

**Topic:** Waste Treatment and Immobilization Plant Communications Approach

**Author:** Suyama, Mattson, Niles, Hudson, Catrell

**Originating Committee:** Tank Waste

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## Summary

The Hanford Advisory Board, following discussions conducted by the Board's committees on Tank Waste, and Public Involvement and Communication along with the U.S. Department of Energy, Office of River Protection (DOE), prepared this assessment and these recommendations for a communications approach regarding the High Level Waste (HLW)<sup>1</sup> Authorization to Proceed and the Low Activity Waste Pretreatment System (LAWPS). The review was performed at the request of the DOE Waste Treatment Plant (WTP) Assistant Manager, as described in the Hanford Advisory Board 2015 and 2016 Work Plans. Specifically, the Committee's discussions focused on two products requested by DOE:

- A description of the Board's perception (local and regional) of the High-Level Waste (HLW) Authorization to Proceed and the Direct Feed Low Activity Waste (DFLAW)<sup>2</sup> Project, and
- A review of information about HLW and DFLAW that has been provided to the Board and to propose approaches and techniques that may be used to effectively communicate information related to these facilities with both highly technical audiences and the general public.

The results of these discussions are addressed separately in this document.

The document is not a communication plan. It is an assessment by the Board of the current status of the Board's and the public's perception of the WTP facility, and a sampling of the information needed by the public to better understand DOE activities related to the WTP path forward. While there is a level of inherent uncertainty that exists in these highly complex projects, it is hoped that this document will serve as an informational baseline document for future stakeholder outreach.

The following white paper provides suggestions for WTP Management and Communications staff as they continue to update their comprehensive communications plan. As noted, there is much uncertainty regarding the path forward for WTP. This uncertainty will be a challenge to convey, and the DOE Communications Plan will need to consider strategies for working through these uncertainties. Also, the strategies that DOE is currently following will likely continue to evolve as the work on the WTP progresses.

In general, the Board believes the public's perception of the HLW Authorization to Proceed and the DFLAW Project can be summarized as follows:

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<sup>1</sup> **The High Level Waste (HLW) Facility** function is to vitrify the HLW slurry from the WTP Pretreatment Facility into a stable glass form for future shipment to an offsite repository. Engineering, construction, and procurement activities for the HLW facility have been limited since 2012 due to unresolved technical issues. The technical issues concern the pulse-jet mixer performance, erosion-corrosion validation, vessel structural integrity, high-efficiency particulate air filter adequacy, and design and operability review vulnerabilities.

<sup>2</sup> **DFLAW** is an alternative approach for immobilizing waste as soon as practicable, while simultaneously resolving the remaining technical challenges. The waste bypasses the PT Facility so that waste immobilization could begin significantly earlier than if treatment of the waste is delayed until all technical issues are resolved and the PT and HLW Facilities are completed.

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- The WTP's history of delays, lack of transparency, technical difficulties, and cost overruns has **damaged** DOE's overall credibility and believability.
- The Board's is **skeptical** of the HLW Authorization to Proceed. The history of technical issues with the HLW and Pretreatment facilities has stopped or greatly slowed WTP progress.
- The Board's perception of the DFLAW Project is **hopeful**. The DFLAW shows evidence that DOE may begin to vitrify some of the Tank Waste significantly earlier than the current operational date of the WTP.

Some potential techniques that can prove useful to effectively communicate WTP status and information are presented in summary form in the following Waste Treatment and Immobilization Plant Communications Approach Tools and Techniques Table; these are discussed in greater detail within the document.

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### Waste Treatment and Immobilization Plant Communications Approach Tools and Techniques

