HANFORD NATURAL RESOURCE TRUSTEE COUNCIL

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October 12, 2015

TO: Stacy Charboneau, U.S. Department of Energy,
Richland Operations Office

RE: Fiscal Year 2015 Activity and Accomplishment Report

I am pleased to transmit the enclosed Fiscal Year 2015 (FY2015) Activity and Accomplishment Report on behalf of the Hanford Natural Resource Trustee Council (HNRTC).

This report summarizes the Hanford Natural Resource Damage Assessment (NRDA) activities and accomplishments for FY 2015. The report is organized by the key work breakdown structure elements that were established for planning, budgeting and scheduling the Hanford NRDA project and subsequent progress reporting. These elements include Assessment Planning, Injury and Service Loss Studies, Restoration Planning, Technical Analysis, Project Management, Information Management and Administration.

Please contact me if you have questions regarding this report, or if you need additional information.

Sincerely,

Jack Bell
Chair, Hanford Natural Resource Trustee Council

Enclosure

cc: HNRTC Senior Trustees

FY 2015 Hanford Natural Resource Damage Assessment

Activity and Accomplishment Report

1. Summary

This report provides a summary of the Hanford Natural Resource Damage Assessment (NRDA) activities and accomplishments during Fiscal Year (FY) 2015. The report is organized by the key work breakdown structure (WBS) elements that were established for planning, budgeting and scheduling the Hanford NRDA project and subsequent progress reporting. These elements include Assessment Planning, Injury and Service Loss Studies, Restoration Planning, Technical Analysis, Project Management, Information Management and Administration. See Figure 1 for the project WBS.

Hanford NRDA work in FY 2015 was focused primarily on continuation of 5 injury studies initiated in prior years and the start of 5 new studies based on the Injury Assessment Plan (IAP). The Hanford Natural Resource Trustee Council (HNRTC) goal is to complete the injury assessment and prepare a Restoration Plan by 2024. Planning efforts resulted in an update of a Project Execution Plan (PEP). The PEP defines the overall work scope, schedule, and budget for the Hanford injury assessment and establishes the means to execute, monitor, and control the project in a disciplined manner. The PEP is a "living document" that is updated annually based on actual budgets and new information gained from the injury assessment process. Actual funding over the last few years has been less than requested which has constrained the assessment process.

The Hanford Natural Resource Trustee Council (Council) has prioritized the list of studies from the IAP which are subject to funding availability. Implementation of the IAP is a dynamic, iterative process and the list of studies is subject to change as additional data becomes available during the injury assessment process.

Ten initial injury studies are ongoing including 5 studies initiated in prior years and 5 new studies for FY 2015. Of the studies initiated in prior years, a final report summarizing results of a Groundwater Contaminant Plume Mapping study has been drafted by the contractor (USGS), a Mussel Toxicity Study (also being conducted by USGS) is nearing completion and 3 tribal service loss studies are in various stages of completion. The 5 new injury studies initiated during the year address: 1) determination of groundwater services and valuation; 2) inventory of terrestrial habitat disturbance/injury; 3) compilation of data characterizing re-establishment of terrestrial habitat, including recovery trajectories; 4) scoping for near shore aquatic injury assessment; and 5) scoping for evaluation of contaminant concentrations in soils of non-process areas.

The Council continued to meet on a monthly basis to plan, organize, implement, and direct Hanford NRDA activities. Technical Work Groups (TWGs) also met on a regular basis to assist in study development, oversee studies, review environmental/contaminant release data, and make recommendations to the Council. Each TWG prepared, and the Council approved, updated five year work plans providing a prioritized list of tasks, task descriptions, and sequencing information for TWG work.

A data management system (DMS) for the Hanford NRDA was developed and approved for implementation in FY 2016. A process for setting up and maintaining the Council Administrative Record (AR) and case file is also expected to be implemented in FY 2016.

1. Assessment Planning

The council continued the ongoing process of scoping, reviewing, refining, and prioritizing injury assessment studies. A near term goal is to fund and make substantial progress on studies involving the analysis of existing data by FY 2016.

