

**River Corridor End State and Final Closure Project Update and SAP Refinement
Workshop for Inter-Area Riparian and Near-Shore Assessment
(June 1 and 2, 2006)**

June 1, 2006 Meeting Minutes

http://www.washingtonclosure.com/projects/endstate/docs/InterArea/Workshop_Final_%20Agenda_June_1-2.doc

AGENDA/PROJECT OVERVIEW

Ella Feist (Washington Closure Hanford [WCH])

<http://www.washingtonclosure.com/projects/endstate/docs/InterArea/ESFC ETF.ppt>

It was announced that the risk assessment subcontract for the 100/300 Area Component of the RCBRA was awarded to Neptune and Company, Inc. Randy Ryti will be managing the project. Ralph Perona (Neptune and Company) will conduct the human health risk evaluation, using exposure models consistent with those previously identified by the Project. Jim Markwiese and Randy Ryti will be performing the ecological risk assessment. Tom Stockton, an environmental statistician, will be overseeing the web-based interface for organizing and analyzing project data. Brett Tiller (Environmental Assessment Services) will be assisting with data interpretation.

RIVER CORRIDOR INTEGRATED PROJECT BASELINE

Jeff Lerch (WCH) discussed the work scope and noted that the 1100 Area is not included in the RCCC.

http://www.washingtonclosure.com/projects/endstate/docs/InterArea/Long_Term_Stewardship_JAL_jmd.ppt

The definition of cumulative risk and its role in the current work scope was discussed. The Project determined that consultation with the groundwater contractors (e.g., Fluor Hanford) will be needed to identify cumulative risks. Anything outside of the River Corridor is not included in this contract.

Possibilities of site-wide risk assessment were also discussed. What areas will be included in a site-wide assessment? John Sands (DOE-RL) stated that there is no schedule or milestone for site-wide assessment and that it is not a requirement of CERCLA. Under NEPA they are doing some site-wide evaluation. Each NPL site is required to do individual risk assessments.

The identification and categorization of waste sites was discussed. If orphan sites do not meet the TPA MP-14 criteria they are not required to be included in WIDS. Stewardship elements were defined as sites that do not meet TPA criteria as a waste site. It is an element that may be left at the end of the contract (e.g., pile of asphalt). The location of orphan sites and stewardship elements will be identified using GPS and the information will be inserted into the stewardship database. Miscellaneous features (e.g., railroad lines, utilities, etc.) may or may not be removed but are not included in WIDS – however, items left on site will be documented.

A Pilot Closure Review is being planned by WCH. A final Independent Closure Review is a DOE-generated requirement for WCH. It is outside of the CERCLA process and is strictly for DOE and the contractor. It has not yet been drafted. It was suggested that trustees/Tribes/Stakeholders could conduct their own review during the process. EPA will be doing a CERCLA review. The River Corridor Contract has remedial action reports as deliverables which start the final Record of Decision (ROD) process.

Trustees requested involvement in the Independent Closure Review process. For the Pilot Closure Review, the Trustees feel that the 100-B/C Area is not a good choice as the conclusions in the risk assessment were not to their satisfaction. The trustees also thought that the 100-B/C Pilot Project results would be integrated into the 100/300 Area Risk Assessment.

WCH wants to use the 100-B/C Area for the pilot closure review to evaluate the process and document lessons learned. DOE expressed that they are not confident in the process as the risk assessment and remedial action report are not yet complete. WCH acknowledged that the 100-B/C Area might not be the perfect fit for the pilot closure. The discussion raised the question – is it viable to perform this pilot process or should we wait?

Mary Baker (NOAA) initiated discussion of closure definitions, cumulative risk, and the amount of data required to determine closure.

INTEGRATION STRATEGY

Jeff Lerch presented a discussion of the forthcoming integration strategy document. The integration strategy (WCH-71) is WCH's strategy plan and is not supported by the Tri-Parties at this time.

http://www.washingtonclosure.com/projects/endstate/docs/InterArea/Integrated_Strategy_JAL.ppt

Jay McConnaughey (Yakama Nation) asked if cumulative risk as defined by the Project is the same as "integration." Jill Thomson (WCH) indicated that this would be discussed further in the presentations.

WCH's accelerated work schedule was presented. Barbara Harper (CTUIR) thought that the long schedule for inter-areas shown earlier meant 3 years of sampling – Jill Thomson clarified that there was only 1 phase of sampling planned (for one year) and the rest of the schedule was forecasted for developing the SAP Addendum prior to the sampling effort, sampling, followed by data evaluation, report generation, review cycles, and issuance of a report.

