: This resolution recommended that DOE spend up to \$2M for PNNL to complete terrestrial and aquatic data analyses.

#### FY 2021 Accomplishments

The HNRTC developed a final Data Analysis SOW with the help of PNNL, and the SOW was approved for funding with resolution 2021-R-07.



### Remaining Work, Deliverables, Milestones for FY 2022

The HNRTC approved the Data Analysis SOW in July 2021 and expects work with PNNL to begin in FY 2022. This is a multiyear SOW which will be ongoing for the next several fiscal years and require trustee participation.

### Groundwater to Surface Water Evaluation (PEP Study 32)

The development of the groundwater to surface water evaluation SOW has been ongoing for several years. A small team of HNRTC groundwater experts began meeting in the summer of 2020 to review the SOW. The final SOW's tasks include:

1. Develop a range of analyses to extrapolate size and concentration of contaminants in the river based on shoreline data.
2. Identify the spatial extent of the river that is expected to have concentration in the benthic zone pore water above the threshold levels.
3. Map the area relative to multiple scenarios for thresholds, background, regulatory contaminant cleanup levels.
4. Evaluate concentrations relative to time-series of events, such as known or suspected contaminant releases, releases during remediation, or seasonal river fluctuations.
5. Include extrapolated future impacts where supported data is available.

### Council Resolution

2021-R-05: The HNRTC approved a resolution to fund PNNL to complete the SOW with a not to exceed amount of \$225,000. However, after discussion with PNNL it was determined that they could not complete the work without potentially more field work.

2021-R-05 Amendment: The HNRTC decided to amend the resolution for DOE to contract the SOW with a not to exceed amount of \$225,000.

### FY 2021 Accomplishments

The finalization of the SOW is a major step toward filling in a major gap in our understanding of a major pathway of contamination to the aquatic environment.

### Remaining Work, Deliverables, Milestones for FY 2022

Procurement of a contractor to complete the groundwater to surface water evaluation is expected to be done in FY 2022.

### Aquatic Baseline Conditions (PEP Study 7)

Releases of hazardous substances began in the 1940's and in some areas will continue for several thousand years. Due to the large timespan of releases, there is a wide range of physical, chemical, or biological conditions that would have or potentially will exist at the site but for the release of hazardous substances. These ranges of conditions are commonly referred to as Baseline in a NRDA and it is defined in the Department of Interior NRDA regulations (43 CFR 11.14(e)). This scope of work is focused on compiling and utilizing information and data to assess and describe the aquatic baseline conditions that occur within the Hanford Site and adjacent areas including the Columbia River, riverine islands, and riparian shorelines between Rock Island and McNary dams.

## Council Resolution

No Resolutions in FY 2021.

## FY 2021 Accomplishments

A small team completed a draft of the Aquatic Baseline Conditions SOW for consideration and finalization in FY 2022.

## Remaining Work, Deliverables, Milestones for FY 2022

Finalization of the Aquatic Baseline SOW and approval by HNRTC is expected to be completed in FY 2022, followed by procurement of a contractor to execute the work.

## Aquatic Workshop

The HNRTC is currently working on efforts to make injury determinations for different habitats, species, and natural resources in general. In order to assist this process in the aquatic environment a focused look into the base of the aquatic foodweb is needed. Primary producers (algae, fungi, plants, macrophytes, and emergent vegetation) and primary consumers (insects, amphipods, arachnids, crustaceans, oligochaetes, and copepods) in wetted areas and the riparian zone are known receptors. These two groups are commonly used in both general habitat assessment of aquatic habitat but also have been specifically used as injury assessment tools in natural resource damage assessment cases. The goal of the series of sessions is to help the HNRTC understand what tools exist, how they have been used, and specifically how they could be used at Hanford.

## Council Resolution

2021-R-01: The HNRTC approved the development and hosting of an aquatic workshop focused on benthic habitat with a not to exceed amount of \$50,000.

## FY 2021 Accomplishments

A small team from the HNRTC is working on the development of the Aquatic Workshop but were given direction to prioritize other scopes of work before putting this item together.

## Remaining Work, Deliverables, Milestones for FY 2022

Finalization of the workshop format and material. The workshop is not expected to occur until the end of FY 2022.

