

**PROPOSAL BY THE U.S. DEPARTMENT OF ENERGY
TO THE STATE OF WASHINGTON
TO AMEND THE CONSENT DECREE**

Executive Summary

The Department of Energy (DOE) is committed to its responsibility to clean up the legacy of nuclear materials production from World War II and the Cold War. DOE recognizes the service and sacrifice of the Tri-Cities communities and the State of Washington during America's time of need and remains fully committed to meeting its obligations to clean up the Hanford site. In consultation and coordination with the State of Washington and with the support of Congress, DOE continues to make steady, sustained progress on this cleanup.

DOE has been working closely with the State of Washington for many years on a responsible strategy to address one of the greatest cleanup challenges at Hanford—the 56 million gallons of waste stored in 177 underground tanks. This waste is a complex and diverse combination of radioactive and chemical waste that takes the physical form of sludges, salts, and liquids with varying combinations of chemical properties. Much of the waste is stored in 149 aging single shell tanks. The remainder is stored in 28 double shell tanks of newer construction. DOE has minimized the risk of waste leaking from the 149 single shell tanks by removing pumpable liquids and transferring those liquids to the double shell tanks. To date, DOE has retrieved the solid waste from 11 of the single shell tanks and work continues on retrieving the waste from six additional tanks. In addition, DOE plans to retrieve the waste from nine more single shell tanks by 2022. DOE is working toward the ultimate solution of treating and immobilizing the tank waste for permanent disposition. The Waste Treatment and Immobilization Plant (WTP) is a key component of that effort. It will allow for vitrification of radioactive waste, which means turning the tank waste into a solid glass form for disposal.

DOE recognizes that both the Consent Decree in *State of Washington v. United States Department of Energy*, No. 08-5085-FVS (E.D. Wash.), and the 1989 Hanford Federal Facility Agreement and Consent Order together govern the cleanup of the Hanford site and that DOE has important obligations under both. The WTP is the cornerstone for DOE to meet these important obligations by achieving safe and successful completion of the Hanford tank waste cleanup mission.

A massive, complex and first-of-a-kind chemical and nuclear plant, the WTP includes several different facilities that are designed to work together to process the waste. These facilities include: (1) the Pretreatment Facility, which is designed to receive the waste, separate it into a high-volume, low activity portion and a low-volume, high activity portion before feeding it to the two vitrification facilities; (2) the Low Activity Waste Facility, which will vitrify the primarily liquid low-activity portion of the waste; (3) the High Level Waste Facility, which will vitrify the solids; (4) the Analytical Laboratory, which will support both vitrification facilities' operations; and (5) the Balance of Facilities, which will provide industrial support capabilities and infrastructure needed for WTP operations.

The current design of the WTP requires that all waste be processed through the Pretreatment Facility. It has become clear, however, based on extensive analysis by DOE and other experts, that unresolved technical issues could prevent the Pretreatment Facility from operating safely as currently designed. Some of these technical issues could lead to nuclear safety-related problems during operations, including the potential for an inadvertent criticality,

hydrogen generation in vessels, structural failure of components in the vessels, and erosion or corrosion of vessels and pipes that could lead to adverse consequences and leave the facilities inoperable for an extended period of time, and possibly permanently. To a lesser degree, some of these technical challenges exist in the design of the High Level Waste Facility, as well. The overwhelming technical judgment is that the WTP cannot operate under the current design, and therefore a new approach is needed.

In 2012, DOE established Design Completion Teams that are actively addressing the technical challenges. Based on current analysis, resolution of the technical issues for the Pretreatment Facility is expected to take approximately three more years and may require some additional design work. Since the High Level Waste Facility has fewer technical challenges, it is expected to take approximately another year to resolve those issues, based on current assessments.