It was requested that the 4th bullet on the Acceleration schedule regarding the RI report be changed from "evaluation of protectiveness levels" to "recommendation of protective cleanup actions" as the former is not CERCLA terminology. Mary Baker asked for clarification in terminology- will the risk assessment determine protective levels, cleanup levels, or protective cleanup actions? She recommended defining remedial action objectives rather than "evaluating protectiveness."

John Sands explained that the reason for the schedule acceleration is that the River Corridor contract expects WCH to accelerate where they can. The only milestone for this contract is the

100/300 Area Draft A Risk Assessment by June 30, 2007. There are, however, some contract deliverable documents/reports/activities.

Bob Peterson (PNNL) interjected a concern relative to residual soil contamination in the vadose zone (e.g., uranium in the 300 Area). This deep vadose zone contamination is an issue that has been included in the Integration Strategy issues section.

RISK ASSESSMENT

Jill Thomson provided an overview of the risk assessment scope.

http://www.washingtonclosure.com/projects/endstate/docs/InterArea/Risk_Assessment_JET_jmd.ppt

Questions raised during this discussion included the following: What is the difference between quantitative and cumulative risk? How is cumulative risk going to be evaluated for the 100/300 Areas? The Project intends to evaluate protectiveness of cleanup levels in interim RODs. If they are not protective, appropriate changes can be made in future RODs.

The trustees proposed that the Columbia River Component (CRC) data compilation information be included in the remedial investigation report. It was felt that as much information as possible should be included. WCH recorded the suggestion for consideration.

COLUMBIA RIVER COMPONENT

Chris Cearlock (WCH) discussed the Columbia River Component.

http://www.washingtonclosure.com/projects/endstate/docs/InterArea/CRC_Data_Evaluation.ppt

Existing data along the river system were compared to available benchmarks in a screening step, and documented in a data compilation document. Barbara Harper asked if tribal pathways were included in the report. Barbara requested that changes be made, noting that benchmarks relate to quality criteria and fish toxicity but don't address human risks associated with use of affected biota. She was concerned that the CRC data were compared to standard benchmarks, which are not protective of tribal users. She stated that even though there is not a complete set of established tribal benchmarks, a general rule of thumb she suggests is that tribal scenario values are 10 times less than Region 9 PRGs. Barbara requested a column containing tribal benchmarks be included. Barbara also recommended a tribal scenario comparison, for information purposes only.

Mary Baker requested sediment core data for radionuclides upstream of the Hanford Site.

All of the original information from the CRC data compilation is maintained in an Access database and WCH is currently working on making this information available on the project website. The regulators and DOE want to present the CRC data compilation information to the public so they can help determine the path forward for this project.

Some language to support why pesticides or other analytes sampled prior to the 1990s is not included in the report is needed (i.e., a discussion of how and why non-detects were dropped out of future sampling campaigns).

100/300 AREA COMPONENT & 100-NR-2

Steve Weiss (WCH) discussed the status of the 100/300 Area Component work, including preliminary sampling and analysis status.

<http://www.washingtonclosure.com/projects/endstate/docs/InterArea/Status-SGW.ppt>

Ted Poston (PNNL) presented a status on the evaluation of ecological receptor impacts at the 100-NR-2 area in the riparian and near-shore aquatic habitats.

http://www.washingtonclosure.com/projects/endstate/docs/InterArea/NR2_june_2final_review_PNNL.ppt

Mainly PAHs are expected to show up in the SVOA screening. Mary Baker (NOAA) asked what screening levels were used for PCBs in fish. Ted Poston took an action item to provide the PCB screening information to Mary Baker.

Jane Borghese (Fluor Hanford) stated that migration of Sr-90 due to the pump-and-treat is minimal and that they are using apatite injections to slow the migration. The first pilot injection was performed on May 31, 2006.

It was asked if the Sr-90 levels in clam shells and clam histopathology are related. A relationship is possible but the evaluation is not conclusive. Participants recommended a possible lab/field study to further explore this concept.

DISCUSSION - CUMULATIVE RISK DEFINITIONS

Definitions of cumulative risk were shared amongst trustees:

Jay McConnaughey (Yakama Nation): Comment #1 - EPA has a framework document on cumulative risk. Comment #2 – There are 4 NPL sites at Hanford and contamination is commingled via air & groundwater. Jay offered the following definition: “Cumulative risk can be defined as the risk posed by contamination released from the Hanford Site, in addition to risk posed by off-site contaminant sources and where they have come to be located [such as contaminants coming down the Columbia River]. In addition to pesticide and herbicide applications and physical impacts cumulative risk should include the synergistic or additive effects and interactions of contaminants.”

