Meeting Minutes
U.S. Department of Energy and Oregon Office of Energy
Bi-Monthly Forum

April 28, 1999
Federal Building, Room 554, Richland, Washington

Distribution:

P. J. Bengtson	PNNL	A0-21
M. L. Blazek	OOE	Oregon
P. F. Dunigan	DOE-RL	A5-15
M. Grainey	OOE	Oregon
R. I. Greenberg	DOE-HQ	
H. B. Hathaway	DYN	G3-07
J. S. Hertzel	FDH	H8-67
D. Huston	OOE	Oregon
G. M. McClure	DOE-RL	A7-75
F. R. Miera	DOE-RL	A7-75
R. D. Morrison	FDH	~~H8-67~~ A1-14
N. B. Myers	BHI	H0-14
K. Niles	OOE	Oregon
K. K. Randolph	DOE-RL	A7-75
J. E. Rasmussen	DOE-RL	A5-15
V. L. Saladin	DOE-RL	A0-21
G. H. Sanders	DOE-RL	A5-15
E. A. Williams	JASON	H0-12

Meeting Minutes
U.S. Department of Energy and Oregon Office of Energy
Bi-Monthly Forum
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Federal Building, Room 554, Richland Washington

Apprvl.: Felix R. Miera Date: 10/26/99
George H. Sanders, Administrator
Tri-Party Agreement
U.S. Department of Energy

Apprvl.: Mary Lou Blazek Date: 10/28/99
Mary Lou Blazek, Administrator
Nuclear Safety Division
Oregon Office of Energy

Attendees:

P. Bengtson	PNNL
M. Blazek	OOE
P. Dunigan	DOE-RL
R. Greenberg	DOE-HQ
H. Hathaway	DYN
G. McClure	DOE-RL
F. Miera	DOE-RL
R. Morrison	FDH
N. Myers	BHI
K. Randolph	DOE-RL
G. Sanders	DOE-RL
V. Saladin	DOE-RL
E. Williams	JASON

AGENDA

DOE/OREGON BI-MONTHLY FORUM

April 28, 1999, Fed. Bldg., Rm. 554

1. Introductions – Karen Randolph
2. DOE Headquarters Involvement in FORUM Meetings – Ray Greenberg
3. HRA/EIS Public Hearings (9:30 - 10) – Tom Ferns/Liz Williams/ Mary Lou Blazek
4. Privatization Public Involvement Update (10-10:30) – Peter Bengston
5. Status of Secretary's Summit Meeting – Ray Greenberg
6. Secretary Richardson/Governor Kitzhaber Potential Meeting – Mary Lou Blazek/Felix Miera
7. DOE/RL Support of Hanford Waste Board Meetings – Mary Lou Blazek
8. Draft Oregon Report – 10 Years at Hanford – Mary Lou Blazek
9. Tri-Party Agreement Status Report (11:00-11:20) – George Sanders
10. Follow-Up on Fiscal Year 2001 Budget Public Outreach – Gail McClure/Mary Lou Blazek
11. Badging & Clearance for Oregon Office of Energy – Mary Lou Blazek
12. Fact Sheet to Address why the Public Should Support More Money for Hanford Cleanup – Mary Lou Blazek
13. Action Items – Ron Morrison
14. Wrap-up & Next Meeting Date

MEETING MINUTES, April 28, 1999 (Richland, Washington)

1. Introductions.
K. Randolph introduced Dr. Ray Greenberg to those present. Dr. Greenberg will be representing the U. S. Department of Energy (DOE) Headquarters.

2. DOE Headquarters Involvement in Forum Meetings.
R. Greenberg lead a discussion of the DOE Headquarters organizational structure. It was explained that the Office of Field Management may be going away and that field offices would then report to the responsible assistant secretary. The Hanford Office will be reporting to C. Huntoon with R. Lightener as the site lead for the Richland Office. K. Randolph asked how can we get public affairs involvement? R. Greenberg responded he would contact Martha Crosley to investigate her level of involvement.

M. Blazek expressed frustration with the DOE Headquarters conducting public involvement activities in the State of Oregon which neither she nor K. Randolph are made aware of. It is important for the DOE Headquarters personnel to communicate and work with us regarding public involvement activities.

3. Hanford Remedial Action/Environmental Impact Statement (HRA/EIS) Public Hearings.
B. Hathaway provided Attachment 1, "Hanford Remedial Action/Environmental Impact Statement and Comprehensive Land-Use Plan" and Attachment 2 "Fact Sheet – Revised Draft Hanford Remedial Action Environmental Impact Statement and Comprehensive Land-Use Plan" and began a discussion of them.

- This activity all began with the Future Site Uses Working Group which eventually led to the HRA/EIS.

- The National Environmental Policy Act was selected as the mechanism for the decision process.

- Six options were explored (see pages 3 and 4 of Attachment 2).

P. Dunigan pointed out that the six alternatives have gone through a lot of evolution to arrive at this point.

E. Williams stated that the public review of the HRA/EIS began on April 23, 1999 and will run for 45 days until June 7, 1999. This review will include 3 public hearings and one public meeting. 500 copies of the EIS have also been distributed to the HRA mailing list and it is available on the Internet.

Action: M. Blazek requested the names of Oregon recipients of the EIS and copies of comment sheets.

M. Blazek asked what specifically the DOE wants from the public?

E. Williams responded that the public's comments are needed on the preferred as well as the other alternatives presented in the HRA/EIS.

M. Blazek stated that the State of Oregon's primary concern would focus on the Columbia River and the impacts to it.

M. Blazek asked if a representative would be able to attend a public interest group meeting on May 6, 1999, in Portland, and discuss the EIS.

Action: E. Williams responded that Tom Fern may be able to attend but, will have to check and coordinate with M. Blazek.

M. Blazek stated that we need to be more careful about the structure of public meetings in order to get the proper interaction on your subjects and get the input you really need. M. Blazek asked if comments made at the May 6th meeting will be part of the record.

P. Dunigan responded that yes, they would become part of the record.

M. Blazek pointed out that some method of recording the comments would be necessary.

E. Williams stated that a note taker and flip charts will be used to record the comments.

4. Privatization Public Involvement Update.
P. Bengtson introduced Vince Saladin to the attendees.

P. Bengtson stated that the program is doing a lot of stakeholder involvement but, where we are lacking is in public involvement. Currently, the Public Involvement Strategy is undergoing internal reviews but, may be available shortly. The current work plan requires the strategy by the end of June.

M. Blazek asked if there is a date by which the strategy will be available?

P. Bengtson could not provide a specific date but reiterated that it should be available soon.

M. Blazek asked to receive any information that is available which is more current than the fact sheet provided several months ago.

9. Tri-Party Agreement Status Report.

2001 Budget.
G. Sanders stressed that the 2001 budget level is still a "projected" budget level and much has yet to happen before it is finalized. The current projected 2001 budget is $232 million short of full compliance with numerous impacts. R. French is working cost cutting measures but, $232 million is a very large shortfall and will be difficult to reduce by cost cuts alone.

M. Blazek stated that it is critical to know when it would be strategic for the State of Oregon to input to the budget process. F. Miera responded that February is the critical date and input must be made by then.

R. Greenberg pointed out that impacts from the Kosovo campaign are placing strains on all federal budgets.

G. Sanders added that the most important input would be the State of Oregon's priorities, as difficult as that may be. We have some priorities form the State of Washington and the U.S. Environmental Protection Agency (EPA) but, they are from a very high level such as tank remediation, Spent Nuclear Fuel, and protection of the Columbia River. This however, still does not give us the details we need.

M. Blazek responded that it is unlikely that the State of Oregon can take a position that it would be alright to not accomplish things which are important. It is important to get the information out regarding how much work is actually being done in order to obtain necessary funding for Hanford compliance.

Office of River Protection.
The Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement) and the associated Tri-Party Agreement organization will be supported under the new Office of River Protection organization.

Tank Waste Treatment Privatization Negotiations.
The Tank Waste Treatment Privatization Agreement In Principle (AIP) which will establish the ground rules and scope of negotiations is 99 percent settled with the State of Washington. Final approval by James Owendoff is pending. The AIP signatories will be Keith Klein, Richard French, Chuck Clarke and Tom Fitzsimmons. The negotiation completion date contained within the AIP is July 31, 1999, though this will be difficult to accomplish given the scope of the negotiations. Many of the current tank waste related Tri-Party Agreement milestones will require changes. The Environmental Restoration Program will also see significant changes. Additionally, regulatory reform is another area to be explored with the State of Washington and the EPA.

Spent Nuclear Fuel.
A problem has developed with Spent Nuclear Fuel Tri-Party Agreement Milestone M-34-14A which is due on September 30, 1999. The safety analysis on a cask drop scenario revealed a

problem which may require redesign of the cask load out system. Although a change is needed to milestone M-34-14A efforts are being made to maintain the fuel removal due date.

Single Shell Tank Stabilization Consent Decree.
The public comment period will end on the Single Shell Tank Stabilization Consent Decree on May 3, 1999. Ecology has committed to holding a public meeting on May 12, 1999 at the Hood River Hotel in Hood River, Oregon.

Vadose Zone Tri-Party Agreement Proposed Milestones.
The Remedial Investigation/Feasibility Study is due in August of 1999 and work is progressing to make that date. The hope is that any resulting public input from the May 12th public meeting will be supportive of the progress being made.

Fast Flux Test Facility (FFTF).
A Secretarial decision on future missions for the FFTF is expected on April 30th at 11:00am. If the decision is to proceed with an Environmental Impact Statement then the FFTF Tri-Party Agreement milestones will go into abeyance. Information on the status of FFTF was included in the last "Hanford Update" as a follow up to the State of Oregon's request to inform the public on the FFTF decision status.

Plutonium Finishing Plant.
A letter has been sent to the regulators and the Hanford Advisory Board in which the DOE offered to reenter negotiations. The State of Washington has so far declined since the DOE does not have a clear pathway established to reach decontamination and decommissioning.

Land Disposal Restrictions Report.
The Land Disposal Restrictions Report was provided to the State of Washington in April completing a Tri-Party Agreement annual milestone (M-26-01). The State of Washington is currently considering whether the DOE is in complete compliance with respect to details of the report.

Action: Provide copy of the 1999 Land Disposal Restrictions Report to M. Blazek.

Tri-Party Agreement Major Milestone M-32-00.
This major milestone is due on September 30, 1999. Currently the DOE is working with the State of Washington to gain agreement on the scope of this milestone for final closeout.

Tri-Party Agreement Major Milestone M-91-00.
Impacts due to budget issues have arisen with interim milestones M-91-03, M-91-04 and M-91-07.

224-T Facility (Transuranic Storage and Assay Facility).
A Resource Conservation and Recovery Act closure plan is due for this facility in June 1999. The DOE needs to secure the facility to a safe and stable condition in order to move on to other more pressing priorities.

Booklet Entitled "Protecting the Columbia River".
Attachment 3 "Protecting the Columbia River: The Need to Retrieve and Immobilize Hanford's High-Level Tank Waste" was provided for discussion. K. Randolph noted numerous negative quotes and information contained in the document. It was also noted that photo credits were not present.

5. Status of Secretary's Summit Meeting.
M. Blazek explained that the meeting is not really a "summit" as such and a planning meeting is to be held in Chicago on May 7th. Governor Kitzhaber is particularly interested due to aspects of transportation, emergency planning and the Columbia River.

6. Secretary Richardson/Governor Kitzhaber Potential Meeting.
K. Randolph stated that it would also be appropriate for Keith Klein to attend any planned meeting.

7. DOE /RL Support of Hanford Waste Board Meetings.
M. Blazek stated that the State of Oregon has had great support from the DOE-RL in the conduct of these meetings. The Board has also expressed appreciation of the DOE-RL's efforts. Bob Tibbatts, Rich Holten, Bill Taylor, Peter Bengtson, Mike Graham, Gail McClure and Felix Miera were noted specifically for their efforts.

