100 Area End State Workshop, June 23 – 24
100 Area River Breakout
Questions:

- **Are the remedies completed at waste sites in the 100 Area sufficient to be considered final remedies?**
- **Should the pipelines from the reactors into and under the Columbia River be removed or should they be left in place?**
- **Groundwater in the 100 Area is expected to meet applicable standards by the end of the cleanup mission with the exception of the strontium-90 (Sr-90) plume at 100 N. Is it acceptable to rely on radioactive decay to remediate this plume or are extensive efforts required to perform further treatment?**

Raw notes from 100 Area River Breakout

Group 1 – Facilitator Susan Leckband

Strong interest in protecting salmon

Washington is requiring riprap to be removed in salmon spawning areas

People will be using the shoreline (they are now)

Has the full excavation of the N Area strontium contamination has been studied. Is the study available?

Can the pipelines into the river be filled with grout?

Have you considered flushing the Sr-90 into the river to restore the aquifer?

If you try to remove the pipelines from the river - environmental groups will work hard to stop you because of damage to fish habitat.

Anything but leaving them in place doesn't make sense

Anticipate hunting and fishing along the reach in the future (unlimited use)
Overnight camping

How are these uses currently restricted – how much more cleanup needs to be done to allow all desired uses

Concern about uranium in clam shells and contaminants in tules – Tribal staff indicated that Tribes want unrestricted ability to use shoreline and resources

There is a concern about movement of invertebrates into groundwater and back into river carrying contaminants and making them accessible.

Concern about DOE's enduring presence to ensure that people are not exposed to contaminants (like at N Springs)

Challenge the assumption that pipe removal will lead to destruction of spawning grounds – the river has a rocky bottom in those areas.

These discussions also need to be held at a management level with the Tribes – No one was here who could speak for the Tribes

Just putting up signs and installing riprap will not be sufficient to protect people and the ecology

Societal pressures in the future will change the end uses

Tribal staff identified anticipated activities for Tribes – setting up summer camps, teepees, sweat lodges using groundwater, erecting fish drying racks, fishing

Tribal staff indicated that groundwater cannot be brought on site for sweat lodges – must be obtained at the site of the sweat lodge.

Tribal staff and Tribal members indicated that the cost of remedy is not a consideration for Tribes (clean it up no matter what the cost)

Cost is an issue for taxpayers

Top 15 feet removal and model groundwater impact is a good approach for strontium plume

What really is a restriction (vs. notification that a hazard exists)?

Access pathway along river, legal and illegal camping

Development right up to the one-quarter mile line of the National Monument

Likely to be commercial development, homes excavations – exposing children to piles of contaminated dirt

Refuges attract development - digging to install swimming pools, piles of dirt taken for other uses.

Residential and commercial uses near the refuge at end of cleanup

Expect very little development - expect Fish and Wildlife to take control of the area limited use – conservation/preservation

Away from rivers edge (say one quarter mile) should be orchards and farming

Federal government does trade property for other uses

If 5 story buildings are constructed it will take a deeper excavation that 15 feet

N springs rip rap attracts small mouthy bass and create an attractive nuisance for fishermen who know and fish this site.

Would like to see the 100 Areas preserved for recreation. This will require construction of some amenities for folks to use such as restaurants, campgrounds etc.

Recreational and Tribal use – not residential

Both B Reactor Area and campsites/access areas within the Monument will reasonably be expected to have

- Excavations to build services such as food leading to exposure scenarios from excavated dirt
- Irrigation for grass
- Use of groundwater for pools sprinklers drinking

Group 2 - Facilitator Gariann Gelston

Strontium 90 (Sr-90) plume

How sound is the science?

How well do you know how much Sr-90 will enter the river? (How good is the modeling?) (Cost/benefit decisions)

If you leave the Sr-90 in place how do you protect the public? Could an exclusion zone be enforced for 300 years?

What about outside factors we cannot control (Blackrock Canyon Dam was an example – But I believe the intent was a whole range of actions taken by others adjacent to the site or elsewhere in the region that we cannot know at this time)

SR-90 –

Like the idea of the penetrable barrier

Seems like low risk – do nothing but deter intrusion

Do nothing unless risk is shown to be significant through science

Review periodically (required)

If contamination left in place include deed restrictions

Impacts of plumes from 200 Areas needs to be considered – look at site holistically

Will monument manager take on areas with radioactive and chemical contamination remaining?

What is the life of a permeable barrier?

Waste Site Cleanup – Groundwater Protection

Need to have same protectiveness of groundwater regardless of future land use based on human and ecological risk (dose to children as baseline, meets drinking water standard)

Are there any radionuclides that will volatilize?

Group 3 – Facilitator Doug Houston

The criteria for waste site cleanup was based on a no degradation approach – it does not mean that groundwater meets the standards at this time (it does not)

How do we know that it will not degrade the groundwater – measurements, assumptions and models?

If you are excavating a waste site and are at the bottom of the hole and some contamination remains why don't you keep digging until it all has been removed?

How certain are you that the source has been removed

What is the cost/risk of active remedy vs. passive – passive meaning waiting for contamination to naturally attenuate?

100N

Why should this be different than how we treat a gas station clean up? All contamination is not removed beneath the gas station – just enough to meet some criteria.

Money needs to be put on the higher risk problems.

Activities needed to remove pipe may cause significant impact to fish habitat.

It is not just human health and ecological risk. There are other risks – public perception, risk perception.

Cap the pipes where they enter the river to reduce hazard. Grout inside and coat the outside so if they do break up and move the contamination will not spread around.

Need risk information on Tribal fishermen, Tribal lifestyles to communicate with Tribal organizations.

Consider in the decision, Hanford's contribution as part of the overall river health and contamination picture (added during 6/24 discussion)

Note: Tribal members present pointed out that the Tribal members present and Tribal staff present spoke for themselves and that government-to-government consultation was required to obtain a Tribal position.

Doug's summary of the discussion:

Seems to be technically acceptable to leave pipelines in place, treat waste sites as described and leave the Sr-90. But need to continue to receive info and provide input to decision process.

Opposed to leaving trash in the river but given cost to remove and risk to workers and habitat it is OK

Concerned about physical risks if pipelines are left in the river