Barbara Harper (CTUIR): Cumulative risk is the assessment of multi-contaminant, multi-pathway and multiple stressors, both site related and off site related; it also pertains to integration across space and time including area-wide contamination.

Mary Baker (NOAA): Cumulative risk assessment is very difficult – many pathways and releases – there are only two conceptual models for this project – trustees want to see one

integrated conceptual model; BRA should provide information to the public to characterize risks – should not ignore contaminants and risks.

Barbara stated that risk assessment is developed for a point but we need to prepare a risk assessment for 570 sq miles. She recommended approaching CERCLA more like NEPA, including cultural considerations, and making people part of the ecosystem.

Mary Baker recommended that the Project focus on assessment endpoints and select endpoints based on the conceptual model; informing the public about all risks.

WCH will continue to gather cumulative risk definition feedback and develop a position on how cumulative risk will be assessed in the RCBRA, ensuring that it meets the guidance requirements.

DOE stressed that there is no requirement to do a CERCLA site-wide risk assessment at this time. CERCLA requires that each NPL site is worked separately. However, the 100/300 Area Risk Assessment includes two of three NPL sites and includes air releases from the third NPL site.

INTER-AREAS INVESTIGATION

The staff from Neptune and Company led the discussion for the Inter-Areas.

http://www.washingtonclosure.com/projects/endstate/docs/InterArea/inter-areas_presentation_1June.ppt

Mary Baker requested more time to review the sampling plans prior to the next workshop. According to the draft schedule the next workshop takes place 4 days after the first draft of the SAP Addendum deliverable is due for release. Mary suggested that the sampling plans be available on the website for review. She also wanted to know if seeps would be mapped. She would like to make a comparison with data from 10 years ago to current data.

Greg Thomas (Fluor Hanford) stated that Bob Peterson's data from PNNL includes 16 aquifer tubes between 100-B/C and 100-K.

Mary Baker asked about the use of toxicity tests. Jim Markwiese (Neptune and Company) answered that toxicity tests are currently not proposed for the inter-areas, but rather inferences will be made based on the toxicity test results from 100/300 Area Component work.

Jay McConnaughey asked what other fish species were considered as representative residents in sediment areas. Currently there is no fish receptor species for the sediment area. Fish in the fine sediment areas are limited to juvenile life-history stages and typically do not reside in this substrate upon maturity. Amphibians are organisms that would spend most of their lives in the backwaters and slough areas and should be considered for sampling.

Mary Baker asked for synopsis of the 100/300 Area data/results. She asked if the gradient assumptions were substantiated, and what toxicity tests and histopathology evaluation revealed. Does the plan need to be adjusted based on results received to date? Randy Ryti (Neptune and Company) responded that with respect to the gradient in the riparian zone- the level of

uncertainty with riparian zone results is attributable to the lack of existing data. Horizontal aquifer tubes and clam data for aquatic sites should be more descriptive.

Mary Baker asked if there is a plan to organize bioassay/toxicity test data, and suggested she be contacted for input (per her experience with Hyallela tests).

Jay McConnaughey thought the I-129 plume intersected the Columbia River. Verification with the 2004 Groundwater Monitoring Report concluded that concentrations of 1 pCi/L have not reached the river. He asked if there are monitoring wells down gradient from the existing plume. Downstream monitoring wells were identified. Jay also asked where I-129 will be addressed because it has a long half-life. Future risk posed by Iodine-129 will be addressed by the groundwater project.

Mary Baker asked which wells are actively monitored and suggested that those wells be included in a figure. She also recommended considering congener analysis to identify contaminant sources.

June 2, 2006 Meeting Minutes

****Action Item**** - Send CD of Data Summary Report to Mary Baker and Barbara Harper.

Professionalism and respect between project staff and trustees was discussed in terms of differing opinions about the risk integration effort. Ella Feist took the action to address professionalism in communication between projects.

A representative of Fluor Hanford (Gloria Cummins) stated that she feels that all the different groups (WCH, Fluor, Tank Farms, PNNL) are working towards integration. She said that they open their project meetings to exchange information/ideas with the trustees/public.

Barbara Harper stated that she is frustrated with the amount of time that has been spent on risk integration and nothing has been done with it (noted CRCIA as an example). She stated that there is a lack of commitment to move forward.

Jill Thomson reiterated that although not all trustee input is incorporated, the input is valuable. Significant improvements have already been made based on stakeholder input.