11. Badging and Clearance for the Oregon Office of Energy.
M. Blazek explained that her current Q Clearance has provided the Openness Committee a great level of comfort. However, the clearance is up for scheduled reapproval in June. M. Blazek asked if any of the attendees were aware of the cost of a normal reinvestigation. No one present was aware of the normal cost of maintaining a Q Clearance. M. Blazek went on to state that if the cost is prohibitive she may have to forgo the clearance though it would definitely be of value to maintain it.

10. Follow-Up on Fiscal Year 2001 Budget Public Outreach.
G. McClure stated that the comment document is due out by the end of April and asked M. Blazek for any comment on the effectiveness of the process. M. Blazek responded that feedback has been positive in that the interaction on budget matters was the best to date.

12. Fact Sheet to Address Why the Public Should Support More Money for Hanford Cleanup.
M. Blazek stated that her understanding was that the DOE-RL was going to draft some information. One of the State of Oregon's constituents has requested a summary of how money is spent at the Hanford Site and requested a summary of how money is spent wisely at Hanford.

8. Draft Oregon Report – 10 Years at Hanford.
M. Blazek asked if the DOE-RL would support the printing of the 10 years at Hanford report. G. McClure responded that the DOE-RL could.

Glenn Podonski Visit to the State of Oregon.
The events related to the G. Podonski visit to the State of Oregon were discussed with R. Greenberg for information.

Action: State of Oregon letter to DOE Headquarters and past DOE/Oregon Forum minutes related to the G. Pondonski visit to be forwarded to R. Greenberg.

Future Agenda Items.
The following items were developed for inclusion on the agenda of the next DOE/Oregon Forum:

- Tank Waste Privatization Public Involvement
- U. S. EPA Multi Media Inspection.

1999 Public Involvement Calendar.
Attachment 4 "1999 Public Involvement Calendar" was provided to the attendees. This item closes out a previous commitment to provide a coordinated schedule of meetings and activities.

13. Action Items.
Action item recap from this Forum:

Action: M. Blazek requested the names of Oregon recipients of the EIS and copies of the comment sheets.

Action: E. Williams responded that Tom Fern may be able to attend but, will have to check and coordinate with M. Blazek.

Action: Provide copy of the 1999 Land Disposal Restrictions Report to M. Blazek.

Action: State of Oregon letter to DOE Headquarters and past DOE/Oregon Forum minutes related to the G. Pondonski visit to be forwarded to R. Greenberg.

Action item status, from prior Forums, was discussed and is reflected in Attachment 5 "State of Oregon/U.S. Department of Energy Open Action Items".

14. Next Oregon/DOE Forum Meeting.
It was tentatively agreed that the next Forum would take place on June 15 or 16, 1999 in Salem, Oregon, time to be determined.

The Forum Was Adjourned.

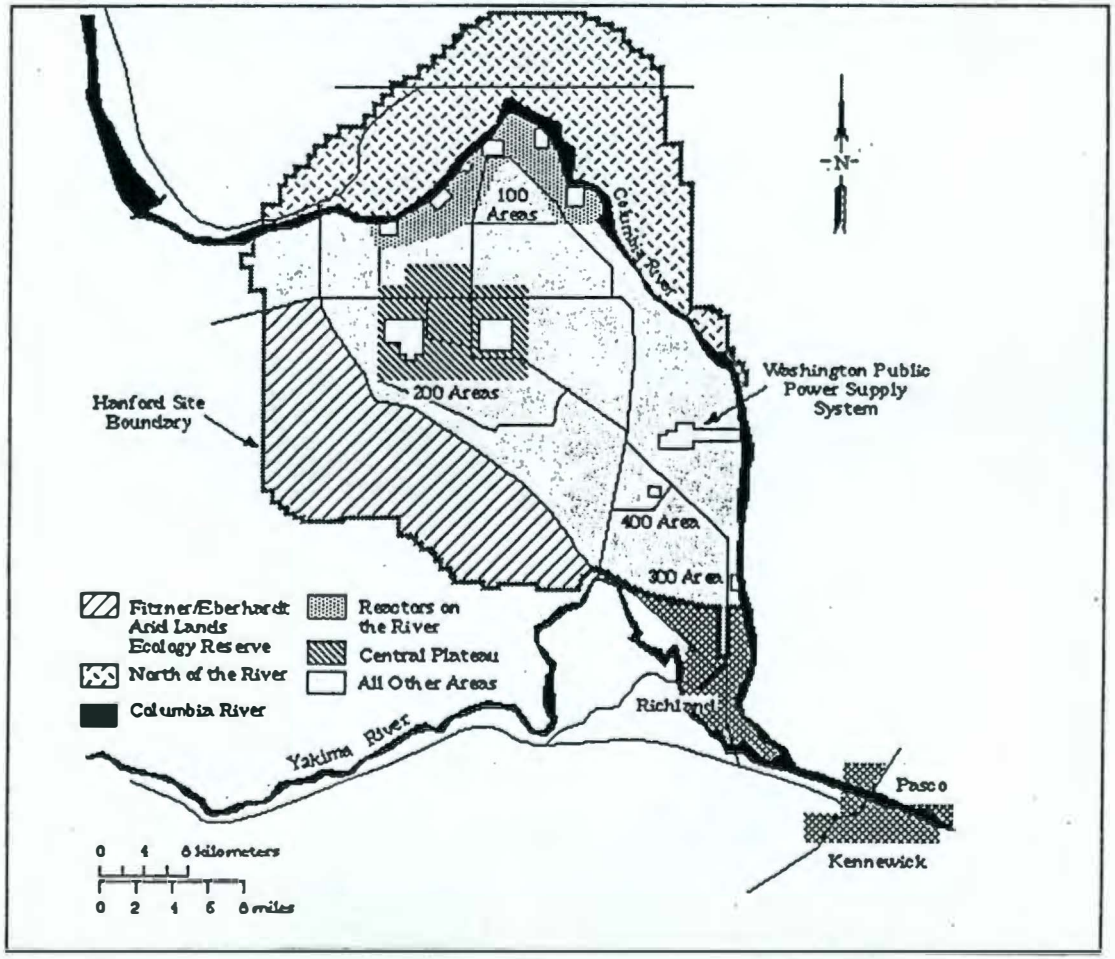
Hanford Remedial Action Environmental Impact Statement and Comprehensive Land-Use Plan (HRA-EIS)

Tom Ferns, U.S. Department of Energy
Richland Operations Office

Attachment 1

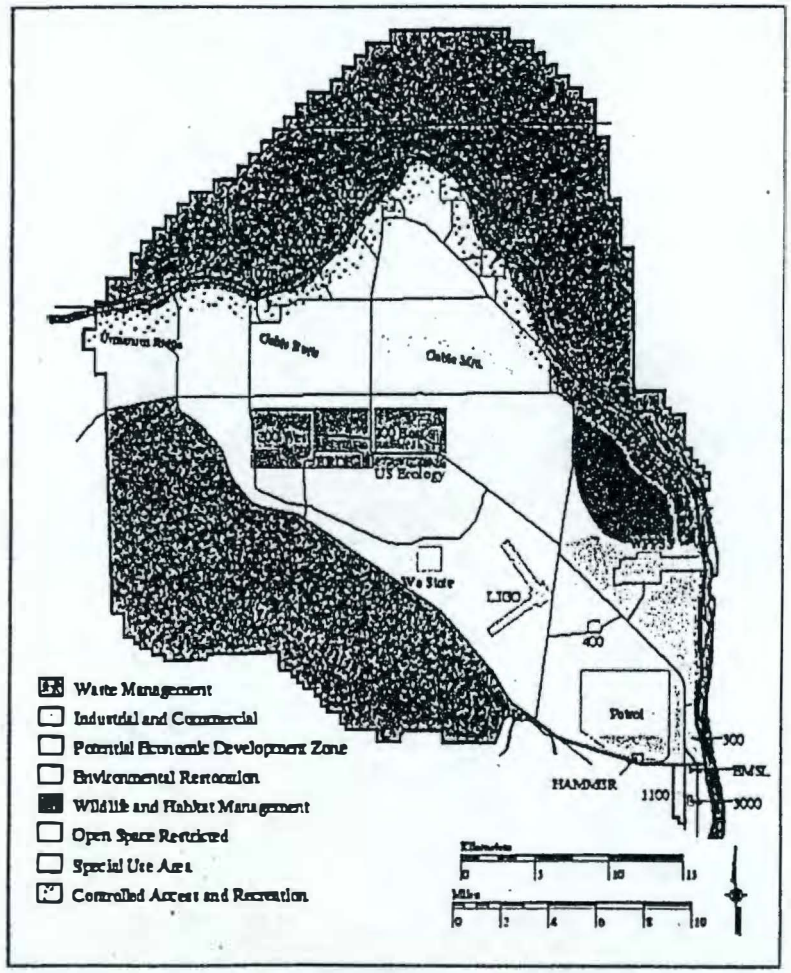
Aerial View of Land Use

Future Site Uses Working Group
Six Geographic Areas

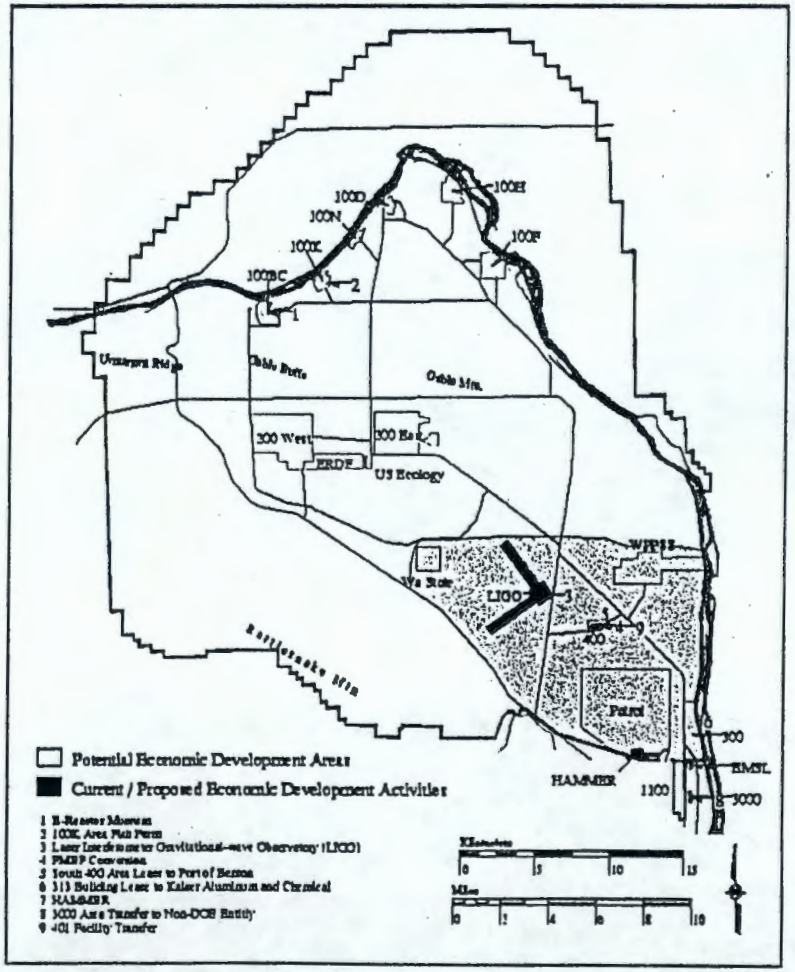


HRA-EIS

Draft HRA-EIS Land Use



Economic Development Activities/Areas



Industrial-Exclusive

- An area suitable and desirable for treatment, storage, and disposal of hazardous, dangerous, radioactive, and nonradioactive wastes
- Includes related activities consistent with Industrial-Exclusive uses

Industrial

- An area suitable and desirable for activities, such as
  - Reactor operations
  - Rail, barge transport facilities
  - Mining
  - Manufacturing
  - Food processing
  - Assembly, warehouse, and distribution operations
- Includes related activities consistent with Industrial uses