Audience	Knowledge Level	Suggested Topics	Form of Delivery	Suggested Follow Up	Next Steps
<p>General public</p> <p><i>Such as those that go to the Hanford Reach Museum, on Hanford Site Tours</i></p>	Diverse	<ul style="list-style-type: none"> <li>• River Protection Project Overview</li> <li>• Tank Farm 101</li> <li>• WTP 101</li> </ul>	<p>Displays</p> <p>Video</p> <p>Kiosk</p> <p>Speakers</p>	<p>Questionnaire</p> <p>Information to request a speaker with the types of presentations available</p> <p>Unanswered question follow-up cards</p>	<p>Follow up with requests</p> <p>Speaking engagement</p>
Employees	<p>Diverse</p> <p>Many Highly Knowledgeable</p>	<ul style="list-style-type: none"> <li>• Safety</li> <li>• How their jobs fit into the big picture of RPP</li> </ul>	<p>Face-to-face meetings (small and large)</p> <p>One-on-one</p> <p>Focused groups</p>	<p>Question and Answer</p> <p>Suggestion forms</p> <p>Dialogue</p>	Follow up with key individuals
Former Hanford Site Workers	Highly Knowledgeable	<ul style="list-style-type: none"> <li>• Site Progress and Changes since they left the site</li> </ul>			
Oregon Hanford Cleanup Board	Medium to High	<ul style="list-style-type: none"> <li>• Current status on events pertaining to HLW and DFLAW/LAWPS</li> </ul>	<p>In person briefings</p> <p>Articles for distribution</p>	<p>Question and answers</p> <p>Dialogue with Board coordinator</p>	Continuous updates as new information becomes available

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Audience	Knowledge Level	Suggest Topic	Form of Delivery	Suggested Follow Up	Next Steps
<p>Interest Groups represented by HAB Members</p>	<p>Diverse</p>	<p>Topics could be based on the “foundation” concept.</p> <p>Focus on what has changed that indicates that the path forward is not going to repeat the mistakes of the past.</p> <p>Bigger picture discussion about treatment of tank waste start to finish and the timeline and cost of current proposals.</p>	<ul style="list-style-type: none"> <li>• Articles in newsletters, websites</li> <li>• In person discussions or briefings</li> <li>• Panel discussions</li> </ul>	<p>Questions and answers</p> <p>Where to find additional information</p>	<p>Solicit ongoing input about materials for publication – what is clear, what is unclear, what is missing.</p> <p>Continued dialogue with HAB representative</p>
<p>Hanford Advisory Board</p>	<p>Diverse</p> <p>Some Very Technically Oriented</p> <p>Many with Long-term Site History and Experience</p>	<ul style="list-style-type: none"> <li>• Continued updates at committee and Board levels</li> <li>• One-on-one meetings (like breakfast meetings) between AM/Deputy AM and Issue Managers</li> <li>• Evening outreach sessions on topics of interest – shared effort between HAB and RPP</li> </ul>	<ul style="list-style-type: none"> <li>• Briefings</li> <li>• Displays at HAB meetings</li> <li>• Videos</li> <li>• One-on-ones</li> <li>• Evening educational sessions</li> </ul>	<p>Questionnaire</p> <p>Offer speakers</p> <p>Provide and post additional information</p>	<p>Debrief with HAB and committee members on what worked and didn’t, how to make improvements.</p> <p>Solicit ongoing input about materials for publication – what is clear, what is unclear, what is missing.</p> <p>Speaker Bureau</p> <p>Articles sent to HAB members</p>

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Audience	Knowledge Level	Suggest Topic	Form of Delivery	Suggested Follow Up	Next Steps
<p>Colleges/Universities</p> <p><i>Identify a group of Freshman and follow them through their Senior year</i></p>	<p>Low</p>	<ul style="list-style-type: none"> <li>• Build that foundation of information</li> <li>• Tank Farms</li> <li>• WTP – general</li> <li>• HLW/PT Technical Issues</li> <li>• DFLAW/LAWPS</li> <li>• One-System Approach</li> </ul>	<ul style="list-style-type: none"> <li>• Identify an organization and 3-5 people responsible</li> <li>• In person meetings</li> <li>• Visit classrooms</li> <li>• Continued dialogue for 4 years or more</li> </ul>	<p>Dialogue</p> <p>Questionnaires to them and that they can use to gain information to provide back to ORP</p> <p>Potential summer Internships</p>	<p>Work with professors</p> <p>Building relationships</p> <p>Progress briefings</p> <p>To develop either future employees or better understanding with youth about Hanford cleanup and what it will take.</p>
<p>Technical Organizations/ Societies</p>	<p>High</p>	<p>Very specific and focused discussions</p>	<ul style="list-style-type: none"> <li>• Briefings</li> <li>• Focus groups on specific topics for feedback</li> </ul>	<p>Follow up with the group on how their input affected a decision</p>	<p>Continuous dialogue</p>

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## **Describe the Board's Perception of the High-Level Waste (HLW) Authorization to Proceed and Direct Feed Low Activity Waste (DFLAW) Project**

### **Board Perception of HLW and DFLAW Projects**

The Waste Treatment and Immobilization Plant, now under construction, has been plagued with a history of delays, lack of transparency, design errors, and cost overruns which call into question DOE's credibility and competence to successfully complete the project and safely immobilize Hanford's tank waste. This history has left its imprint on the Board and public, and damaged the Department of Energy's (DOE) credibility and believability.