Rather than waiting for completion of the Pretreatment and High Level Waste Facilities, which depends on full technical issue resolution, DOE believes there are distinct advantages to pursuing a phased approach to complete the WTP, beginning with feeding some of the liquid waste directly to the Low Activity Waste Facility. Because there are no major known technical issues remaining with the Low Activity Waste Facility, the Analytical Laboratory, and the Balance of Facilities, there is an opportunity, in the near term, to complete these facilities and develop additional infrastructure to allow liquid waste to bypass the Pretreatment Facility and be sent directly into the Low Activity Waste Facility. To accomplish this, DOE is proposing to construct a new capability to remove cesium and solids from the liquid portion of the tank waste, prior to transferring that waste to the Low Activity Waste Facility. This approach, known as Direct Feed Low Activity Waste (DFLAW) has several important benefits:

- Enables radioactive waste treatment and permanent disposal to begin prior to the completion of the Pretreatment Facility and the High Level Waste Facility.
- Builds the necessary capacity and expertise in the workforce through operating the less complicated nuclear facilities first, thus enabling a more efficient startup of the more complicated Pretreatment Facility and High Level Waste Facility.
- Frees up space in existing double shell tanks prior to the start of the Pretreatment Facility's operations.
- Enables the completion of the tank waste treatment mission sooner than would be possible with the current approach, which requires waste to be processed through the Pretreatment Facility.
- Creates a second pathway for liquid waste treatment during planned maintenance or other times the Pretreatment Facility may not be operational throughout the life of the treatment mission.

As part of the phased approach, DOE has determined that a Tank Waste Characterization and Staging (TWCS) capability (currently envisioned as one or more appropriately-sized vessels in a stand-alone facility) is needed. TWCS will help resolve technical issues by ensuring the waste to

be fed to the Pretreatment Facility will be properly mixed and have the physical characteristics that can be safely processed by the Pretreatment Facility and the High Level Waste Facility.

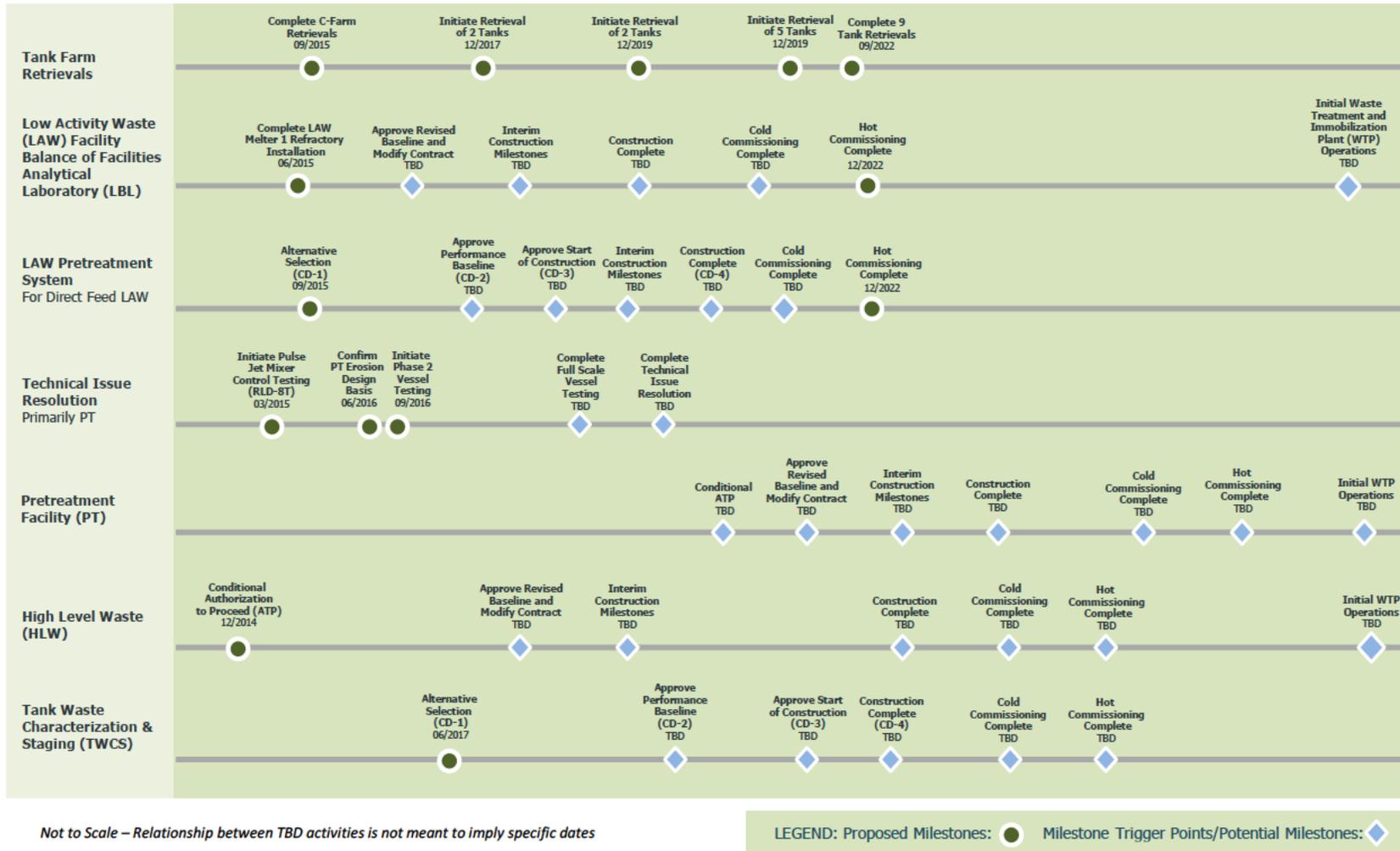
Furthermore, DOE believes that a simpler design for the Pretreatment Facility will significantly decrease the time for the testing needed to resolve the mixing concerns within the pulse jet mixed vessels. Replacing larger vessels that had multiple designs with smaller, standardized vessels will improve operability and is expected to maintain the same level of throughput. It will have the added benefit of allowing a greater number of smaller vessels to be placed within the same footprint. These additional vessels will provide confidence that the WTP can operate safely throughout its design life because they will provide backup capabilities in the event there is an issue with another vessel.