**Hanford Aquatic Restoration Planning (HARP)** advances restoration crediting methods and planning for aquatic habitat

## Hanford Aquatic Restoration Planning (Study 54)

The goal of HARP is to initiate aquatic restoration planning and develop an aquatic restoration crediting framework. Review of literature on ecological aquatic resources and services was led by NOAA with frequent participation by trustee organizations and contractor support. In Phase I (Literature and Data Review) the HARP team laid the foundation for development of a framework for crediting aquatic restoration. A future phase of the study would entail creating the crediting framework based on the findings of this first phase of the study.

## Council Resolution

There were no resolutions in FY 2021.

## FY 2021 Accomplishments

In FY 2021, Task 2 (Literature Review of Off-Site Restoration in Mainstem and Tributaries) was completed. The HARP team gathered and reviewed over 100 manuscripts addressing aquatic restoration in the Columbia River basin and broader geographies. Deliverables for this task included lists of habitat types, monitoring metrics, and restoration techniques; a database of recovery rates organized by restoration technique, derived from five meta-analyses discovered during the literature review; an inventory of aquatic restoration projects implemented on the mainstem of the Columbia River from Bonneville Dam to Chief Joseph's Dam, an annotated bibliography, and white paper.

Task 3 (Literature Review of Benefits from Restoration) was substantially completed in FY 2021, though full Council review of deliverables occurred in early FY 2022. Task 3 activities completed in FY 2021 included contractor review of literature on the benefits of aquatic restoration and drafting an annotated bibliography; contractor development of a geodatabase and example maps depicting existing restoration prioritization efforts; team review of the literature on restoration planning for the mainstem of the Columbia River and development of an associated annotated bibliography; team review of 12 aquatic restoration crediting frameworks, and team review of the literature on ecological services provide by aquatic habitats, along with development of an associated annotated bibliography.

## Remaining Work, Deliverables, Milestones for FY 2022

Trustee Council review of final deliverables from Task 3 is expected to occur in early FY 2022. Final Task 3 deliverables are scheduled for upload to Project Portal by December 31, 2021. These activities conclude Phase I (Literature and Data Review) of the Hanford aquatic restoration planning scope of work. A future phase of the study (expected to be implemented starting in FY 2024) would entail creating the aquatic restoration crediting framework based on the findings of this first phase of the study. The HARP team does not intend to proceed with Phase II in FY 2022.

## Tribal Lost Service (TLS) Studies

The three Hanford Tribal trustees [Yakama Nation (YN), Nez Perce (NPT) and Confederated Tribes of the Umatilla Indian Reservation (CTUIR)] have each continued studies to determine the nature and extent of potential impacts of Hanford releases on the cultural services provided to tribal communities by natural resources. These services may have been diminished in quality and/or are no longer present and are in need of restoration efforts, or were interrupted by the presence of contaminants released by Hanford operations.

### Yakama Nation

The Yakama Nation began work on the update of the TLS workplan in fiscal year 2021. Major revisions are being pursued for some sections while others remain as originally drafted. Remaining clarity on how the work fits into the rest of the ongoing assessment is being evaluated. The final draft for discussion with DOE will occur in FY 2022.

### Nez Perce Tribe

The NPT study was completed at the end of FY 2018. A Restoration Plan for Tribal service losses was approved by the Council in February 2019. The project was approved for funding in the 4<sup>th</sup> quarter of FY 2020 and NPT received funding for one year of the 3 year project. NPT initiated hiring 2 of the 3 contractors identified in the project SOW and began preparation for hiring the third contractor on an open, competitive bid process. The team for the project met once a week to setup the schedule for conducting the study and review of past efforts to ensure all members were ready to move forward with implementation of the full SOW.

### Confederated Tribes of the Umatilla Indian Reservation

The ongoing TLS report for the 100-F Area is focusing on a successful run of the Risk Calculator Tool (The Tool), which will not be available until the CTUIR GIS runs the model and maps the risk. The model holds thousands of data layers, was created by a CTUIR Contractor and applied to The Tool in FY21 to generate the risk layers and overlaying of the results of cultural activities and other areas of concern to calculate risk. CTUIR GIS and CTUIR First Foods Policy Program worked together on a SOW to address glitches in the system from FY 2021. The Tool is one part of the 100-F Area study and that area will be completed in FY 2022.