The history of tank waste clean-up has been characterized by a number of identified problems: leaking tanks, hazardous tank vapor releases, workplace safety issues, and work stoppages that delay progress for WTP construction. Statements by congressional and state leadership, Government Accountability Office (GAO) reports and Defense Nuclear Facilities Safety Board findings have been critical of the WTP technical design, safety culture and associated hazard mitigation that, taken together, highlight the critical challenges to successful, timely and cost-effective startup of WTP operations. Finally, Washington State entered into litigation with DOE over safety and whistleblower concerns and failure to meet TPA construction milestones. Coupled with Court ordered sanctions against information dissemination during the extended Consent Decree negotiations, have worked to lower public expectations for DOE milestone completion timelines.

Although the construction of the WTP has been given the highest priority, the numerous construction delays due to design and technology issues have reinforced the feeling that the path forward remains flawed. The secrecy imposed on the experts charged with resolving the WTP technical issues, coupled with long periods with few progress updates during litigation has left the public with little information and no recourse. The public is eager to have conversation with officials during outreach and information sharing sessions, but low participation by DOE at many public meetings has reinforced the impression that DOE is not fully sharing information on issues surrounding the WTP. The on-going litigation between Washington State and DOE impedes open communication between the agencies and the public interested in the progress toward completion of the WTP.

The HAB is confident that trust can be rebuilt between the public and the agencies, especially if DOE demonstrates a willingness to engage with the public on all the issues and makes observable and measurable progress toward vitrification of tank waste.

The Board is aware that review and approval by DOE Headquarters and the Department of Justice are routinely required before presentations/information can be released for public access and that this process restricts the timeliness and responsiveness of the local DOE office in responding to the Board's and the public requests for information. Once these restrictions are lifted, DOE should engage actively in discussions of the full scope of the vitrification process from its origins as tank waste to its final disposition and disposal in a deep geologic repository.

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### **High-Level Waste**

The Board is **skeptical** of the HLW Authorization to Proceed. The general public does not understand the HLW Authorization to Proceed process. Technical issues related to the high-level waste vitrification facility have on two occasions stopped or greatly slowed construction progress. DOE was previously directed by the Court to commit to a schedule for WTP construction completion. Due to a lack of WTP progress, the WTP completion schedule is once again the subject of legal action and is entangled in information restrictions imposed during the on-going Consent Decree discussions

### **Direct Feed Low-Activity Waste (DFLAW) Project**

The Board finds **hope** in the DFLAW Project. Given that the State of Washington does not believe the WTP can be fully operational prior to 2034 (and DOE maintains 2039 under the best-case scenario), DFLAW provides hope that at some point in the future, DOE may begin to vitrify the low-activity component of some of Hanford's tank waste.

This DFLAW approach, as proposed in the September 24, 2013 Hanford Tank Waste Retrieval, Treatment, and Disposition Framework (Framework) document is promising. This document describes a strategic framework for addressing the risks and challenges to completing the DOE mission by implementing a phased approach. The approach outlined in the document proposes to construct the necessary facilities to start the immobilization of the low activity component of the tank waste through the use of the DFLAW process. By separating and vitrifying a significant portion of the tank waste as low level waste, DOE gains time. Once this process is fully operational, there is the potential to create some much needed capacity in the existing double shell waste storage tanks. The early operation of the DFLAW would allow treatment of tank waste while work continues to resolve the technical issues impacting the construction of the Pretreatment (PT) and High-Level Waste (HLW) Facilities.