Until the technical issues are resolved and a new baseline and contract reflecting that resolution are created, it is not possible to confidently predict or commit to when the Pretreatment Facility and the WTP as a whole will be completed. Therefore, DOE's proposal focuses on a new approach to completing all of the objectives of the Consent Decree through a commitment to begin immobilization of tank waste employing DFLAW as soon as practicable while simultaneous progress is made to resolve technical issues related to the Pretreatment Facility and High Level Waste Facility.

This proposal provides a set of near term, fixed milestones for certain activities along with a commitment by DOE to develop future milestones on a rolling basis as technical issues are resolved or when sufficient project planning and design information is otherwise available. The key feature of this proposal with regard to milestones for the Pretreatment Facility and for the High Level Waste Facility is a defined process for setting milestones within a specified time period following resolution of significant technical issues and establishment of new performance baselines and contract modifications. Achievement of these events will be transparent to Washington State officials, as will be the associated establishment of binding milestones. This proposal also commits to a deadline for DFLAW Hot Commissioning Complete by December 31, 2022, and maintains the Consent Decree requirement for the retrieval of nine additional tanks by September 30, 2022. (See Figure 1).

DOE has made tremendous progress in the cleanup of the Hanford Site over the past 25 years, but we recognize we still have a long way to go to meet our obligations to the people of Washington State. While we share the same sense of urgency as the State and the public to effectively and safely complete this mission, we also recognize that thoughtful decision making and actions in the near-term will build the foundation for a stronger, sustainable, and enduring tank waste cleanup mission at Hanford. DOE will move forward as expeditiously as possible to begin immobilizing tank waste, as reflected in this proposal, and will continue to work closely with the State of Washington and key stakeholders to build a lasting coalition and accord that will result in the accomplishment of our mutual goals. At a time of fiscal uncertainty, this proposal represents the first step toward achieving those goals by providing a realistic yet aggressive approach to vitrifying waste and introducing needed capabilities and redundancies to provide high confidence that the WTP will successfully complete its mission at Hanford.