## **Project Management**

### Trustee Council Operations

Sara Lovtang (Oregon) was Chair of the Council for FY 2021, and Stacy James (U.S. Fish and Wildlife Service) was Vice-Chair. For FY 2022, Stacy James will serve as Chair and McClure Tosch (Yakama Nation) will be Vice-Chair. The full Council generally met on a monthly basis in FY 2021, to plan and oversee Hanford NRDA activities. A key Council objective for FY 2021 was to fund and make substantial progress on injury studies focused on data acquisition and analysis, and to obtain project support from a firm with NRDA expertise. Current year funding was reviewed on a routine basis.

The FY 2023 budget request was formulated around HNRTC's PEP and team workplans. The submission of the budget request to DOE was delayed until July 2021 in order to achieve consensus among all trustees.

### Data Management

Data management is essential to the injury assessment process. As such, the HNRTC operates and maintains a data management system as outlined in the Data Management Plan approved by the Council. Data management activities performed during 2021 included: 1) implementing, operating and maintaining a data management system; 2) providing data and document management; 3) GIS data stewardship; 4) quality assurance; and 5) data access coordination.

### Council Resolutions

2021-R-02: Council regretfully rescinded Resolution 2020-R-03 because CTUIR was not allowed to contract with Alta Science and Engineering, Inc., to complete data compilation tasks from the 2020 resolution (due to federal acquisition rules).

2021-R-03: Council recommended DOE spend up to \$220,000 to procure new contracting for the completion of terrestrial and aquatic data compilation and upload into Project Portal, beginning in Fiscal Year 2021.

2021-R-08: Council recommended DOE expend on behalf of the Council a not-to-exceed amount of \$245,000 to fund the Data Manager/Quality Assurance Coordinator for fiscal year 2022 using a contracting mechanism that includes option years.

2021-R-09: Council recommended DOE expend a not-to-exceed amount of \$135,000 to fund the GIS Specialist/Data Steward for fiscal year 2022 using a contracting mechanism that includes option years.

### FY 2021 Accomplishments

Notable HNRTC Data Management activities in 2021 included the development and update of critical data management documentation, user training, historical analytical data acquisition, and project-specific data exploration and data visualization support.

HNRTC Data Management-oriented work products included:

- Blank/annotated template for Data Utility Assessment (DUA) process
- "DUA 101 and Data Management Refresher" Webinar (including video recording and PowerPoint presentation saved to Project Portal)
- Revised HNRTC NRDA Data Management Plan, Quality Management Plan, and Content Submission Standard Operating Procedure documents, including appendices
- Data management administrative task documentation files including desk instructions, Project Portal administration handbook, and written narratives for treatment of files and data
- Methodology documents describing data import checking and duplicate record resolution
- Development of Data Dictionary including Project Portal analytical table field descriptions, identification of standardized and custom fields, and supporting "lookup" files for analyte names, locations, and media types provided in Project Portal
- GIS "README" files describing the contents, location, and origin of the various GIS files displayed in the Project Portal Maps Module and stored in the Project Portal Workspace/GIS Resources folder

HNRTC Project Team-Specific data management/GIS support and work products included:

- Data, documentation, graphic, and GIS support for numerous meetings and presentations
- Exploratory data acquisition, review, and summary requests for remedial action site characterization (Terrestrial Team request for existing WIDS site lifecycle data)
- Soil depth reconnaissance
- Data visualization support for the 18b Restoration Team Geographical Focus Areas, including GIS visualization/modeling, mapping, informal reporting, and presentation (18b Team)
- Data visualization/subject matter expertise support to identify preliminary Upland Aquatic features of the Hanford Site and Hanford Reach National Monument. Task included identifying and using current and historical hydrological and geohydrological Hanford Site and publicly available geospatial data, acquisition and review of reference materials describing aquatic resources, summarizing available information, and informal reporting of methodology, findings, and reference maps
- Acquisition of historical data files for Columbia River Comprehensive Impact Assessment (CRCIA) for Aquatic Team DUA0047 (Aquatic Team)
- Completeness review of CRCIA dataset relative to existing data in Project Portal and those available for formal acquisition using HEIS (Aquatic Team)

## Remaining Work, Deliverables, Milestones for FY 2022

Trustees will continue to support the implementation, operation and maintenance of the Council's data management system. This includes hiring contractors to provide management of data, documents and GIS data layers; quality assurance; and data access coordination. Data management activities for FY 2022 are expected to involve technical coordination between the Trustees, a data acquisition/compilation contractor, the data quality coordinator, the data management system and PNNL as work from the data analysis contract begins.