Research and Development

- An area designated for conducting basic or applied research that requires the use of a large-scale or isolated facility
- Includes scientific, engineering, technology development, technology transfer, and technology deployment activities to meet regional and national needs
- Includes related activities consistent with Research and Development

Agriculture

- An area designated for the tilling of soil, raising of crops and livestock, and horticulture for commercial purposes along with all those activities normally and routinely involved in horticulture and the production of crops and livestock
- Includes related activities consistent with Agricultural uses

High-Intensity Recreation

- An area allocated for high-intensity, visitor-serving activities and facilities (commercial and governmental), such as
  - Golf courses
  - Recreational vehicle parks
  - Boat launching facilities
  - Tribal fishing facilities
  - Destination resorts
  - Cultural centers
  - Museums
- Includes related activities consistent with High-Intensity Recreation

Low-Intensity Recreation

- An area allocated for low-intensity, visitor-serving activities and facilities, such as
  - Improved recreational trails
  - Primitive boat launching facilities
  - Permitted campgrounds
- Includes related activities consistent with Low-Intensity Recreation

Conservation (Mining and Grazing)

- An area reserved for the management and protection of archeological, cultural, ecological, and natural resources
- Limited and managed mining and grazing could occur as a special use (e.g., a permit would be required) within appropriate areas
- Limited public access would be consistent with resource conservation
- Includes activities related to Conservation (Mining and Grazing), consistent with the protection of archeological, cultural, ecological, and natural resources

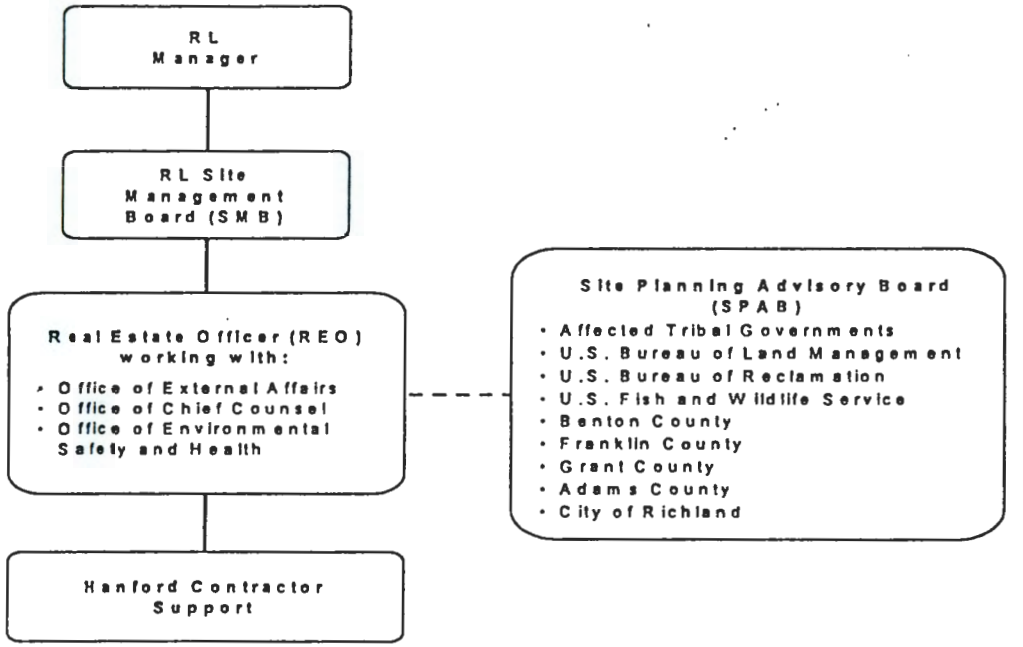
Conservation (Mining)

- An area reserved for the management and protection of archeological, cultural, ecological, and natural resources
- Limited and managed mining could occur as a special use (e.g., a permit would be required) within appropriate areas
- Limited public access would be consistent with resource conservation
- Includes activities related to Conservation (Mining), consistent with the protection of archeological, cultural, ecological, and natural resources

Preservation

- An area managed for the preservation of archeological, cultural, ecological, and natural resources
- No new consumptive uses (e.g., mining) would be allowed within this area
- Public access controls would be consistent with resource preservation requirements
- Includes activities related to Preservation

Organizational Structure for the Comprehensive Land-Use Plan



Definitions for Terms Relating to Plan Implementation

Allowable Use –

- Any reservation of land for a physical development or land-use activity that is consistent with the land-use designation and policies of the land-use map and Comprehensive Land-Use Plan

or

- A specifically identified part of an approved Area Management Plan, except for "Amendments" or uses that are identified as "Special Use"

Definitions for Terms Relating to Plan Implementation

Special Use – Activities requiring further review and approval prior to being allowed. The following are special uses

1. Any physical development or land-use activity in the Preservation or Conservation designation
2. Area Management Plans (AMPs) outside of the 200, 300, 400 and 1100 Areas
3. Any proposed new development that is inconsistent with the land-use designation of the adopted local counties' or cities' comprehensive plans for the Hanford Site

(Continued)

Definitions for Terms Relating to Plan Implementation (Continued)

The following are special uses

4. Mining or grazing activities within areas designated for Conservation
5. Any proposed new project that is located within an area that has a deed or covenant restriction
6. Additions to or enlargements of pre-existing, nonconforming uses
7. Any proposed new project that establishes an exclusive use zone (EUZ) over lands not currently under an EUZ

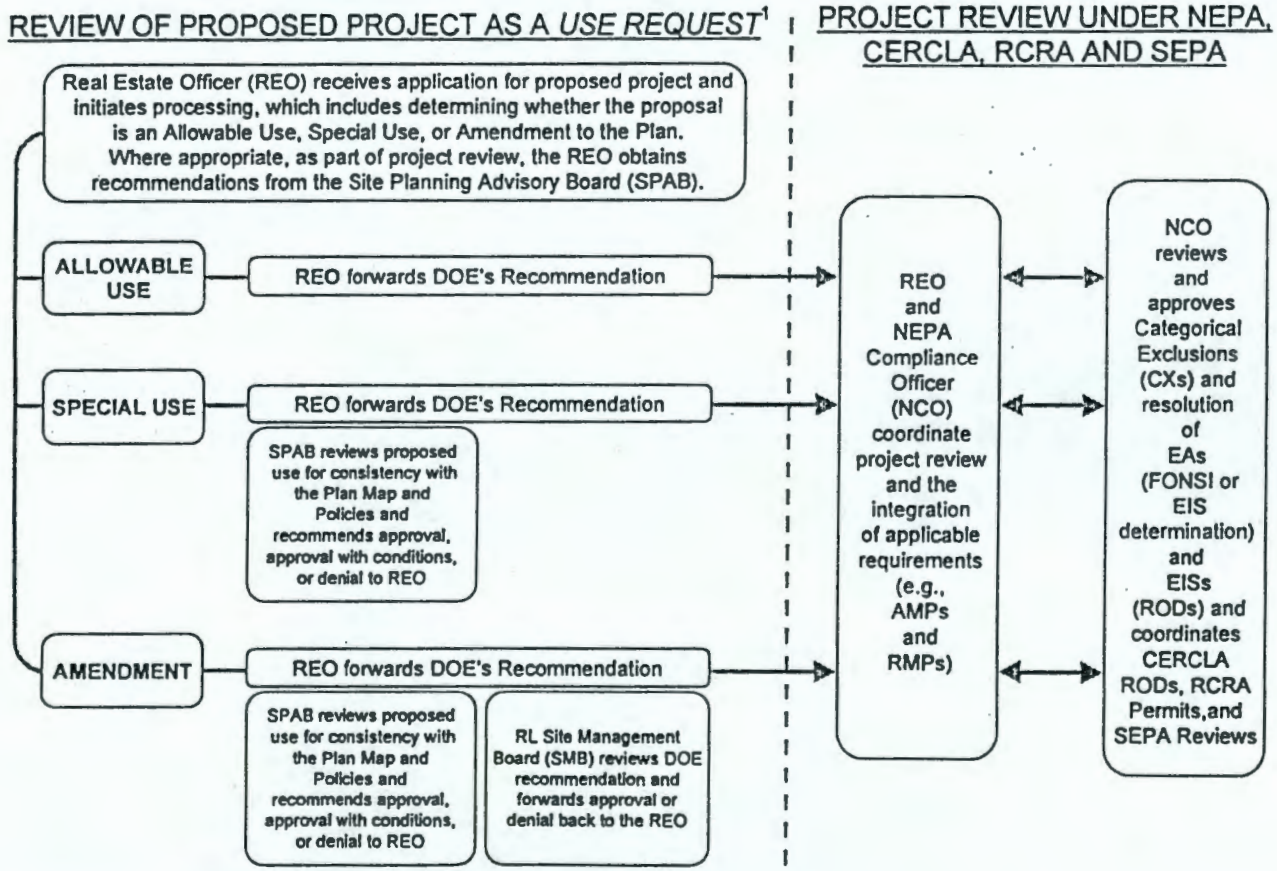
Definitions for Terms Relating to Plan Implementation

Amendments –

Amendments are required for the following:

1. Any change to the map land-use designation of an area
2. Any change to Comprehensive Land Use Plan policy
3. Any change in the use of land or an existing facility to a use that is inconsistent with the land-use designation

Review Process for Use Requests



[1]The proposed land or facility use, and location are reviewed for consistency with the Plan Map and Policies.

Fact Sheet

Revised Draft Hanford Remedial Action Environmental Impact Statement and Comprehensive Land-Use Plan

The U.S. Department of Energy (DOE) has issued the Revised Draft Hanford Remedial Action Environmental Impact Statement and Comprehensive Land-Use Plan (HRA-EIS) for public review and comment. The public review and comment period runs from April 23, 1999 to June 7, 1999. Public comment on this Revised Draft will be considered by DOE in completing the Final EIS, and the Record of Decision (ROD). While development of the CLUP will be complete with release of the HRA-EIS ROD, full implementation of the CLUP is expected to take at least 50 years.

The DOE will hold public hearings on the Revised Draft HRA-EIS on:

May 18, 1999
State Office Building
800 NE Oregon Street
Portland, Oregon
Information: 6-7 p.m.
Public Hearing: 7 p.m.

May 20, 1999
Shilo Inn
50 Comstock Road
Richland, Washington
Information: 3-5 p.m.
and 6-7 p.m.
Public Hearing: 7 p.m.

June 3, 1999
Ridpath Hotel
West 515 Sprague Ave.
Spokane, Washington
Information: 6-7 p.m.
Public Hearing: 7 p.m.

In addition, during the comment period DOE will participate in public involvement activities sponsored by the other cooperating agencies, at times and locations to be determined.

Requests for copies of the Revised Draft HRA-EIS, further information on the Revised Draft HRA-EIS, and/or written comments on the Revised Draft HRA-EIS should be directed to: Thomas W. Ferns, DOE NEPA Document Manager for the HRA-EIS, U.S. Department of Energy, Richland Operations Office, P.O. Box 550, MSIN HO-12, Richland, WA 99352-0550. Requests for copies of the Revised Draft HRA-EIS or comments on the Revised Draft HRA-EIS can also be made through (1) the Internet at Thomas_W_Ferns@rl.gov or (2) by FAX at (509) 376-4360. The document is available for viewing at the DOE's public reading rooms and information repositories, and on the DOE Hanford Internet Home Page at:

http://www.hanford.gov/eis/hraeis/hraeis.htm

Cooperating Agencies and Consulting Tribal Governments

The nine cooperating agencies and consulting Tribal governments that participated in the preparation of this Revised Draft HRA-EIS are: the U.S. Department of the Interior (Bureau of Land Management [BLM], Bureau of Reclamation [BoR], and the U.S. Fish and Wildlife Service [USFWS]); the City of Richland, WA; Benton, Franklin, and Grant counties; the Nez Perce Tribe, Department of Environmental Restoration and Waste Management; and the Confederated Tribes of the Umatilla Indian Reservation (CTUIR).