Figure 1
Key Activities Under Proposed Consent Decree Amendment



Not to Scale – Relationship between TBD activities is not meant to imply specific dates

LEGEND: Proposed Milestones: ● Milestone Trigger Points/Potential Milestones: ◆

Introduction

The Department of Energy (DOE) hereby submits to the State of Washington this proposal to amend the Consent Decree in *State of Washington v. United States Department of Energy*, No. 08-5085-FVS (E.D. Wash.), pursuant to Section VII of the Consent Decree. In light of the technical issues that have made the current plan for the Waste Treatment and Immobilization Plant (WTP) unworkable, this proposal sets forth a new approach for completing the tasks that DOE agreed to undertake when it entered into the Consent Decree with the State of Washington in October 2010: initial operation of the WTP and completion of the next set of single shell tank retrievals.

The new approach contained in this proposal features not only a renewed commitment to complete all of the objectives contained in the Consent Decree, but also a new commitment to build the capability to directly feed low activity waste to the WTP to expedite beginning immobilization of the supernate (i.e., the liquid tank waste) and a new capability for mixing, characterizing, and staging the waste before feeding it to the WTP.

In the discussion that follows, DOE provides the justification for the proposal, consistent with Section VII-A-1 of the Consent Decree, and a description of DOE's proposed path forward to resolve the technical issues associated with the Pretreatment and High Level Waste Facilities and to advance and complete the WTP. This discussion is followed by a narrative overview of the proposal, and, finally, the specific proposed amendments to the Consent Decree.

Justification

DOE has determined that amendment of the Consent Decree is necessary because "circumstances and events," within the meaning of Section VII-D-1 of the Consent Decree, have given rise to a serious risk that DOE may be unable to meet milestones A-1 through A-4, A-6 through A-9, A-13 through A-17, and A-19 in Appendix A for the WTP construction and startup, despite DOE's exercise of reasonable diligence. DOE has also concluded that amendment of the Consent Decree schedule is necessary with regard to milestone B-1 in Appendix B related to the retrieval of tank waste from tanks C-102 and C-105 because these retrievals are at risk of not being completed by the milestone date, despite DOE's exercise of reasonable diligence. In addition, DOE is proposing to replace interim milestone B-3 with three new milestones that allow for more efficient sequencing of the work needed to complete the next set of tank retrievals. DOE is not proposing to change milestone B-4, which requires retrieval completion by September 30, 2022, except to renumber that milestone to accommodate the additional new B milestones.

Pretreatment and High Level Waste Milestones. With respect to the WTP-related milestones listed above, amendment of the Consent Decree is necessary due primarily to significant technical obstacles DOE has encountered in connection with the design of the Pretreatment Facility and the High Level Waste Facility. DOE has discussed these technical issues in some detail with the Washington State Department of Ecology. The most significant technical issues affecting the WTP schedule include the following:

- Hydrogen gas events in pulse jet mixed vessels and in piping and ancillary vessels: In the current design of the Pretreatment Facility pulse jet mixed vessels, high solids concentrations expected to be present in some of those vessels could form a sediment layer on the bottom that could retain hydrogen gas. Such settling could lead to a sudden episodic release of hydrogen into the vessel head space at the top of the tank in unacceptably high concentrations that could create the risk of combustion that could break the containment of the vessel.
- Criticality in Pretreatment Facility vessels: Up to 16 of the 149 underground single shell tanks at Hanford may contain plutonium particles of a size and density that could settle on internal surfaces of the pulse jet mixed vessels as currently designed. If such settling were to occur and the pulse jet mixers could not re-suspend the particles, in a highly unlikely scenario, a sufficient quantity of plutonium could form in a particular geometry that could possibly initiate a criticality (a limited fission event that releases a large amount of heat and energy that could rupture or damage the mixing vessel).
- Pulse jet mixer control: Solids expected in pulse jet mixed vessels, as currently designed, could interfere with waste-level measurements in vessels, which could lead to overblow events (i.e., air discharged out of the pulse jet mixers into the vessel). The cumulative effect of overblows could exceed the vessel design limits and cause a structural failure of the components within the vessels and impact waste processing.
- Erosion and localized corrosion in WTP vessels and piping: As currently designed, the WTP vessels and piping may not be sufficiently robust to establish adequately conservative margins for erosive wear expected in the vessels and associated piping, particularly in light of the uncertainties in waste feed characteristics. Failure to design an appropriate level of wall thickness into the piping and vessels, combined with potential excessive erosion and corrosion, could lead to wall thinning, an extended work stoppage for repairs, and, in some locations, piping or vessel failure.
- Ventilation balancing: In contaminated facilities, air handling units are designed and installed to ensure air always flows from the non-contaminated areas to the contaminated areas. A recent project design review of the High Level Waste Facility indicated air may not flow in the required directions

within the facility. This could result in the spread of contamination within the facility and put the workers at risk.