### Project Execution Plan Update

During FY 2021, the HNRTC initiated the first major revision to the PEP since 2016. The revision both updated the progress to-date and streamlined the document by removing obsolete information. The revision focuses on a three-year planning horizon through incorporation of the aquatic and terrestrial working group plans. While the near term technical priorities have been defined, the update still requires new cost estimates for these priorities and a new baseline. Support from the NRDA expert contractor is expected to help fill these remaining gaps in FY 2022.

### Data Analysis Scope Development

The Council approved a scope of work and funding schedule for data analysis. Ten tasks were identified by the HNRTC and developed by Pacific Northwest National Laboratory (PNNL) for inclusion in the Terrestrial and Aquatic Data Analysis SOW. The schedule for all ten tasks spans about 2.5 years, with tasks 1-4 projected as being complete in the first year and totaling about \$559,000.

### Council Resolution

2021-R-07: HNRTC recommended that DOE spend up to \$2,000,000 for PNNL to complete the Terrestrial and Aquatic Data Analysis SOW, and included cost estimates and schedules developed by PNNL for this work.

### FY 2020 Accomplishments

The Council approved a scope of work for data analysis, which included ten tasks:

- Task 1 Identify Additional Background Data and Gage Suitability of Thresholds
- Task 2 Media Threshold Selection (comparing thresholds from HNRTC Threshold Memo to background)
- Task 3 Compare Site Data to Selected Thresholds (Task 2) and Identify Provisional Assessment Areas
- Task 4 Compare Screened Site Data (Task 3) to Background Data
- Task 5 Receptor Selection Based on Conceptual Model of Exposure in Provisional Assessment Areas (Task 4)
- Task 6 Develop Thresholds for Receptor Species (Task 5)
- Task 7 Model Doses and Tissue Concentrations for Selected Receptors (Task 5)

- Task 8 Compare Estimated Receptor Exposure Doses (Task 6) and Actual and Estimated Receptor Tissue Concentrations (Tasks 5 and 7) -- to Threshold TRV Doses and Tissue Concentrations (Task 6)
- Task 9 Differentiate Background and Hanford Site Anthropogenic Radionuclides
- Task 10 Analysis of Data from Previous Bioassays Conducted on the Hanford Site

### Remaining Work, Deliverables, Milestones for FY 2022

In FY 2022, PNNL will begin by meeting internally to discuss internal project requirements such as project management activities and quality assurance plans. Once those requirements have been met they will begin the tasks outlined in the Terrestrial and Aquatic Data Analysis SOW.

One potential holdup to PNNL's progress may be the delay in contracting for additional data compilation, including compilation of several background data sets for the Hanford Site. As these data are anticipated to be part of PNNL's analyses, delays in acquisition may result in delays with PNNL's scope execution. The data compilation contract is expected to be in place in FY 2022 with prioritization of the background data sets.

### Facilitation Services

Facilitation services were not provided to the Council during FY 2021, after Trustees decided not to extend the previous facilitation team's contract in August 2020. Procurement for a new facilitation contractor was initiated in early FY 2021 and completed late in the fiscal year. In the interim, tasks that are typically completed by the facilitation team were accomplished through efforts of the Council Chair, Vice Chair, and other trustees. While the Chair and Vice Chair did an exemplary job in handling the bulk of the administrative tasks, these were distractions to the core work of the Council and resulted in a backlog of ancillary work, including upkeep of the Administrative Record and the working files that are maintained in Project Portal.

### Council Resolution

2021-R-06: Trustees approved an amount not to exceed \$200,000 for facilitation services for Council activities throughout FY 2022.

### FY 2021 Accomplishments

A multi-year facilitation services contract was awarded to Ross Strategic at the end of the fiscal year.