Objective of the EIS

The HRA-EIS will be used by the DOE and the nine cooperating and consulting agencies to develop a comprehensive land-use plan (CLUP) for the Hanford Site. Implementation of the CLUP will begin a more detailed planning process for land-use and facility-use decisions at the Hanford Site. The DOE will use the CLUP to screen proposals. Eventually, management of Hanford Site areas will move toward the CLUP land-use goals. This CLUP process could take more than 50 years to fully achieve the land-use goals.

The final CLUP will consist of the following:

A final Land-Use Map, depicting the desired future patterns of land use on the Hanford Site. This map will be one of the alternative land-use maps presented in the EIS, or a map that combines features of several of the alternatives maps based on public comment.

Land-Use Definitions, describing the purpose, intent, and principal use(s) of each land-use designation on the final CLUP map.

Land-Use Policies, directing land-use actions. These policies ensure that individual actions of successive administrations shall collectively advance the adopted CLUP map, goals, and objectives.

Land-Use Implementing Procedures, including:

- Administrative procedures for reviewing and approving requests for use of Hanford Site lands.
- A Site Planning Advisory Board (SPAB), consisting of representatives from the cooperating agencies and the affected Tribes, to evaluate and make recommendations on development proposals and land-use requests. It is anticipated that some requested activities will be allowed to occur under the plan, but that others will need to be modified or required to incorporate mitigation to reduce potential impacts.
- New or revised "area" and "resource" management plans for the Site aligned and coordinated with the new land-use maps, policies and procedures of the adopted CLUP.

The HRA-EIS Alternatives

Six land-use alternatives (including the No-Action) were developed by the nine Cooperating Agencies and Consulting Tribal Governments using common land-use designations and definitions. With the exception of the No-Action Alternative, each of the six alternatives represents a Tribal, Federal, state, or local agency's Preferred Alternative.

No-Action Alternative. This alternative, developed by DOE in compliance with the *National Environmental Policy Act of 1969* (NEPA), presents the current status of land use at the Hanford Site and represents no change from current land-management processes or intergovernmental relationships with the cooperating agencies. Specific land-use decisions for Hanford would continue to be made under the NEPA process and the Tri-Party agreement, based on the *Hanford Strategic Plan* (Mission Plan) and on a project-by-project basis.

DOE's Preferred Alternative. DOE's Preferred Alternative anticipates multiple uses of Hanford, including anticipated future DOE missions, non-DOE Federal missions, and other public and private-sector land uses. The DOE Preferred Alternative would do the following:

- *for the clean-up mission* – consolidate waste management operations on 50.1 km^2 (20 mi^2) in the Central Plateau of the Site.

- *for the economic development mission* – allow industrial development in the eastern and southern portions of Hanford and increase recreational access to the Columbia River.

- *for the Natural Resource Trustee mission* – expand the existing Saddle Mountain National Wildlife Refuge to include all of the Wahluke Slope (North Slope) of the Site, consistent with the 1994 Hanford Reach EIS and 1996 Hanford Reach Record of Decision; place the Arid Lands Ecology Reserve (ALE Reserve) under USFWS management by permit; and ensure that, where practicable, withdrawn BLM lands are clean enough to support BLM's multiple-use mandate (i.e., mining and grazing).

Alternative One (Natural Resource Trustee). The USFWS's alternative emphasizes a Federal stewardship role for managing the natural resources at Hanford. This alternative considers these resources in a regional context, and would expand the existing Saddle Mountain National Wildlife Refuge to include all of the Wahluke Slope (North Slope), the Riverlands, McGee Ranch, and the ALE Reserve (e.g, all of the Hanford lands north and east of the Columbia River, including the islands, and west of State Highways 24 and 240). The vision of Alternative One is to conserve the Hanford Site shrub-steppe ecosystem and protect the Hanford Reach of the Columbia River.

Alternative Two (Nez Perce Tribe, Environmental Restoration/Waste Management Department). This Nez Perce alternative calls for preservation of natural and cultural resources and traditional Tribal use at the Site. Future DOE missions would be constrained to the Central Plateau, 300 Area, and 400 Area. This alternative reflects Tribal visions and views of Tribal treaty rights and traditional Tribal uses of Hanford lands.

Alternative Three (Cities and Counties). This local governments' alternative is based on the individual planning efforts of local agencies and organizations including Benton County, Franklin County, Grant County, and the City of Richland. Alternative Three recognizes the potential that land use at the Hanford Site has in relation to economic development. Alternative Three would allow dryland (non-irrigated) agricultural and grazing activities, and irrigated agriculture on the Hanford Site. The land-use designations contained in Alternative Three were developed consistent with local availability of infrastructure, nearness of urban areas, soils capabilities, and current use patterns.

Alternative Four (Confederated Tribes of the Umatilla Indian Reservation, CTUIR). This CTUIR alternative calls for preservation of natural resources and areas of religious importance to the CTUIR as well as traditional Tribal uses of Hanford lands, while allowing DOE greater flexibility during the clean-up mission. This alternative reflects Tribal visions and views of Tribal treaty rights and traditional Tribal uses of Hanford lands.

WASHINGTON STATE DEPARTMENT OF ECOLOGY

Protecting the Columbia River:

The Need to Retrieve and Immobilize Hanford's High-Level Radioactive Tank Waste

MARCH 1999

Attachment 3

Written by the Oregon Office of Energy's
Nuclear Safety Division,
under a contract with
the Washington Department of Ecology.

(The cover photo shows the inside of
one of Hanford's high-level
radioactive waste storage tanks.)

Overview

The Columbia River. Lewis and Clark first made it famous in the early 1800s. Native Americans have relied on it for food, water and transportation for more generations than any of us know for certain. It was the last obstacle for homesteaders and pioneers on the Oregon Trail. More recently, its water has been used to irrigate millions of acres of arid land and turn it into productive farmland that helps feed people all around the world. It's a popular recreation destination for boating, camping, windsurfing, fishing and swimming. This mighty river is a symbol of the power and beauty of nature, and of the region and its people.

Radioactive and chemically hazardous wastes at the Hanford Nuclear Site pose a severe risk to the Columbia River.

The Columbia River is also a river at severe risk.

Highly radioactive and chemically hazardous waste from the Hanford Nuclear Site in southeastern Washington state presents a serious, long-term threat to the Columbia River and to Northwest residents. We know that some of the most hazardous waste from Hanford – leaked from aging underground storage tanks – has already reached the groundwater and will eventually reach the river. To protect the environment and people along the Columbia River from further damage, the wastes must be removed from the tanks and immobilized.

> "Hanford's contamination and waste pose an ominous threat to the Columbia River and to the people of both Washington and Oregon. This is very much a public health issue as well as an environmental issue." Letter from Washington Governor Gary Locke to President Clinton, April 1998.

For over 40 years, the U.S. government produced plutonium for nuclear weapons at Hanford. This process generated enormous amounts of radioactive and chemically hazardous wastes. Beginning in 1944, Hanford workers began to store the most hazardous of these wastes in large underground tanks. Hanford's 177 waste storage tanks now hold about 54 million gallons of highly radioactive waste, nearly 60 percent of the nation's total. Sixty seven of these tanks have leaked an estimated one million gallons of waste into the soil.

Although all other federal sites with liquid high-level waste have treatment facilities, the process to remove and immobilize the wastes is barely underway at Hanford. Previous attempts to build treatment facilities have failed, causing at least 10 years in delays. It will take at least 30 more years to immobilize Hanford's waste and will cost billions of dollars. Success will require a national commitment on the scale of the effort to first build the atomic bomb or to put a man on the moon. Citizens of the northwest must hold the federal government to its commitment to remove this environmental threat and convince Congress to provide the funding necessary for this project.

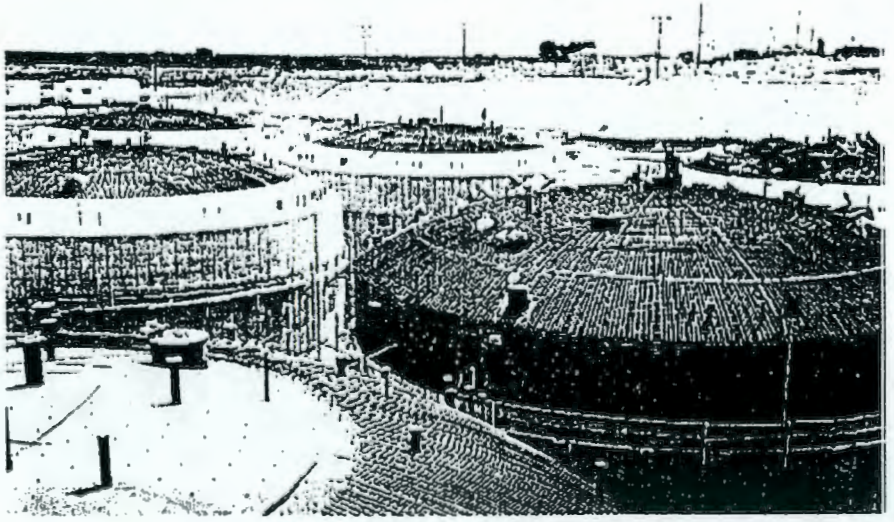
This booklet explains the history of Hanford's tank waste, the leaks and their impact, other tank safety issues, the difficulties associated with removing and treating the waste, and the consequences if the program is not successful.

Background

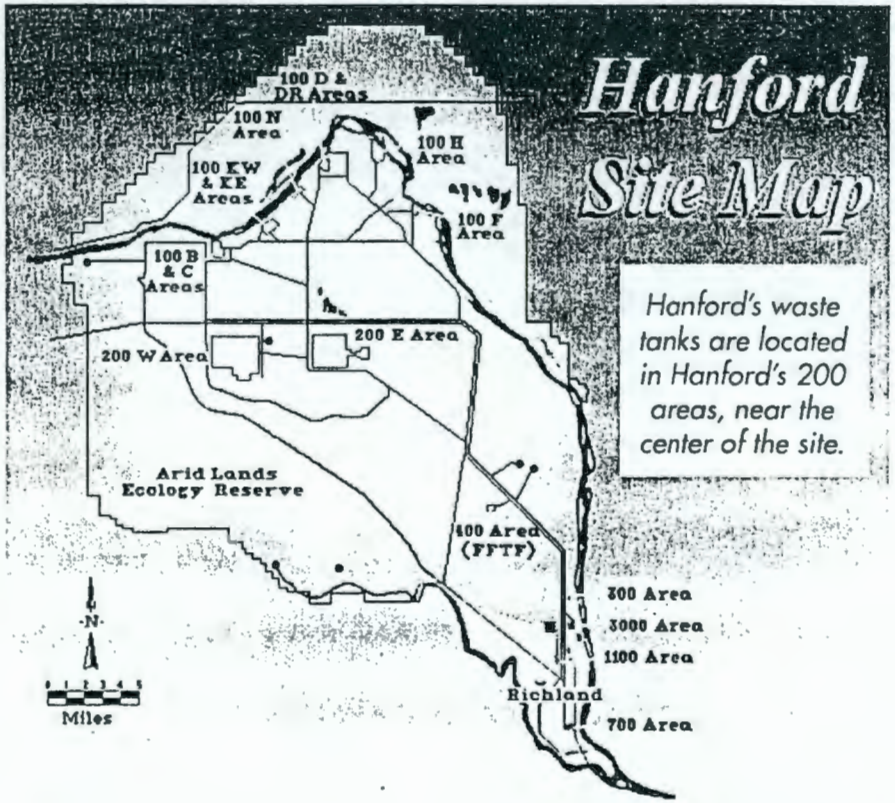
In early 1943, at the height of World War II, the U.S. government selected a remote area of southeastern Washington state as the location to manufacture plutonium for a nuclear bomb. Plutonium is produced when uranium fuel rods are irradiated in a nuclear reactor. The nuclear reactions produce heat and new elements, including plutonium. Eventually, nine nuclear production reactors were built along the banks of the Columbia River at Hanford. Hanford's first nuclear reactor began operation in September 1944.