Each of these technical issues poses potential risks to the ability of the WTP to operate as intended during its 40-year design life and to function within acceptable safety parameters. For example, excessive erosion below a pulse jet mixed nozzle could cause vessel failure by creating a hole in the vessel bottom, allowing the vessel's contents to spill onto the floor of the processing cell. This could cause plant shut-down and extended operating delays, and require expenditure of significant resources on recovery or alternative treatment systems. These concerns are of particular importance since significant elements in the Pretreatment Facility are designed to operate in "black cells," areas that will allow little to no human or robotic access once operations begin.

In light of the foregoing risks, DOE suspended construction of the Pretreatment Facility and aspects of the High Level Waste Facility in August 2012, pending resolution of technical issues. Continued construction of the project as currently designed and in accordance with the remaining milestones in Appendix A, without resolving these technical issues, is untenable as the current project design may result in facilities that cannot meet DOE's nuclear safety requirements, and/or cannot perform their intended functions for the duration of their design lives. Resolution of these technical issues has put at serious risk the ability to complete the construction work on the Pretreatment Facility and the High Level Waste Facility by the milestone dates set forth in Appendix A starting in December 2014.

Low Activity Waste Facility Milestones. Because the current design of the WTP anticipates that all components initiate operations simultaneously, and requires all waste to be fed through the Pretreatment Facility, the delays in the Pretreatment Facility described above would also delay the operation of the Low Activity Waste Facility as currently designed. This has a direct impact on the ability of DOE to meet interim milestone A-9 (Complete Hot Commissioning of the LAW Facility) because hot commissioning the Low Activity Waste Facility requires tank waste to be fed into the facility for processing; however, without the Pretreatment Facility, radioactive tank waste cannot be supplied to meet the milestone under the current facility design. In addition, milestone A-8 (Cold Commissioning of the LAW Facility) is tied to the hot commissioning milestone in that cold commissioning requires simulants to be fed into the melters in the Low Activity Waste Facility. Once started, melters cannot be turned off without significant damage occurring, requiring replacement of the refractory bricks and/or rendering the melter inoperative. Thus, to avoid having to shut off the melters, hot commissioning should be sequenced immediately following cold commissioning.

DOE has also determined that a serious risk has arisen that DOE may be unable to meet the Low Activity Waste Facility Construction Substantially Complete interim milestone (A-7). The primary factor contributing to this determination was budgetary, particularly in Fiscal Years (FY) 2013 and 2014. Continuing resolutions provided the appropriations and authorizations for work in FY 2013 because no budget was passed for that fiscal year. The continuing resolution associated with the WTP work included congressional control points that prevented the movement of funding to the control point containing the Low Activity Waste Facility until reprogramming occurred in May 2013.

As a result of these funding constraints, the procurement of some materials and equipment was halted or substantially delayed. During the delay, some vendors went out of business or, because of replacement work commitments, were no longer able to support the original project schedule. Once reprogramming occurred, this increased the amount of funding to the Low Activity Waste Facility and the procurements were restarted. However, not all impacts were fully mitigated through the reprogramming. Bechtel National, Inc. (the WTP prime contractor) began directly working with the subcontractors to determine what actions were possible to compensate for the lost time. Unfortunately, in some cases, significant changes were required. For example, only one company was the procurement source for the thermal catalytic oxidizer, a critical part of the air handling and treatment system necessary to meet air permitting requirements for the melter off-gas treatment system in the Low Activity Waste Facility. That company went out of business. This required Bechtel National, Inc. to search for another vendor that could produce this unique and necessary part. Despite Bechtel National, Inc.'s efforts, the loss of this vendor has caused a delay in delivery of the thermal catalytic oxidizer and has required determining a new method for getting the part into the facility, which has in turn adversely affected the overall Low Activity Waste Facility construction schedule.