2. Injury and Service Loss Studies

Five injury studies initiated in prior years and 5 new studies were at various stages of completion in FY 2015; status is described below.

a. Evaluation of Hanford Groundwater Contaminant Plume Mapping

This study was initiated in FY 2012, and was performed by the United States Geological Survey (USGS) under a contract with the United States Fish and Wildlife Service (USFWS). The purpose of this study was to evaluate reliability of existing Hanford groundwater plume maps. The USGS independently developed groundwater contaminant plume maps for selected areas of the Hanford site, assessed the uncertainty of the resulting information and provided an initial assessment of the adequacy of existing contaminant plume maps at Hanford for the Trustee needs, by comparing their maps to previously-generated maps from DOE contractors. A draft report was issued for Trustee review, and results have been presented to trustees; based on trustee questions and comments, a revised, final report is imminent. The plume maps presented in the USGS draft materials appear generally consistent with existing DOE plume maps.

b. Effects of Hexavalent Chromium and Other Stressors on Native Mussels

This study was initiated in FY 2012 and is near completion. The study is being performed by the USGS under a contract with the USFWS. The purpose is to assess the toxicity of hexavalent chromium, alone or with co-stressors, on native mussel species associated with the Hanford Site. Adverse changes might include acute or chronic toxicity resulting from exposure to hazardous substances in water or sediments.

In this study, hexavalent chromium was tested alone and in the presence of three co-stressors: temperature, nitrate, and zinc, using acute (96 hour) and chronic (28 day) laboratory

bioassays. Two mussel species - the western pearlshell and fatmucket, were used in the tests. The western pearlshell is the primary focus of studies; it was once abundant in the Hanford Reach, but appears to have been locally extirpated. Because the pearlshell had not previously been cultured or used in laboratory assays, the fatmucket was included in all assays as a backup species in the event tests using the pearlshell could not be successfully performed.

Acute toxicity tests were conducted in the spring of 2013, with chronic tests beginning in late September. Initial results from the acute tests indicate that temperature affects the toxicity of hexavalent chromium in the western pearlshell, although nitrate and zinc did not appear to have a significant effect on hexavalent chromium toxicity. Twenty-eight day chronic mussel toxicity tests were completed by the USGS, but were repeated in 2014 because of technical problems (poor survival of control group) during the initial set of assays. Initial study results were presented to the Trustees in the summer of FY2015; a final report from the USGS is anticipated in FY 16. The study provides insight into mussel toxicity, but questions persist regarding effects of Hanford operations and extirpation of pearlshell mussels in the Hanford Reach.

c. Tribal Service Loss Studies

The three Hanford tribal trustees [Yakima Nation (YN), Nez Perce (NP) and Confederated Tribes of the Umatilla Indian Reservation (CTUIR)] have each initiated 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, or interrupted by the presence of contaminants released by Hanford Operations. The CTUIR study is initially focused on the 100-F Area to analyze existing data for evidence of residual injury and to develop and test injury assessment methodologies. The YN and NP studies are more comprehensive in nature and address areas of the Hanford site traditionally used by the tribes.

d. Groundwater (GW) Policy Study

The focus of this study is to help determine valuation of Hanford groundwater and the services it provides. It will describe services provided by groundwater under baseline conditions at Hanford and analyze how services may have been adversely impacted by contaminants. Specific accomplishments during the year include:

- A draft table was constructed listing services provided by groundwater.
- Groundwater volume was determined for the unconfined aquifer, and for the area and volume of plumes with contaminant concentrations exceeding water quality standards.
- Independent groundwater experts were identified for consultation and review.

A white paper discussing groundwater injury and potential impacts on services will be developed by the end of 2015. Valuation of services will continue through FY 2016.

e. Inventory of Terrestrial Habitat Disturbance/Injury

The purpose of this study is to compile/map information on the occurrence, nature, type, and size of disturbances, during Hanford operations and response actions, that have adversely affected habitat, and to estimate the nature and duration of injury. The initial phase of this effort has been focused on scoping this study and mapping physical disturbance on selected parts of the Hanford site due to operations and remedial actions.

f. Compilation of Terrestrial Habitat Data Including Recovery Trajectories

This study includes a number of different tasks that use existing data, new field observations, and active restoration experiments in order to estimate/predict the trajectories for habitat re-establishment and maturation from various starting conditions, for natural recovery and a range of re-vegetation treatments. This information is needed to (a) define injury based on metrics to be developed, (b) quantify the duration of habitat recovery from injury (area under the recovery curve), and (c) help design restoration projects. Work was initiated in FY 2015 to scope this study, start field site visits and compile relevant data; work is expected to continue through FY 2016.

g. Columbia River Aquatic Injury Assessment

Ongoing activities for the year include:

- Comparing contaminant concentrations in water to water quality criteria and literature-based injury threshold concentrations for aquatic biota.
- Comparing contaminant concentrations in sediments to sediment quality criteria and literature-based injury threshold concentrations for aquatic biota.
- Literature review - Evaluate results of existing Hanford sediment and pore water toxicity studies to identify evidence of injury.

h. Evaluation of contaminant concentrations in soils of non-process areas

For the NRDA, the Trustees need to assign ecological injuries to Hanford terrestrial lands that are believed to have some level of contaminant exceedance, but may not have adequate sampling density to estimate individual Contaminant of Concern (COC) concentrations over time and space. In non-process areas, there is predicted a low current contamination level, and most contamination occurs near process areas, facilities and waste sites.