A series of chemical processes are used to separate the plutonium from the other elements. This process began at Hanford in late December 1944. The uranium fuel was put into large tanks where nitric acid and other chemicals dissolved the fuel. Other chemical processes separated the plutonium from the other radioactive materials.

The chemical separations process created most of the high-level wastes which are



Hanford storage tanks under construction



stored in Hanford's underground tanks. These separation activities all occurred in Hanford's 200 East and 200 West areas, located near the middle of the site. The tanks are also in the 200 areas – clustered in groups of two to 16 tanks and referred to as tank farms. Underground pipes connect the tanks to other tanks, to other tank farms, and link the 200 East and West areas.

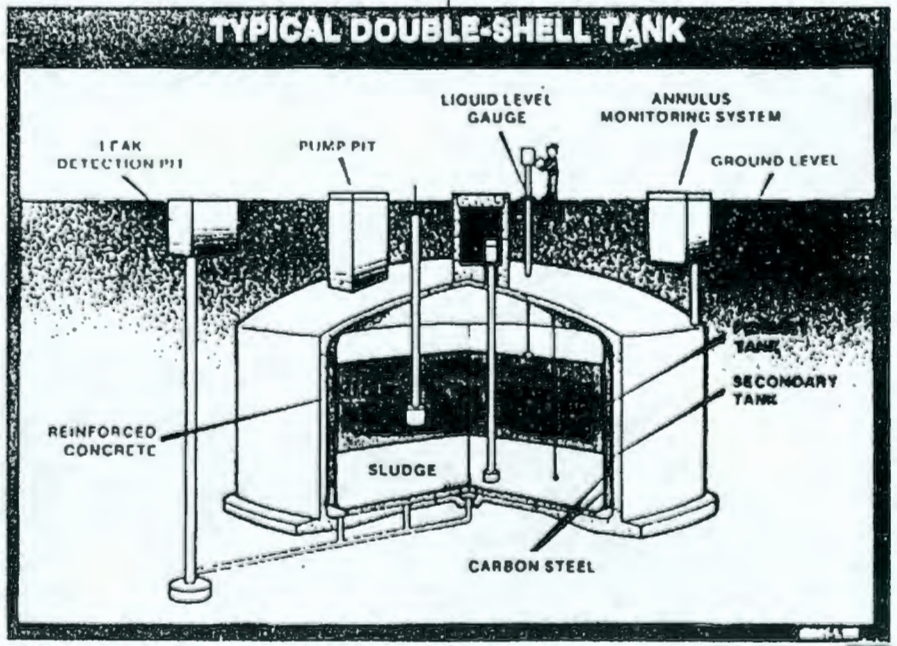
Much of the waste created in the chemical separation process had low levels of radioactivity. This waste was discharged directly to the soil. Other portions of the waste were highly radioactive and were mostly placed into the underground tanks.

Sixty four waste storage tanks were built during World War II to support the chemical separation operations. Forty eight of the tanks were 530,000 gallons in size. The remaining sixteen were much smaller, and hold 55,000 gallons of waste.

Following World War II, as the United States and the Soviet Union fought the Cold War, Hanford went through several expansions. Each expansion resulted in the construction of additional underground storage tanks. By 1964, Hanford had 149 underground storage tanks in 12 tank farms. The newer tanks were larger – 758,000 and 1,000,000 gallons in size.

"The federal government's commitments to treating Hanford's tank waste have consistently been unfulfilled – treatment has always been delayed. Risk assessments have shown that both a catastrophic tank failure and continued leaking pose unacceptably grave risks to the Northwest's citizens, the environment, and agricultural economy. Delays only increase these risks." Hanford Advisory Board position expressed to DOE Secretary Peña and members of Congress, February 1998.

By the late 1950s, Hanford officials realized that some of the tanks, which were designed to be used only 10 to 20 years, had leaked. Eventually, to try and prevent future leaks, tanks with a double-shell containment were designed and built, beginning in the late 1960s. A total of 28 double shell tanks were built, mostly in the 200 East area. The newest of



these tanks have 50 year design lives.

The wastes placed in Hanford's underground tanks contain organic chemicals and solvents, radioactive materials (mostly cesium and strontium, along with uranium, plutonium, technetium and other elements) and miscellaneous wastes. Before the waste was pumped into the tanks, sodium hydroxide was added to neutralize acidic liquids. Otherwise, the acid would have quickly corroded the tanks.

Hanford's single shell tanks are cylindrical reinforced concrete structures with inner carbon steel liners just one-quarter to three-eighths of an inch thick. The domes of the tanks are made of concrete and do not include a steel liner. The smallest tanks are about 26 feet deep and 20 feet in diameter. The largest tanks are about 45 feet deep and 75 feet across.

The double shell tanks have two steel liners (with a single liner in the dome) and are reinforced by a concrete shell. All the tanks are covered with about 10 feet of soil and gravel.

There are also some smaller miscellaneous underground storage tanks at Hanford, ranging up to several tens of thousands of gallons in size.

Hanford's Waste Storage Tanks

200 East Area
- -11 tank farms, 66 single shell tanks, 25 double shell tanks.

200 West Area
- -7 tank farms, 83 single shell tanks, 3 double shell tanks

Single shell tanks
- 16 have a capacity of 55,000 gallons
- 60 have a capacity of 530,000 gallons
- 48 have a capacity of 758,000 gallons
- 25 have a capacity of 1,000,000 gallons

Double shell tanks
- 4 have a capacity of 1,000,000 gallons
- 24 have a capacity of 1,160,000 gallons

Tank Space Issues

Throughout its operating history, Hanford was plagued by a lack of sufficient tank space. By late 1946, half of the 64 tanks built during World War II were full and the others were nearly half full. Three primary methods were used over the next 40 years to free up or create tank space: dumping waste into the soil, evaporating liquids and building new tanks.

In the mid 1950s, ferrocyanide and other chemicals were added to some tanks in an effort to remove the radioactive elements cesium and strontium from the waste. The remaining waste was then presumably low enough in radioactivity to allow its discharge to the soil. This process was used to free up some tank space but would later result in serious safety concerns (see Section 5 on Watch List tanks).

Some tank space became available through a "cascade" process. Some of the tanks were built in cascades of three or four tanks. These tanks were connected with piping at different levels. When one tank filled to the level of the pipe, waste would flow through the pipe to the next tank. Since the solids, including much of the strontium and plutonium, would generally settle to the bottom, the waste that went to the next tank had less radioactivity. Liquid from tanks at the end of the cascade was then dumped into the soil.

At times the tank space needs were so critical that high-level waste was disposed directly to the soil. The initial belief was that the radioactive materials would attach to the soil particles and move very slowly, if at all. That didn't prove to be the case. Direct releases were recommended at Hanford only in emergency situations.

In 1951, Hanford's first two evaporators began operation. Liquid wastes were pumped to steam-heated pot-like evaporators. As the water boiled off, it left highly concentrated liquids containing solid salt crystals. Evaporated water was condensed and processed to remove contamination, then discharged to the soil. The concentrated waste was then pumped back into the tanks,

vhere the salt crystals settled o the bottom and formed a saltcake. Some of this concen- rated waste was also dis- charged to the ground.

Larger and more efficient evaporators began operations n the mid-1970s. Between 1950 and 1995, about 203 million gallons of liquids were evapo- rated from Hanford's tank waste.

Hanford's tanks currently contain about 54 million gallons of waste. The double shell tanks contain 18.6 million gallons of waste, mostly liquid. The double shell tanks total 31 million gallons n size, but not all of that space can be used. For example, because of safety issues associ- ated with some tanks (see Section 5 on Watch List Tanks) no waste can be added to them. As a result, there is only about six million gallons of usable space available in the double shell tanks.

Some new waste is still being created through the cleanup of some of Hanford's facilities and is added to the tanks. Also, a variety of mainte- nance activities, such as the flushing of pipelines to prevent them from plugging, can create new waste.

Even with these efforts to reduce tank waste volume, it still became necessary to add more tanks. As mentioned earlier, by 1964, Hanford had 149 underground tanks. The 28 double shell tanks were put into service between 1971 and 1986.

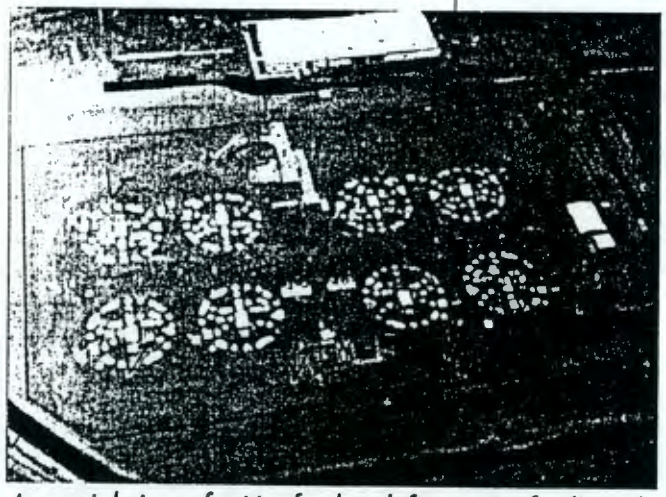
In the early 1990s, it was believed six new double shell tanks were needed (at an estimated cost of about $435 million). An independent analysis conducted for the Hanford Advisory Board – a group of 32 varied interests advising the U.S. Depart- ment of Energy (DOE) and state and federal regulating agen- cies on Hanford cleanup – determined that additional tanks were not needed now. DOE eventually agreed.

"What we have is a slow-motion disaster." Dirk Dunning, Oregon Office of Energy. (Tri-City Herald, August 30, 1998).

However, unless treatment plants are soon built, Hanford will need more storage tanks. History has shown us that building new tanks is not the long-term solution – it simply creates an even greater legacy of wastes to be dealt with in the future. This expensive, danger- ous and wasteful cycle must end.

Tank Leaks

Hanford's first tanks were built in 1944. They were expected to last from 10-20 years. Within that time period – in 1956 – the first leak was suspected. The leak, an estimated 55,000 gallons from tank U-104, was confirmed in 1959. By the late 1950s to early 1960s, several tanks were confirmed leakers. The largest known Hanford tank leak was 115,000 gallons in 1973. Despite other con- firmed tank leaks in the follow- ing years, it was not until November 1980 that a ban on adding new waste to the single shell tanks was put in place.



An aerial view of a Hanford tank farm. Hanford's tanks are buried under a minimum six feet of dirt, which provides a radiation barrier for tank farm workers.

Tank leaks are discovered through one of three methods – monitoring wells, leak detec- tion systems and drops in the waste level in the tanks. None of the methods has proven completely reliable.

There are two types of monitoring wells – those that reach to the groundwa- ter, and those – called drywells – which do not. There are more than 760 drywells lo- cated around the single shell tanks. The detection of radioactivity in a drywell can indicate a leak from a tank. However, the waste must move laterally away from the tanks

to reach a drywell, otherwise a leak may go undetected. It has only been in the past year and a half that tank waste has been detected in the groundwater monitoring wells.

Waste levels in the tanks can fluctuate for a variety of reasons. In 1997 and 1998, DOE determined that changes in the atmospheric pressure sometimes resulted in fluctuations in tank waste levels. In other cases, tank leaks have been detected because of drops in the levels.

In all, 67 single shell tanks have been declared or suspected of leaking. Some tanks have leaked more than once. The total amount of waste leaked is estimated at 750,000 to 1,050,000 gallons of high-level waste and continues to rise as more information is gathered about the tank leaks. As long as waste remains in the tanks, leaks to the ground will occur. Some of that waste will reach groundwater within 10-20 years, and then travel towards the Columbia River.