Funding in FY 2014 was similarly controlled by a continuing resolution for approximately four months through January 2014. The funding allocation again contained two congressional control points, and overall WTP continuing resolution funding was reduced to \$675 million from \$690 million. Although work continued on the Low Activity Waste Facility, it had to be slowed until the control points were realigned with the enactment of the FY 2014 omnibus appropriations bill in January 2014.

Analytical Laboratory Milestone. Interim milestone A-6 (Complete Methods Validation) is applicable to the methods to be used in the Analytical Laboratory for sampling and analysis of the waste samples from the Low Activity Waste Facility, the High Level Waste Facility, and the Pretreatment Facility. Until the waste acceptance criteria are established for each of these facilities through technical issue resolution and facility design, and the laboratory processes to be used are finalized, the methods cannot be finalized, thus creating a serious risk of delay for completion of this milestone

Tank Waste Retrievals. DOE has also determined that some modifications to the single shell tank waste retrieval schedule in Appendix B of the Consent Decree (though not a change to the overall retrieval completion date) are necessary due to delays caused by budget issues, including sequestration, personnel shortages, and unforeseen technical and potential safety issues. The delay in retrievals is directly attributable to layoffs and associated impacts caused by sequestration in FY 2013, which resulted in the temporary loss of two of the four work crews that allowed for simultaneous or multi-shift retrieval of two tanks that was necessary to meet the milestone. Although the contractor was eventually able to restore retrieval shifts, the lost work time was the equivalent of roughly a five month delay.

In addition to personnel and budget impacts, in 2013, DOE identified a new technical issue regarding the potential nuclear safety-based limitations on the amount of sludge (i.e., the sludge height) that can be stored in the two double shell tanks slated to receive the waste retrieved from the last two single shell tanks. This contributed to DOE's notification to the State

that a serious risk had arisen that DOE may be unable to meet milestone B-1, specifically the schedule requirements for the retrieval of the last two single shell tanks, C-102 and C-105. DOE is currently analyzing the sludge height issue and expects the analysis and associated testing to be complete by the end of 2014. Depending on the results of the analysis, the waste from the remaining two single shell tanks may have to be transferred to a third double shell tank, which could delay the retrieval schedule for up to 12 months.

DOE is also proposing a change to the B-3 interim milestone (Initiate the Start-up and Retrieval in at least Five Tanks). Based on lessons learned from the C Farm retrievals, it is more efficient to install the majority of the above-ground infrastructure for retrieval of all of the tanks of a tank farm prior to cutting the dome of the first tank and initiating in-tank work. DOE has proposed three replacement milestones that allow for this more efficient work sequencing. DOE is not proposing to amend milestone B-4 (although it is re-numbered to B-6 for clarity) and intends to complete retrieval of the nine tanks by the milestone date in the Consent Decree, September 30, 2022.

Timeliness of Request. This request to amend the Consent Decree schedule is timely. In accordance with Paragraph IV-C-3 of the Consent Decree, DOE provided notice to the State in a timely manner upon determining that a serious risk had arisen that DOE may be unable to meet certain milestones. Specifically, DOE provided notice: (1) on November 21, 2011, that a serious risk had arisen that DOE may be unable to meet milestones beginning December 31, 2014, for WTP facilities (later specified as milestones A-1, A-2, A-3, A-4, A-13, A-14, A-15, A-16, A-17, and A-19); (2) on June 6, 2013, that a serious risk had arisen that DOE may be unable to meet interim milestone A-7 (LAW Facility Construction Substantially Complete) by December 31, 2014, and the C Farm retrieval deadline for the last two tanks in milestone B-1 by September 30, 2014; and (3) on October 8, 2013, that a serious risk had arisen that DOE may be unable to meet interim milestone A-6 (Complete Methods Validations) by December 31, 2017, interim milestone A-8 (Start LAW Facility Cold Commissioning) by December 31, 2018, and interim milestone A-9 (LAW Facility Hot Commissioning Complete) by December 31, 2019. Since that time, additional facts and analyses have led DOE to determine that it is necessary and possible to amend the Consent Decree at this time, as described herein.