To determine actual contaminant levels for non-process area, the HNRTC needs to assess the large acreage that is sparsely sampled. Regardless of quantification approach, according to the IAP and Preliminary Estimate of Damages, the Trustees will need some additional soil sampling in non-process areas to ensure that injury quantification is accurate and reliable. Scoping for this effort was initiated in FY 2015; field sampling is planned to start in FY 2017.

3. Restoration Planning

The Restoration TWG continued to identify, screen and develop potential early restoration projects focused mainly for terrestrial resources. Field visits were conducted by Council members and Senior Trustees to observe habitat conditions at some of the proposed project locations and explore the viability, timeliness and logistics of these sites as potential early restoration projects. It is anticipated that restoration will initially be implemented as pilot projects, to help develop and refine the technical and logistic capability for ecological restoration. Trustees have not yet agreed to implement any early restoration projects.

4. **Technical Analysis**

This element includes work planned and conducted by TWGs, or by individual trustee staff and/or contractors working in support of a TWG. TWGs met on a regular basis to assist in study development, to review and analyze existing Hanford environmental/contaminant data, and to make recommendations to the Council for action. For several contaminants of concern (COCs), characterization of background concentrations in media (water, soil, sediment) and identification of associated injury thresholds continues to be a focus of the TWGs. A workshop was conducted in May, 2015, to establish tentative baselines and thresholds for two metals (lead, copper); this work is serving to establish templates and procedures for defining background concentration and injury thresholds for other COCs using Hanford specific data.

5. Project Management

This element includes staffing for the Council, Project Coordination and Trustee Management Oversight. The Council met on a monthly basis to plan and oversee Hanford NRDA activities. The FY 2017 budget recommendation was developed and submitted to US DOE in March, 2015. A key Council objective for FY 2015-16 is to fund and make substantial progress, by the end of 2016, on injury studies focused on analysis of existing data. Current year funding/costs were reviewed on a routine basis.

Strategic planning, which was initiated in FY 2012, resulted in the completion of a Project Execution Plan (PEP) during 2014. The PEP was subsequently updated in FY 2015 and submitted to DOE along with the FY 2017 budget recommendation. The next update to the PEP is intended to provide more detail and logic for the next few years of the Hanford NRDA effort. The PEP defines the overall work scope, schedule, and budget planned for the Hanford injury assessment over the life of the project, with a target date for completion by 2024. The PEP is designed to culminate in a Restoration Plan, which will quantify damages and outline restoration projects for the Site. The Council may also choose to prepare a "Report of Assessment" that outlines the results of the injury assessment phase.

The Senior Trustees met twice during the year to review and discuss overall Hanford NRDA progress and issues such as funding, early restoration, establishment of a legal working group and potential update of the HNRTC Memorandum of Agreement and By-Laws.

Tammy Ash, USFWS was chair and Jack Bell, NP was vice chair of the HNRTC for FY 2015. Troy Baker, NOAA was elected as vice chair for FY 2016.

6. Information Management

The purpose of this activity is to implement, operate and maintain a data management system (DMS) as outlined in the Data Management Plan approved by the Council. This includes: (1) implementing, operating and maintaining a DMS and (2) providing the following functions: data management; document management; GIS and non-GIS data stewardship; QA and data access coordination. The goal of this data management effort is for the DMS contractor, Trustees, other DOE contractors, and research organizations to collaboratively maintain a working database for assessing potential injury to natural resources and the services they provide, resulting from releases of hazardous substances from the Hanford Site. The development and demonstration of a system to operate and maintain the DMS was performed by MSA and its subcontractor, ddms in FY2015. The Council subsequently made a decision to proceed with ongoing operation and maintenance of the DMS by MSA and ddms.

7. Administration

The Trustees continue to be assisted by a professional facilitator and administrative assistant in coordinating and conducting Council meetings. Tasks include scheduling meetings, preparing agendas, recording action items, issuing meeting materials, facilitating meetings, overseeing the Council website and supporting the Council in issue resolution. Process improvements continue to be realized for record keeping and general operations of the Council including planning and operations.

Figure 1 - Hanford NRDA Project Work Breakdown Structure