To reduce the threat of tank leaks, DOE, which owns the site, began to pump as much liquid as possible from the single shell tanks, and move it into the double shell tanks. This process is called interim stabilization. A tank is considered interim stabilized when it contains less than 50,000 gallons of drainable liquid and less than 5,000 gallons of liquid floating on top of the waste.

> "We have been assured for many years that contaminants from the tanks were trapped in the soils beneath the tanks and were not traveling downward to the groundwater. This new information concerns us...(The) long term risk has escalated. The data shows that time is not on our side. We need to quickly retrieve and treat all the tank waste." Former Ecology Director Mary Riveland. (Tri-City Herald, February 20, 1996).

Currently, 119 tanks have been interim stabilized, including 64 leakers. Twenty nine tanks remain to be interim stabilized.

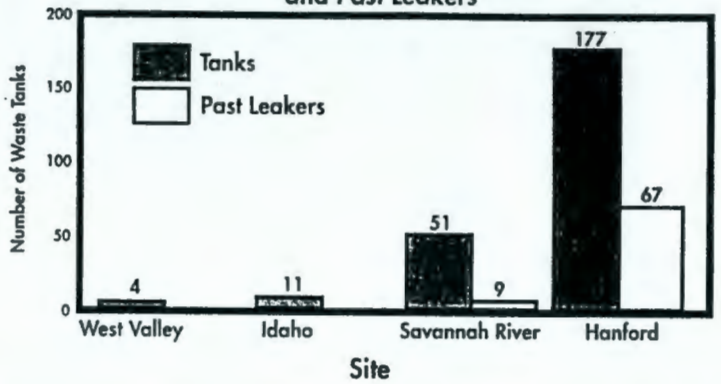
In 1989, DOE signed a cleanup agreement with the State of Washington and the U.S. Environmental Protection Agency. The Hanford Federal Facility Agreement and Consent Order (Consent Order), often called the Tri-Party Agreement, contains cleanup schedules called milestones. The Consent Order contains several milestones – which are legal obligations – related to interim stabilization of the single shell tanks. In September 1997, DOE missed a milestone to begin interim stabilization of six tanks. Another milestone to begin pumping eight tanks by March 1998 was also missed. The Washington Department of Ecology denied DOE's requests for a new schedule, and in June 1998, Governor Gary Locke and Attorney General Christine Gregoire announced their intent to sue DOE. This was eventually resolved in October 1998 and a new schedule was agreed to by both parties in March 1999 in a Consent Decree.

One of the biggest concerns and unknowns is the fate of the wastes once they have leaked from the tanks. For years, DOE and its contractors insisted that the leaked tank waste had not reached the groundwater, despite concerns by others that this was the case. In February 1996, new tests showed cesium leaking from the tanks had gone deeper in the soil than had been thought. Cesium was detected in dry wells 125 feet below the surface, just 85 feet above groundwater. Earlier predictions were that cesium would attach to the soil and move very little, if at all.

In November 1997, DOE confirmed that waste from the tanks had reached groundwater from five tank farms. Two months later, it was determined that waste from three other tank farms had also reached the groundwater.

The fact that leaked tank wastes have traveled faster than earlier predictions means an escalation of the risk to human health and the environment, and an added urgency to remove the waste from the tanks as soon as possible.

Waste Tanks by DOE Site and Past Leakers



Watch List Tanks

In 1989 and into the early 1990s, a series of concerns were raised about the potential for wastes in some of Hanford's tanks to ignite or explode. It was feared that an explosion or fire inside a tank could cause the dome to collapse and provide an outlet for radioactive materials to reach the environment.

By mid-1990, concern about these and other safety issues prompted a number of expert studies to assess the immediate threat. Most of the assessments indicated that the chance of a fire or explosion in a tank was possible, but not imminent.

Congressman (now Senator) Ron Wyden of Oregon successfully proposed legislation that created a "Watch List" of tanks. Tanks on the Watch List require special safety precautions because of the potential for release of high level radioactive waste through a fire or explosion. The Watch List was created in January 1991. There were four issues of concern: hydrogen, ferrocyanide, organics and high heat.

- hydrogen is generated through chemical reactions in the tank waste. At certain concentrations, hydrogen is flammable. At higher concentrations it is explosive.
- about 350 tons of ferrocyanide were added to two dozen tanks in the early 1950s to separate cesium and strontium from the waste. Under high temperatures and at certain concentrations, ferrocyanide can explode.
- more than five million pounds of organic chemicals were added to the tanks, mainly as a result of efforts to remove strontium from the wastes. At certain concentrations and at certain temperatures, organics can ignite.
- radioactive decay in the waste can create temperatures great enough to cause the waste to boil. If the tank were to leak, adding

cooling water would increase leakage to the soil. If cooling water was not added, the waste could heat enough to cause structural damage to the tank, possibly leading to a large release to the environment.

The original Watch List had 23 tanks listed for ferrocyanide, 23 for hydrogen, eight for organic and just one for high heat, tank C-106. In all, 52 tanks (47 single shell and five double shell) were on the initial Watch List. Some tanks were on more than one list. A few additional tanks were added to the Watch List later in 1991, in 1992, 1993 and 1994. No tanks have been added to the Watch List since May 1994.

"Every year waste remains in Hanford's tanks increases the risks of catastrophic releases, including explosions or leaks that will eventually poison the Columbia River."
Gerald Pollet, Heart of America Northwest.

Many of the tank safety issues have since been resolved, and the number of Watch List tanks has gradually been reduced. DOE closed out ferrocyanide as a safety issue in September 1996 after determining that the concentrations of ferrocyanide were too low for a credible accident to occur. In December 1998 DOE closed the safety issue related to organic complexants.

The Watch List now contains 28 tanks.

The most notorious of the Watch List tanks was SY-101, located in the 200 West area. Chemical reactions in the waste create hydrogen, which was trapped in the solids at the bottom of the tank. When enough hydrogen was generated, it forced its way through the solids into the open head space of the tank. The concern was that during these hydrogen "ventings," which came to be known as tank "burps," the hydrogen concentration would be high enough to burn or explode if there was a spark inside the tank. These ventings occurred every 100 days or so.

In July 1993, a giant circulation pump was installed in SY-101. The 64 foot tall, 19,000 pound pump circulates liquid waste from the tank's upper layer to the bottom where jet nozzles discharge the fluid. There is still hydrogen generated in the waste, but for several years it vented in small steady releases, rather than in large infrequent releases.

Recently, the crust in SY-101 has grown over 20 inches in thickness. Hanford workers and regulators have been unable to verify the reason. These repeated problems clearly demonstrate that indefinite storage in Hanford's tanks is not an option.

In addition to the Watch List categories, there have also been concerns about whether the plutonium in any tank was concentrated enough to create a criticality (a self-sustaining nuclear chain reaction). No tank is believed to have that level of concentration.

Although most of the immediate tank safety issues have been resolved, the only way to successfully resolve the threat of tank leaks is to remove all waste from the tanks.

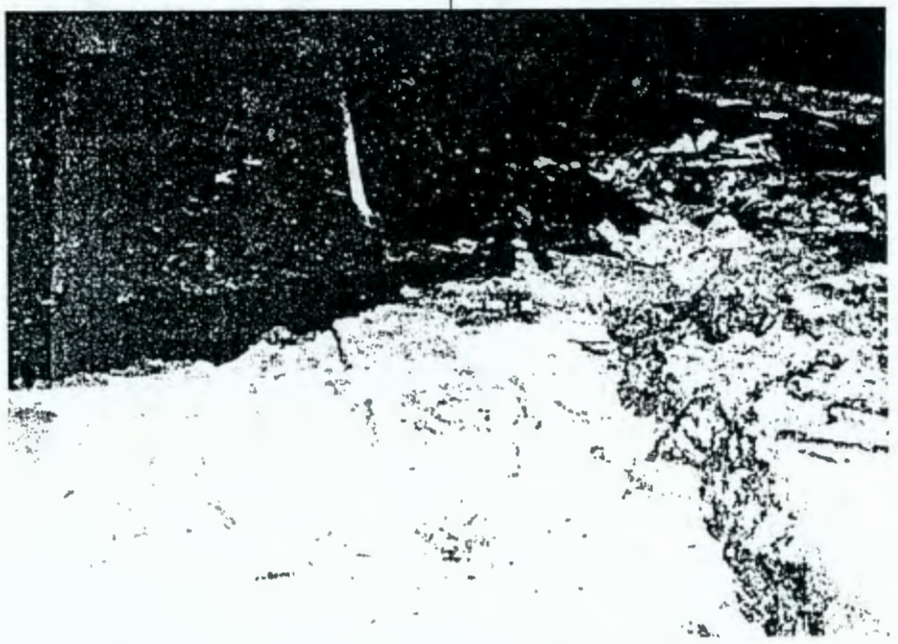


Photo from inside Tank SY-101

The Threat

Most people familiar with Hanford's tanks agree there are two kinds of tanks at Hanford – those that leak and those that will leak. All of the 149 single shell tanks are beyond their design life. Some are suspected to have little structural integrity left. The double shell tanks have yet to leak, but it is only a matter of time before they do. The degradation of the tanks will only continue.

Further releases to the ground, groundwater and the Columbia River are the inevitable result of tank failure. The contamination already in the groundwater could reach the Columbia River in as little as 20 years and continue for the next 5,000 years.

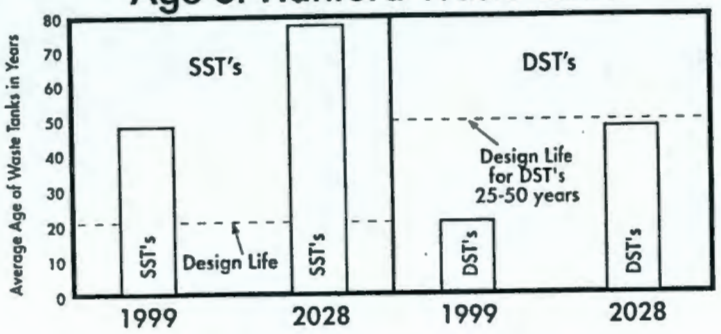
Past leaks, although significant on their own, represent only a small percentage of the waste still remaining in the tanks. The greatest opportunity to reduce this risk is now, while the waste is still somewhat contained. It will be much more difficult – perhaps impossible – and certainly much more expensive, to remove waste leaked into the soil and groundwater.

> "The health, environmental and economic consequences of the tank waste treatment and disposal program are extreme." Hanford Advisory Board advice to DOE, the U.S. Environmental Protection Agency and the Washington Department of Ecology, December 4, 1998.

The tank waste cannot be removed and immobilized without treatment facilities. Without these facilities:

- waste in the double shell tanks cannot be removed and they will eventually fill and begin to fail
- the single shell tanks will continue to fail
- contamination to groundwater and the Columbia River will increase
- catastrophic risks from infrastructure failure and explosion will increase

Age of Hanford Waste Tanks



The Tri-Party Agreement call for tank waste processing to be complete by 2028

The environmental consequences and economic risks of continued tank leaks are great. We can't risk the ecological health of the Columbia River on the hope that the waste will be slowed sufficiently by the soil or that it won't reach the river in concentrations that cannot easily be diluted. If the waste is not removed from the tanks, we know it will, at some point, reach the Columbia River. We cannot accurately predict when the waste will reach the river, or in what concentrations, just that it will eventually get there and that it will likely have significant effects on the groundwater, the Columbia River, other ecological resources, and on downriver users. Aside from the environmental damage and health risk, the perception of the river being contaminated could devastate the market for northwest agricultural products.

In addition to the threat posed by leaking wastes, we can't yet rule out the possibility of a tank explosion or a dome (the roof of a tank) collapsing. Although the risk of a tank explosion appears considerably less than in the early 1990s, when some of these risks were first identified, not all tank safety issues have been resolved. In addition, the risk of a dome collapse increases with time, as the tanks age and deteriorate. Either event could result in a release of radioactive materials to the air, posing a threat to human health and the environment, and an almost certain impact on marketing agricultural products grown in the region.