DATA QUALITY OBJECTIVES

John Sands (DOE-RL) expressed the opinion that the air deposition report (DOE/RL-2005-49) was a scoping document; it gathered information but did not perform detailed analysis on the information gathered.

Mary Baker commented that Jill's slide of the Central Plateau and 100/300 Area sources was very useful and could be used as a possible conceptual site model. The sources that should be

included are air stack releases, tanks, effluent river pipelines, overland flow to the river releases, etc.

Barbara Harper inquired if there will be a 3-D risk map to look at when this task is complete.

Jay McConnaughey asked about the current versus future conditions regarding the I-129 plume. The Fluor Hanford Groundwater Project is performing a risk assessment for specific groundwater operable units. The question was asked as to whether a risk assessment is planned for the upland inter-areas. Since that region within the River Corridor is not identified as contaminated and requiring remediation, there will not be a risk assessment done for the upland inter-areas.

The Fluor Hanford Groundwater Project does not know the timing for characterizing the I-129 plume, but the Fluor report will likely be published after the WCH risk assessment. Fluor is performing the investigation of the I-129 plume migration and recognizes that it is a multi-layer problem. Trustees would like to include the effects of I-129 at the river in the river corridor risk assessment.

Mary Baker inquired about assessment endpoints and measures. Specifically she inquired about direct exposure to fish and representative receptor species (e.g., bass, suckers).

Rebecca Arenson (NOAA) asked for clarification of plant data collection (annual, perennial, roots, shoots, tubers). Barbara Harper stated that the tribes are interested in participating in native food studies and requested all plant data including collection and analysis methods.

Mary Baker asked about using swallows as potential receptors. Swallows have been identified as vectors in spreading contamination, especially in building nests with mud from contaminated sites. However, the swallows' close association with operational areas (e.g., nesting colonies associated with outfall structures) and limited presence elsewhere along the Columbia River may make them less than optimal for evaluating the Inter Areas. Swallows will, however, be considered further in the selection of measurement and assessment endpoints for the Inter Areas.

Survival/growth/reproduction endpoints are included in the 100/300 Area Component of the RCBRA. Trustees voiced concerns that the endpoints need to be more subtle. It was acknowledged that histopathology is also part of the assessment.

A crosswalk between assessment endpoints and measurement endpoints was requested by DOE for the next meeting.

Consideration of additional contaminant sources, namely the pipelines and 200 Area, was requested.

Barbara Harper requested a copy of the tribal scenario that she was working on with Donna Morgans. In addition, it was suggested that Barbara and Ralph Perona (Neptune and Company) have opportunities to discuss human health exposure parameters. Barbara asked if the MIS

samples provide upper-bound data. Patrick Moran (USGS) recalled that samples were collected in a large area and could look at a distribution.

Mary Baker inquired about the extent of the near-shore boundary, specifically the 6 ft water depth and the “green line”. How will this boundary be addressed this year under higher than average river flow conditions? The project responded that the boundary is limited by what was stated in the contract and that any proposed changes would require contract modifications approved by Keith Klein of DOE/RL.

Aquifer tube data for horizontal/vertical tubes are available and being prepared for release in the next few weeks.

Mary Baker asked about the 100-K Area roosting site, specifically, is there quantitative information on exposure. Brett Tiller responded that the eagles are mainly eating waterfowl and salmon. While their occupancy is normally seasonal (late fall and winter), there was one year when a pair lingered at a nest site near 100-F for additional months, but did not lay eggs.

Mary also asked what herons eat. Brett Tiller responded that there are some PNNL studies on the great blue heron. Their locations and diets are known. Great blue herons eat fish and crayfish. Dispersal patterns are about 1 to 3 km.

John Sands asked what other wide-ranging receptors are being considered. Suggestions include deer, coyote, bats, Canada geese, and great blue heron.

Mary Baker asked what are the major predators of native mussels and clams. Waterfowl and carp/bass feed on bivalves.

Mary stated that she still thinks there is not enough detail on risk characterization in the SAP. Ella Feist answered that the Project will be asking for input over the next 18 months for the 100-300 Area RCBRA.

REFERENCE SITE DISCUSSION

Mary Baker requested a mediated workshop session on reference sites.

The Washington State Department of Ecology sent a letter stating that they will contract someone to perform an independent study about reference sites.

Mary Baker identified recurring issues that will surface in future comments, including:

- Toxicity
- Sculpin Histopathology
- Clam Histopathology

The general consensus was that WCH had done a good job of documenting the additional reference sites chosen, but did not clearly document why other sites were not selected. It was

acknowledged that evaluating different river systems will lack comparability in all metrics (e.g., biological) due to natural differences between rivers.