**Review information about HLW and DFLAW that has been provided to the Board and propose approaches and techniques that may be used to effectively communicate information related to these facilities with both highly technical audiences and the general public.**

### **Background**

The Framework document describes a strategic framework for addressing the risks and challenges to completing the DOE mission by implementing a phased approach that would:

- Begin immobilization of the tank waste as soon as practicable through the DFLAW process.
- Process transuranic (TRU) tank wastes for disposal at the Waste Isolation Pilot Plant (WIPP).
- Resolve technical issues for the Pretreatment (PT) and High-Level Waste (HLW) Facilities, including determining how to adequately mix and sample the waste prior to processing, to enable design completion, and the safe completion of construction, startup and operations of these facilities.

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The complexity of both the waste itself as well as the WTP facilities has led to difficult, and to date, unresolved technical issues for portions of the PT Facility and to a lesser extent the HLW Facility. Because the current design of WTP anticipates that all waste will be processed through the PT Facility, immobilization of any waste could not occur per the current plan until the technical issues involving the PT Facility are resolved.

DOE's current emphasis is to focus on the DFLAW approach and does not appear to be pursuing the disposal of tank waste in WIPP alternative.

### **WTP Communications Approach**

The Board attempted to answer questions as to who should be communicated with, how often and best ways to provide information. HAB discussions revolved around what this communications approach could entail, and include:

- Focus on the following three topics:
  - HLW Safety Design Strategy approval and implementation
  - HLW Authorization to Proceed with full Production Engineering
  - Direct Feed Low-Activity Waste (LAW) Initiation of Pre-Conceptual Design and Engineering
- Communicate using understandable terms.
- Discuss past problems in communications about how DOE is moving forward.
- Provide information in stages.
- DOE should invest a representative to work with tribes and the Defense Nuclear Facilities Safety Board on a regular basis.
- Review, update, and consider reusing the communications materials on tank waste and tank waste treatment developed by the Oregon Department of Ecology (ODOE) approximately 15 years ago.
- Consider using focus groups to help inform what information about the WTP is relevant to different audiences of the public and methods for communicating this information.
- Use visual flowcharts on LAW and HLW to demonstrate how these parts of the vitrification process fit into the larger WTP picture.
- A template for communicating familiar information can be developed to help streamline methods for communication; concrete examples can be presented.
- Communicate a concrete schedule and budget for completion of the WTP.
- Be open about the WTP timeline and technical issues, as well as providing a feedback loop for the public.

### **Tailor Presentations to the Audience Being Addressed**

Building a WTP Communications approach will be complicated due to differing levels of background information and context. Building that foundation can also be easily disrupted when an event or other recent news events diverts the public's attention from the planned presentation.

Some of the approaches discussed include:

- Determine what information interests the public, and how the TPA agencies can best develop key messages and methods for engagement.



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- Communicate with the community-at-large beyond what the regulations require.
- As opportunities present themselves, the agencies should attend meetings where Hanford information is being provided and discussed.
- Tailor information for the least informed member of the public. Include effort to address leaking tank issues and safely stabilize the waste through vitrification. Include examples of vitrification at other weapons complex sites.
- Leverage community resources, like the Hanford Reach Museum, to display and provide information.
- Consider expanding the agencies use of film to communicate about Hanford. Videos and documentaries should be televised more broadly than via the web on YouTube.
- Share information about and actions being taken to address the challenges with the WTP with the public. Information sharing and dialogue is the goal, not getting the public to come to a specific conclusion.
- Use question cards to facilitate information sharing when a member of the public asks a question and the information is not available. Ensure that the question cards include fields for email, phone, and mailing address to accommodate a clear path for future communication.

### **Effective Communication with a General Audience**

Effective communication with a general audience requires establishing common background information and inviting dialogue about the path forward and asking for feedback and questions. Too often DOE overlooks both the general kinds of questions people want answered as well as the kinds of answers they are being provided in social media.

Some of the approaches discussed include:

- Agencies should solicit information about what the audience is interested in, prior to a scheduled meeting and be prepared to discuss that subject in non-technical, jargon and acronym free language.
- Given the history of delays, technical showstoppers, and cost overruns, special attention should be given to establishing what is different in the current environment that will negate the previous pattern

### **Effective Communication with a Technical Audience**

Effective communication with a technical audience needs to engage out-of-the-box thinking and invite participation in puzzling through the challenges inherent in solving the technical challenges at the High-Level Waste and Pretreatment Facilities. The backgrounds and levels of technical knowledge of the audience can vary greatly depending on the topic to be addressed.