Previous plans to treat Hanford's tank wastes have failed. The citizens of the Northwest cannot afford another failure. There is simply too much at stake.

Treatment Plans

When the original Consent Order was signed in May 1989, it contained a schedule for construction and operation of a vitrification plant to immobilize Hanford's tank waste. This facility was scheduled to be operational in 1999, but after continual delays and lack of funding, was cancelled in 1993.

This was not the first time that immobilizing Hanford's tank waste had been considered. In 1958, the Atomic Energy Commission (a DOE predecessor), considered a plan to convert Hanford's B Plant into a facility capable of turning high level liquids into a solid ceramic. Unfortunately, that plan was not followed, again primarily because of funding concerns.

In 1994, DOE began to pursue a strategy of privatization for the tank waste treatment program, where a private company would pay all up-front design, construction and operating costs. The company would then get paid when they have turned waste into glass.

In September 1996, DOE entered into contracts with two contractor teams, one led by BNFL, Inc. and the other by Lockheed Martin Advanced Environmental Systems (LMAES). At that time, the contract was structured into two parts. Part A, planned for 20 months and ending in mid-1998, was to evaluate each company's technical, operational, regulatory, business and financial proposals. During Part B, planned for 10-14 years, the contractors would finance, design, construct, operate, and deactivate the waste treatment plants as a demonstration of the technology. Not all of the waste would be treated during Part B. This work would be done on a fixed-price basis. It was believed that the competition would help keep the price down.

In May 1998, DOE determined that the approach by LMAES had an unacceptably high technical risk and only BNFL was allowed to move forward with the design portion of the contract. In July 1998, DOE reached a tentative contract agreement with BNFL.

The agreement required major changes in both the project cost and schedule.

The estimated cost of $6.9 billion in 1997 dollars to treat 10 percent of the tank waste is an increase over earlier estimates. Start-up of some facilities is also pushed back by a few years. However, the facilities would be designed to operate for up to 30 years instead of as simply part of a five to nine year demonstration. The facility designs allow expansion of the plants' capacities at a later date, enough to eventually treat all the Hanford tank waste.

"We're putting at risk the Columbia River. The vitrification plant is not some hypothetical it-would-be-nice. It is, in fact, a necessity for us to move forward." Washington Attorney General Christine Gregoire. (Tri-City Herald, April 24, 1998).

The wastes will first be treated to separate the high-activity waste from the low-activity waste (waste which contains smaller amounts of radioactivity in large volumes of materials, but which still poses a hazard). Most of the waste will be low-activity. Through a process called vitrification, the high-activity waste will be converted to a glass-like material, then poured into steel containers to harden. These containers will be stored at Hanford until a national high-level waste repository is constructed. The low-activity waste will also be vitrified through a similar process. The low-activity waste will be permanently buried at the Hanford Site. By changing the waste into a solid form, the material will still be radioactive, but will no longer be mobile and able to enter the environment through the soil or groundwater.

BNFL has two years to develop the design, arrange financing, and determine a final cost. If DOE agrees with that plan and the price, BNFL would then vitrify 10 percent of Hanford's tank wastes by 2018. The waste would come from 11 tanks and includes some of the highest safety-risk tanks at Hanford. Construction of both a pre-treatment facility and a high-activity waste vitrification facility would begin in mid-2001. The pre-treatment facility would begin operations between August 2005 and April 2006. The high-activity waste vitrification facility would begin operation between February 2006 and February 2007. The low-activity vitrification facility would begin operation between January 2007 and January 2008.

Tank Waste Characterization

Hanford's tank wastes are chemically complex and varied. Through the years, several different chemical processes were used, different materials were added to various tanks for a variety of reasons, and waste was transferred from tank to tank.

As a result, the waste in any particular tank is likely to be different – and perhaps very different – from that of any other tank. This makes the process of treating and immobilizing the waste that much more difficult.

For effective treatment, the chemistry of the waste must be well understood. The presence of some metals in the waste or other irregularities could interfere with the formation and durability of the final glass. In addition, the hazardous constituents in the waste must be understood so that treatment can be designed to meet regulatory standards.

"Those of us that draw our drinking water from the Columbia River don't believe we have...years to lose. We want to see a vitification plant built as soon as possible." Pam Brown, on behalf of the Hanford communities at a Hanford Advisory Board meeting, September 10, 1998.

To understand the chemistry of the tank waste, samples are needed from the tanks. This is a complex undertaking. The materials in the tanks not only are different chemically, but they are also very different in consistency.

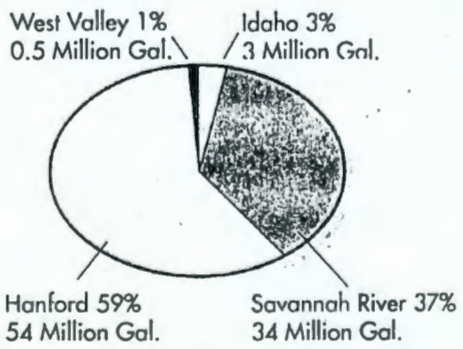
Sludge collects at the bottom of the tanks. It contains chemicals and radioactive materials that settled to the bottom. Sludges have a consistency ranging from peanut butter to cement. On top of the sludge is often a layer of saltcake, which is a moist but somewhat solid material made of water-soluble chemicals. Slurry in the tanks is a mixture of solid particles suspended in a liquid. It can be similar to a thick paste.

The liquids in the tanks are referred to as either interstitial or supernatant. The supernatant liquid generally floats on top of the slurry or saltcake. The interstitial liquid fills the spaces within the solid wastes and often is not easily pumped. Vapor fills the top of each tank. About half of the supernatant liquid has been pumped from the single shell tanks. As a result, what is left after the liquids are pumped is a combination of sludge and saltcake with some interstitial liquids.

This variety of waste types adds to the difficulties of taking and analyzing samples that are representative of a single tank or group of tanks. The presence of the solids means the tank wastes don't fully mix, and a sample from one side of a tank may not be representative of waste on the other side of a tank.

Characterization of the tank waste will continue into the future to support safety, retrieval, treatment and regulatory needs.

Hanford has more than half of DOE's high-level liquid wastes.



Tank Waste Retrieval

Getting the waste out of the tanks and to the treatment plants poses its own challenges. Because of the condition of the tanks, there is concern that the waste retrieval methods will result in extensive leaks and more waste entering the soil and the groundwater.

It should be possible to pump the liquids and slurry without too much difficulty, although the consistency of the waste could change during pumping and plug the pipes. Because the first phase of treatment will take waste from nine double-shell tanks (mostly liquid) and only two single-shell tanks, waste retrieval should not pose significant challenges in meeting BNFL's schedule of treating 10 percent of Hanford's waste by 2018.

"Despite years of monitoring and hundreds of boreholes into the vadose zone and the groundwater beneath the zone, DOE has a poor understanding of the extent of contamination in the vadose zone and whether the contamination is migrating." Letter from Ohio Senator John Glenn and Oregon Senator Ron Wyden to Congress' General Accounting Office (Tri-City Herald, July 17, 1997).

The saltcake and sludge will eventually present significant challenges, especially in the tanks that have leaked. Hydraulic sluicing is strongly being considered to remove most of the hard saltcake and sludge. With sluicing, high-velocity streams of water will break the waste apart, and allow it to be pumped from the tanks. This process could severely damage the tanks and result in extensive leaks into the soil. Sluicing will require additional water to be added to the tanks. Solid wastes were successfully transferred between two Hanford tanks in early March 1999, as part of a demonstration of retrieval methods.

There is some consideration about installing some type of barriers around the single shell tanks to prevent leaks caused by sluicing. A variety of different barrier forms are being considered – including cement and cryogenics (freezing a layer of the soil). However, it's not certain how effective these technologies would be.

Other technologies, including robotic arms, are also being explored to retrieve waste while reducing the amount of water that would need to be added to the tanks.

One concern is that the contamination around the tanks is not well enough understood now to effectively judge the risks posed by past leaks. Without that knowledge, it is not possible to accurately predict the added risk to the environment that could occur from additional waste entering the soil as a result of the sluicing or other waste removal techniques. Efforts are now beginning to better determine the extent and spread of contamination in the vadose zone, which is the area of soil between the surface and the groundwater.

Tank Closure

Once the vitrification process is completed, and most of the waste is removed from the tanks and immobilized, there is still the question of what to do with whatever waste could not be removed from the tanks (called the "heel"), the tanks themselves, the underground piping, and the contaminated soil beneath the tanks. These decisions will need to be made at some point in the future. A number of options have received some study. For example, the empty tanks could be filled with cement or sand to keep them from collapsing, all pipes sealed, and a barrier of some type installed over the tanks to prevent intrusion and to reduce contact with water. A better understanding of the contamination levels in the vadose zone and the resultant risk is needed to help guide the decisions about final closure of the tanks.

"Protecting the Columbia River from the threat posed by Hanford's radioactive tank waste is one of the Department of Energy's highest priorities. Cleaning up these wastes is one of the most urgent and complex problems faced by the Department." DOE statement, February 1999.

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Public Involvement Calendar

Listings in "italics" indicate public involvement activities sponsored by other organizations that relate to Hanford issues

Contact to provide input/update information:
Nancy B. Myers
Bechtel Hanford, Inc.
372-9059

Revised - 04/27/99

January

Sun	*Mon*	*Tue*	*Wed*	*Thu*	*Fri*	*Sat*
					1	2
3	4	5	6	7	8	9
10	11	12	13 HS&WM Comm. Mtg. (Tri-Cities)	14 ER Comm. Mtg. (Richland) Ad Hoc Meeting on TWRS Privatization (Richland) Public comment period ends on 200 Area Implementation Plan U.S. Fish & Wildlife public meeting (afternoon and evening at Tower Inn)	15 $ & Sense Comm. Mtg. (Tri-Cities)	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

1999

February

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1 GW/VZ Expert Panel Meetings (Richland)	2 GW/VZ Expert Panel Meetings (Richland)	3 GW/VZ Expert Panel Meetings (Richland)	4	5	6
7	8	9	10 HAB New Member Orientation (afternoon) 100 Area Workshop (7:00-9:00pm, Cavanaugh's)	11 PFP Tutorial Workshop Hanford Advisory Board (Kennewick, Cavanaugh's)	12 Hanford Advisory Board (Kennewick, Cavanaugh's)	13
14	15	16 PUBLIC COMMENT 2/16-4/1: Initial Single-Shell Tank Waste Management Area Corrective Actions, Characterization, Integration, and Associated Groundwater & Vadose Zone Activities	17 HS&WM Comm. Mtg. (Tri-Cities)	18 ER Comm. Mtg. (Richland)	19	20
21	22	23	24	25 Budget Workshop/Public Meeting (1:00 – 6:00pm) – Richland	26 $ & Sense Comm. Mtg. (Richland)	27
28						