Rebecca suggested that because the Inter-Areas investigation scope is 50-75 miles long, a broader geographic range for reference areas should be considered. A request for additional sites included sites along the Yakima and Snake Rivers. Samples could be obtained above Roza Dam on the Yakima River. According to fish data from the EPA report, the cleanest areas are above the Roza Dam on the Yakima and below Umatilla on the Columbia River. It was indicated that the Clearwater and Salmon drainages have good flow and could possibly be used as reference sites.

Patrick Moran suggested that the USGS metal background studies for Washington be used as an average “background” value to work from. He also asked if Vernita site concentrations were different from state mean concentrations. Mary Baker responded that chromium in fish liver and soils were elevated at the Vernita site. Jim Markwiese responded that chromium is present in fish tissue but that 50-60% of all specimens collected from the 1940s through 1970s contained site contaminants.

It was stated that there is no flexibility in the schedule/timeline therefore it is not possible to resample if needed.

How much weight-of-evidence (WOE) does a reference site have compared to other sites? The project responded that lines of evidence are weighed equally to all other samples taken.

It was suggested that if the data are available prior to the next meeting, it would be more satisfying for the trustees.

GENERAL DISCUSSION

There is an outstanding trustee concern related to salmon. A recommendation was made to perform an experiment with salmon egg masses and water. A chromium workshop is scheduled for June 16th.

Are the ecological receptors appropriate for calculating human health exposures?

The next Inter-Areas SAP Refinement Meeting is to be scheduled for July 13th – The #2 Workshop Announcement will be issued through Dana Ward – Jill Thomson has an action item to set up the meeting. WCH/Neptune and Company will present the SAP Addendum at the meeting.

Specific topics identified for the June 7th/8th Trustee Council meeting:

- 6 foot bank for islands
- Is there going to be better participation from Ecology, etc.
- Accurately portray that the inter-areas effort is an expansion of the 100/300 Area Risk Assessment, not a new risk assessment.

- The benefit to assessing the inter-areas now is that there will be time to make adjustments to deal with unacceptable risk in future cleanup actions.

Barbara Harper suggested that review material be prioritized by importance, stating that they appreciate the amount of material available but don't have time to read all of it.

Mary Baker expressed appreciation for the web-based review of data.

Trustee call-in participation was discussed. Upcoming topics of discussion include End States and what closure means. Definitions of cumulative risk, clean closure, etc., should also be identified by each agency.

With respect to future participation, who do the Trustees call?
 Information sharing – directly with WCH
 Request for work – contact DOE

MEMORIES

- Trustee involvement in the Pilot Closure Review
- Utilize 100/300 Area Risk Assessment results for the Pilot Closure
- Consider revising “evaluation of protectiveness” to “recommendation of protective cleanup actions”
- Consider including the Columbia River Component in the Remedial Investigation report
- Consider obtaining tribal benchmarks or more intense environmental uses (maybe on EPA Region 10 website) and multiple pathway contaminant risks.
 - Re: Columbia River Component Data Evaluation Summary
- Identify locations of wells and those being actively monitored.
- Consider the risks of I-129 from Central Plateau
- Neptune: consider adding fish to ecological risk questions (page 44)
- Create/issue a crosswalk assessment end points and measures.
- This effort is an expansion of the 100/300 Area Risk Assessment

Preliminary NOAA Comments

Mary Baker had the following issues/suggestions for research following the workshop.

1. Salmon assessment – consider caged egg study in plume areas, especially the chromium plume.
2. Sculpin histopathology assessment – need feedback from Ralph Ellston on his results. Also consider giving samples to the USGS (A. Farag)
3. Consider sediment toxicity testing in the fine-grained areas (e.g., with amphipods). (Note – WCH is already doing this.)
4. Continue/expand clam histopathology analyses (build on 100-NR-2 clam work)

5. Sample sucker and other juvenile fish using fine-grained sediment and material from slough areas. Assess results and pick most contaminated species for future sampling.
6. Integrate human health sampling with fish and plant sampling for the ecological risk assessment.
7. Consider other reference locations (e.g., Clearwater and Salmon drainages into Snake River). Sample sediments, seeps, surface water and fish. Also, provide more detailed reference data from the Vernita Bridge location.

PATH FORWARD

1. Issue 7/13/06 #2 Workshop schedule announcement by 6/6/06. (Jill Thomson/ John Sands/Dana Ward)