The presenter should identify the nature and background of the subject being addressed before launching into the topic proper. This tends to produce a more disciplined discussion and a more engaged audience

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### **Effective Communications with Office of River Protection Workers**

One audience that should not be forgotten is the Tank Farm workers, the Vitrification Plant workers, and other WTP complex employees who need to understand how the work that they do fit into the bigger picture.

Some of the approaches discussed include:

- An informed workforce can be a very effective vehicle for communicating with friends, neighbors and the public in general.
- Communicate how each Hanford employee's work fits into the bigger picture of tank waste treatment and disposal and overall and near-term goals and activities.

### **High-Level Waste**

The High Level Waste (HLW) Facility function is to vitrify the HLW slurry from the WTP Pretreatment Facility into a stable glass form. This vitrified glass is then stored in sealed containers for future shipment to an offsite repository.

Engineering, construction, and procurement activities for the HLW facility have been limited since 2012 due to unresolved technical issues. This technical issues concern the pulse-jet mixer performance, erosion-corrosion validation, vessel structural integrity, high-efficiency particulate air filter adequacy, and design and operability review vulnerabilities.

The HLW was authorized to begin production engineering in 2014. Currently process improvements, technical and design issue resolution, and nuclear safety basis alignment are being implemented.

Due to this significant delay in facility construction, Bechtel National is in the process of revising the WTP project baseline. The WTP completion schedule is the subject of legal action and is being subjected to information restrictions imposed during the current Consent Decree discussions.

Some of the ideas noted during these discussions were:

- Focus on how to communicate about HLW and the HLW facility, and the best ways to communicate that the facility is back in full construction after the resolution of technical issues.
- The approach should also address how to tell the story of how HLW connects to WTP, and how the whole system works together.

### **Direct Feed Low Activity Waste Project**

In order to begin the process of vitrifying waste as soon as practicable and at the same time creating much needed waste tank capacity, the DFLAW project was created.

DOE should communicate why it is important to do the Direct Feed LAW, where the resulting glass will be disposed, and why it will be better solution in the interim and the long term. The information should be outlined in a fact sheet the public can take away with them, like the Vit-101 and PT fact sheets.

### **One-System**

The One System concept could be usefulness as a communication tool. The One System approach should reassure the public that efforts are underway to integrate and address all of the various aspects

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required to support facility operation, such as: permits, procedures, operations, supporting facility modifications, etc.

Expand the use of public open houses to present a wide spectrum of information at different levels using visuals, stations and subject matter experts.

### **Tank Waste Origins and History**

No discussion of any of the WTP facilities would be complete without discussing the waste in the tanks and the urgent need to get it into a safe, stable form for final disposition.

All presenters should be prepared and have backup materials to at least address these topics at a summary level should questions arise during their discussions. This material should be pre-approved and consistent with the information available online at a level that the general public could easily access and understand.

The following is a list of information that should be available on-line and/or as pre-approved presentations for use by the general public. This material should be available at a level that the general public can easily access and understand. Individuals who are requested to make presentations should be able to access this library to quickly obtain consistent and reliable background information.

- General History of the Hanford Site
  - Tank Storage History
  - Origins of the waste in the tanks
  - Tank age and condition of the tanks
  - Single Shell Tank Integrity
  - Double-Shell Tank Integrity
  - Tank capacity needed to be able to safely store waste
  - Leaking Tanks and the threat to the environment
  - Tank Retrieval (leaking and non-leaking) Progress and Plans
- History and Scope of the WTP
  - WTP Facilities
  - Map of WTP Site with WTP Facilities shown
  - Brief Description of function of each facility
  - Current Construction Photos and Status
  - WTP Technical Issues
  - High-Level Waste Authorization to Proceed
  - Proposal for fixing problems
  - Timeline
  - Budget
  - Systemic changes that ensure this project will work
- Direct Feed Low Activity Waste Facility
  - Proposal
  - Timeline
  - Budget

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- Systemic changes that ensure this project will work
- Final Waste Disposition
  - Deep Geologic Repository
  - Interim Storage
- Timeline and Budget
  - Design and Construction
  - Technical Issues and Resolution
  - Remaining Open Issues
- Safety Culture, Safety Conscious Work Environment, and Safety Foundation
  - Tank Vapor Issues & History
  - Reporting of Concerns