### Remaining Work, Deliverables, Milestones for FY 2022

In FY 2022, the new facilitation team will assist the Council in integrating diverse views and interests to support decision-making that will advance the NRDA. The facilitation team will also focus on: updates to the Administrative Record; ensuring all past resolutions, meeting summaries and meeting materials are uploaded to Project Portal; and maintenance of the HNRTC public website.

### NRDA Expertise

The non-federal trustees identified a need for NRDA expertise to support their organizations and drafted a SOW in 2020. It was later decided by the HNRTC that this expertise should serve the entire Council and not just the non-federal organizations. The HNRTC identified the need to retain a contractor with

extensive NRDA case experience to provide information, recommendations, and study support to the HNRTC in completing the assessment.

#### Council Resolution

There were no resolutions in FY 2021.

#### FY 2021 Accomplishments

After the original draft SOW was written in 2020, the trustees reached agreement that it should be re-drafted to contract for support of the entire HNRTC. A revised SOW was produced in the spring of 2021 and the federal trustees provided comments. The summer and fall were spent having several discussions about our respective expectations for the roles of the contractor and the phases and studies of the NRDA that the contractor would focus on. The Hanford Senior Trustee Council met in August and considers the procurement of expertise a top priority. Further refinement of the SOW continued through the end of the fiscal year.

#### Remaining Work, Deliverables, Milestones for FY 2022

In FY 2022, the trustees will work together to reach agreement on tasking for the NRDA expert. Trustees will provide the Seniors with progress updates during Senior meetings. Once the SOW is finalized, a funding resolution will be drafted and voted upon. If approved, procurement of a contractor is anticipated to be completed in FY 2022.

#### *Attorney Working Group*

The implementation of a NRDA requires that the trustees consider the interplay of legal and technical issues in injury determination and quantification and in developing restoration plans for the injured resources. In order to facilitate discussions and resolve complex legal issues bearing on the assessment process, the HNRTC agreed in FY 2018 to establish an Attorney Working Group.

#### Council Resolution

There were no resolutions in FY 2021. DOE provided funding for the startup of the working group in FY 2019 and FY 2020 in accordance with the HNRTC budget. Subsequently, attorney expenses are being included in individual trustee participation agreements with DOE.

#### FY 2021 Accomplishments

Department of Justice (DOJ) and trustee attorneys convened in virtual meetings to continue discussions of acquisition of NRDA expertise consultant support to assist all the trustees in advancing the NRDA, which culminated in the return of the matter to the technical trustees to complete procurement steps. In addition, the attorneys exchanged several memoranda and responses from March through September regarding (1) broad legal principles bearing on the assessment process, (2) the potential for using the 100 B/C Area terrestrial disturbance analysis prepared by IEC as a test case for the application of legal principles in an actual project context, and (3) the potential for agreement on how the principles might be memorialized and implemented more broadly. Such principles related to baseline services and conditions, and compensability issues related to pre-CERCLA releases at Hanford.

#### Remaining Work, Deliverables, Milestones for FY 2022

Attorneys for each trustee organization are jointly considering an approach to a more seamless integration of legal and policy issues in the finalization of injury determination and quantification actions with respect to terrestrial and aquatic injuries, which will be assessed further in FY 2022.



### **Problems/Challenges in FY 2021**

While the HNRTC made advances in some key areas in FY 2021, including scoping new studies for the aquatic injury assessment and data analysis for chemical injuries, a lack of consensus amongst trustees on how and when to address elements of the terrestrial case has led to some stagnation in this area.

Agreement on the scope and boundaries of the terrestrial case will take time and will need the support of both the Attorney Working Group and the NRDA expert that the HNRTC is actively working to retain.

Contracting of work for the Council also continued to be a challenge in FY 2021. The procurement process through both DOE and its contractors was protracted, with procurements taking longer than 9 months to complete. For example, HNRTC went the entirety of the fiscal year without the anticipated data compilation contractor. Also, delays in contracting a new facilitator for the Council had some ripple effects on the HNRTC's ability to resolve issues and advance its work. That challenge was alleviated with the award of a new multi-year facilitation services contract at the end of the fiscal year.