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March

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1 PUBLIC COMMENT 2/16-4/1: Initial SST Waste Management Area Corrective Actions, Characterization, Integration, and Associated GW/VZ Activities	**2**	**3** PUBLIC COMMENT 3/3-5/3: DOE's High-Level Radioactive Waste Tank Interim Stabilization Program and Consent Decree	**4** $ & Sense Comm. Mtg. (Richland)	**5**	**6**
7	**8**	**9** Budget Discussion Group – Portland (4:00-6:30pm - Oregon State Office Bldg.) Budget Public Meeting – Portland (7:00-9:00pm - Oregon State Office Bldg.)	**10** Budget Meeting-Seattle (7:00-10:00pm, Seattle Center, Olympic Room) HS&WM Comm. Mtg. (Tri-Cities)	**11** ▪ ER Comm. Mtg.- Richland (8:00-4:00pm, Bechtel Bldg., Assembly Room) ▪ Budget Workshop – Spokane (6:30-8:30pm – Spokane Downtown City Library, Conf Room 1A)	**12** TWRS Ad Hoc Committee Meeting (Richland)	**13**
14	**15**	**16**	**17**	**18**	**19**	**20**
21	**22** Field Investigations and Data Gathering Sub-Panel meeting of the GW/VZ Integration Project Expert Panel (8:00-4:00; Bechtel Bldg., Richland)	**23** ▪ Field Investigations and Data Gathering Sub-Panel meeting of the GW/VZ Integration Project Expert Panel (8:00-4:00; Bechtel Bldg., Richland) ▪ DOE Regulatory Unit meeting with BNFL, March Topical meeting (1:00-5:00, Fed Bldg-147, Richland)	**24** ▪ Peer Review Process Sub-Panel meeting of the GW/VZ Integration Project Expert Panel (8:00-4:00pm, Bechtel Bldg., Richland) ▪ TPA Quarterly Public Involvement Planning Mtg. & Public Involvement Committee Mtg. –Richland (1:00-5:00pm – Tower Inn) ▪ TPA Public Forum on Hanford's Tank Waste Treatment Contract (7:00-8:30pm, Tower Inn, Lewis/Clark Room, Richland)	**25** ▪ Hanford Advisory Board –Richland (Tower Inn) ▪ Informational Session on the Path Forward for Removing the Liquids Out of the Single-shell Tanks (Consent Decree) (7:00-9:00pm, Tower Inn, Whitman/McNary Rooms, Richland)	**26** Hanford Advisory Board – Richland (Tower Inn)	**27**
28	**29**	**30** Oregon Hanford Waste Board - Ontario, OR	**31** Oregon Hanford Waste Board – Ontrario, OR			

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April

Sun	*Mon*	*Tue*	*Wed*	*Thu*	*Fri*	*Sat*
				1 PUBLIC COMMENT 3/3-5/3: DOE's High-Level Radioactive Waste Tank Interim Stabilization Program and Consent Decree	**2**	**3**
4	**5**	**6**	**7**	**8** Openness Workshop (9:00-4:30pm, FB Room 147, Richland)	**9** Openness Workshop (9:00-4:30pm, FB Room 147, Richland)	**10**
11	**12**	**13** $ and Sense Comm. Mtg. (Portland Airport, Portland, OR)	**14** HS&WM Comm. Mtg. (Portland Airport, Portland, OR)	**15** ER Comm. Mtg. (Bechtel Bldg, Richland) **Budget submittal to DOE-HQ**	**16**	**17**
18	**19**	**20**	**21**	**22**	**23** PUBLIC COMMENT: 4/23-6/7 Revised Draft HRA EIS Comprehensive Land Use Plan	**24**
25	**26** PUBLIC COMMENT: 4/26-6/8 Proposed Change to TPA Milestone for 324 Bldg. Radiochemical Engineering Cells	**27** ▪ DOE Regulatory Unit Mtg with BNFL, April Topical Meeting (1:00-5:00pm, FB 147, Richland) ▪ *TPA Quarterly Milestone Rev - 9:00am/ IAMIT – 1:00pm - EPA*	**28** Oregon/DOE Bi-Monthly Meeting – Richland	**29** GW/VZ System Assessment Capability Workshop – 9:00-5:00, Bechtel Bldg., Richland, WA	**30** GW/VZ Expert Panel Risk Sub-Panel - 8:00-4:00; Bechtel Bldg., Richland, WA	

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May

Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1
2	3 PUBLIC COMMENT 3/3-5/3: DOE's High-Level Radioactive Waste Tank Interim Stabilization Program and Consent Decree	4 TechCon/ITRD Forum on Reducing Surface Infiltration Around the Hanford Tanks (Conference Center, Richland)	5 TechCon/ITRD Forum on Reducing Surface Infiltration Around the Hanford Tanks (Conference Center, Richland)	6 TechCon/ITRD Forum on Reducing Surface Infiltration Around the Hanford Tanks (Conference Center, Richland)	7	8
9	10 Tank Waste Treatment Ad Hoc Committee Mtg. (Fed Bldg, Room 147)	11 $ and Sense Comm. Mtg. - Richland	12 ▪ HS&WM Comm. Mtg. –Richland (Fed. Bldg, Room 147) ▪ Public Meeting – M-45 & M-41 Milestones, Hood River , OR (7-9) ▪ *Inter-tribal Council on Health Projects (ICHP) – Pendleton, OR*	13 ▪ ER Comm. Mtg. – Richland (Bechtel Bldg.) ▪ GW/VZ Integration Project Expert Panel – Richland (Bechtel Bldg) ▪ *Hanford Health Effect Subcommittee (HHES) – Pendleton* ▪ *Hanford Natural Resources Trustee Council, Richland (Bechtel Bldg.)*	14 ▪ GW/VZ Integration Project Expert Panel – Richland(Bechtel Bldg) ▪ *Hanford Health Effect Subcommittee (HHES) – Pendleton* ▪ *Hanford Natural Resources Trustee Council, Richland (Bechtel Bldg.)*	15 ▪ GW/VZ Integration Project Expert Panel – Richland (Bechtel Bldg) ▪ PUBLIC COMMENT: 5/15-6/28: K Basins Interim Remedial Action
16	17	18 Public Hearing - HRA EIS Comp. Land Use Plan, 6:00pm, State Office Bldg., Portland, OR	19	20 ▪ SSAB Transportation Workshop, Fernald, OH ▪ Public Hearing - HRA EIS Comp. Land Use Plan, 7:00 Shilo Inn, Richland	21 SSAB Transportation Workshop, Fernald, OH	22 SSAB Transportation Workshop, Fernald, OH
23 SSAB Transportation Workshop, Fernald, Ohio	24	25 DOE Regulatory Mtg. with BNFL – May Topical Mtg. (Fed. Bldg. Room 147, 1-5pm)	26	27	28	29
30	31					

1999

June

Sun	*Mon*	*Tue*	*Wed*	*Thu*	*Fri*	*Sat*
		1	2 Openness Workshop-Spokane, WA, (9-4:30)	3 ▪ Hanford Advisory Board-Spokane, WA (Ridpath Hotel) ▪ Public Hearing - HRA EIS Comp. Land Use Plan (6:00pm, Ridpath, Spokane)	4 Hanford Advisory Board-Spokane, WA (Ridpath Hotel)	5
6	7 PUBLIC COMMENT: 4/23-6/7 Revised Draft HRA EIS Comprehensive Land Use Plan	8 ▪ $ and Sense Comm. Mtg. – Richland ▪ PUBLIC COMMENT: 4/26-6/8 Proposed Change to TPA Milestone for 324 Bldg. Radiochemical Engineering Cells	9 HS&WM Comm. Mtg. – Richland (Fed. Bldg. Room 147)	10 ▪ ER Comm. Mtg. –Richland (Bechtel Bldg.) ▪ CERCLA K-Basins Interim Remedial Action Public Meeting, 7:00-9:00pm, Tower Inn, Richland	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28 PUBLIC COMMENT: 5/15-6/28: K Basins Interim Remedial Action	29	30			

1999

July

Sun	*Mon*	*Tue*	*Wed*	*Thu*	*Fri*	*Sat*
				1	2	3
4	5	6	7	8	9	10
11	12	13	14 TPA Quarterly Public Involvement Planning Meeting and Public Involvement Committee Meeting Richland, WA (Double Tree Inn-Hanford House)	15 Hanford Advisory Board-Richland, WA (Double Tree Inn-Hanford House)	16 Hanford Advisory Board-Richland, WA (Double Tree Inn-Hanford House)	17
18	19	20 $ & Sense Comm. Mtg. -Richland	21 HS&WM Comm. Mtg. – Richland (Fed. Bldg. Room 147)	22 ER Comm. Mtg. - Richland (Bechtel Bldg.)	23	24
25	26	27	28	29	30	31

1999

August

Sun	*Mon*	*Tue*	*Wed*	*Thu*	*Fri*	*Sat*
1	2	3	4	5	6	7
8	9	10 $ and Sense Comm. Mtg. -Richland	11 HS&WM Comm. Mtg. – Richland (Fed. Bldg. Room 147)	12 ER Comm. Mtg. - Richland (Bechtel Bldg.)	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

1999

September

Sun	*Mon*	*Tue*	*Wed*	*Thu*	*Fri*	*Sat*
			1	2	3	4
5	6	7	8 TPA Quarterly Public Involvement Planning Meeting and Public Involvement Committee Meeting Seattle, WA (Radisson Hotel)	9 Hanford Advisory Board-Seattle, WA (Radisson Hotel)	10 Hanford Advisory Board-Seattle, WA (Radisson Hotel)	11
12	13	14	15	16 TENTATIVE – ER Comm. Mtg. – Richland (Bechtel Bldg.)	17	18
19	20	21 SSAB Meeting and Site Tour - Richland	22 SSAB Meeting and Site Tour -Richland	23 SSAB Meeting and Site Tour - Richland	24	25
26	27	28	29	30		

1999

October

Sun	*Mon*	*Tue*	*Wed*	*Thu*	*Fri*	*Sat*
					1	2
3	4	5	6	7	8	9
10	11	12 $ and Sense Comm. Mt.g (TBD)	13 HS&WM Comm. Mtg. - Portland, OR	14 ER Comm. Mtg. - Richland, (Bechtel Bldg.)	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

1999

November

Sun	*Mon*	*Tue*	*Wed*	*Thu*	*Fri*	*Sat*
	1	**2**	**3**	**4** Hanford Advisory Board – Richland, WA (TBD)	**5** Hanford Advisory Board – Richland, WA (TBD)	**6**
7	**8**	**9** $ and Sense Comm. Mtg. - Richland	**10** HS&WM Comm. Mtg. – Richland (Fed. Bldg. Room 147)	**11** ER Comm. Mtg. – Richland (Bechtel Bldg.)	**12**	**13**
14	**15**	**16**	**17**	**18**	**19**	**20**
21	**22**	**23**	**24**	**25**	**26**	**27**
28	**29**	**30**				

1999

December

Sun	*Mon*	*Tue*	*Wed*	*Thu*	*Fri*	*Sat*
			1 TPA Quarterly Public Involvement Planning Mtg. & Public Involvement Comm. Mtg. – Portland, OR (Doubletree, Lloyd Center	2 Hanford Advisory Board – Portland, OR (Doubletree, Lloyd Center)	3 Hanford Advisory Board – Portland, OR (Doubletree, Lloyd Center)	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

1999

Attachment 5

April 28, 1999

State of Oregon/ U.S. Department of Energy Open Action Items.

1. The State of Oregon has submitted work plans and funding requests in order to prepare for the October 1999 date (the Hanford Sites current ship date on the national transuranic list). The response has been the Hanford Site is not close enough to justify preparations yet.
Action: RL-DOE to relay the above noted concerns to RL's Assistant Manager for Waste Management.
Status: Complete.

2. **Action:** M. Blazek to develop a letter to the DOE Headquarters regarding the Podonski visit.
Status: Complete.

3. **Action:** G. McClure and K. Randolph to follow up on activities related to the Privatization Public Involvement Plan.
Status: Complete.

4. **Action:** G. McClure to discuss public notification possibilities regarding current FFTF status with R. Stanley of the State of Washington.
Status: Complete.

5. **Action:** The DOE is expecting enforcement actions in the next couple of months as a result of last summers Environmental Protection Agency Multi-Media inspections. J. Rasmussen will provide additional information to the State of Oregon when it is available.
Status: Complete.

6. **Action:** W. Taylor to review public involvement plans for Privatization effort and discuss with M. Blazek.
Status: Complete.

7. **Action:** RL took the action to put together a coordinated schedule of meetings and activities to try to find a fit for the proposed public involvement activities (INEEL, HLW EIS Hanford Alternative).
Status: Complete.

8. **Action:** A public involvement plan (for the Groundwater Vadose Zone Integration Project) was discussed with a copy to be provided by N. Myers to M. Blazek
Status: Open.