Good Cause for Amendment. There is “good cause” for the proposed WTP and tank retrieval schedule amendments within the meaning of Section VII-D-1 of the Consent Decree. The Consent Decree recognizes that numerous circumstances and events, including unknown technical obstacles, unforeseen safety concerns, and labor shortages may require extension of milestone dates. DOE has encountered circumstances and events that either were not anticipated in developing the Appendix A schedule or have had a greater impact on the schedule than was anticipated at the time the schedule was developed. Lack of suppliers proficient at producing materials that meet nuclear safety quality requirements has also contributed to overall project delays. Although DOE has exercised reasonable diligence in spite of these obstacles and has undertaken extensive efforts to resolve these technical and other issues, the delays that have occurred and, in some cases, continue to occur, have created a serious risk that DOE will be unable to meet the existing Consent Decree Appendix A milestones for WTP construction and startup in 2014 and beyond.

In addition, DOE has encountered circumstances and events that either were not anticipated in developing the Appendix B schedule or have had a greater impact on the schedule than was anticipated at the time the schedule was developed. DOE's efforts to meet the Appendix B-1 milestone have also been affected by funding impacts. Although DOE has exercised reasonable diligence in spite of these obstacles, there is good cause to amend the milestones in Appendix B, as described above.

Effect on the Hanford Federal Facility Agreement and Consent Order. Pursuant to Section VII-G-1(d) of the Consent Decree, a proposal to amend the Consent Decree must specify any requirement of the Hanford Federal Facility Agreement and Consent Order (HFFACO) that would be affected if the proposal to amend the schedule were accepted. This provision reflects the reality that the construction and startup of WTP, which is governed by the Consent Decree, can affect the end date for single shell tank retrievals and the overall tank waste mission, much of which is governed by HFFACO. DOE recognizes that both the Consent Decree and the HFFACO together govern the cleanup of the Hanford site and that DOE has important obligations under both agreements.

DOE's proposed amendment of the Consent Decree would likely affect milestones in Appendix D of the HFFACO. The specific milestones that would likely be affected include retrieval and closure of single shell and double shell tanks listed in milestone series M-45; secondary waste treatment milestones listed in milestone series M-47; supplemental treatment milestones listed in milestone series M-62; and completion of new facilities to support operations of the WTP listed in milestone series M-90.

While DOE recognizes that revising Consent Decree milestones related to the WTP construction and startup and tank retrievals will likely affect the end date for single shell tank retrievals and the overall tank waste mission, DOE does not have sufficient information at this time to make reliable assessments of the specific effect of the WTP delays until the technical issues are resolved. Implementing Direct Feed Low Activity Waste (DFLAW) will allow DOE to begin waste vitrification years earlier than with the current design given the technical issues with the Pretreatment Facility, which DOE anticipates will shorten the time required for the overall waste retrieval mission as opposed to a scenario without DFLAW. In addition, there are a number of other variables that can affect retrieval end dates or mission completion dates. Under the HFFACO, DOE will continue to work with the State to conduct scenario modeling in an effort to better understand the potential effects of various variables.

Addressing Technical Obstacles and Mapping a Path Forward

Because the current design for the WTP requires that waste be processed through the Pretreatment Facility prior to vitrification, no waste may be vitrified by the WTP until the technical issues involving the Pretreatment Facility are resolved and design changes implemented. To a lesser degree, similar technical issues have also affected the High Level Waste Facility, and these will have to be resolved to complete the facility. DOE is focused on resolving the technical issues, including developing the capability to mix and characterize the waste before it is transferred to the Pretreatment Facility, which is a key to resolving the technical issues. In addition, to allow DOE to begin vitrifying waste as soon as practicable, DOE

is pursuing the DFLAW option, which would enable DOE to begin vitrification years earlier than possible under the current WTP design.

Two new capital facilities will need to be designed, constructed, and commissioned as part of these efforts. These facilities will be subject to the requirements of DOE's project management order, DOE Order 413.3B, *Program and Project Management for Acquisition of Capital Assets*. DOE Order 413.3B establishes a transparent review and approval process that governs DOE's acquisition of capital assets, including facility construction projects. Executing a project requires a critical decision (CD) at five key points during the project planning and execution process, from the identification of mission need through facility startup. The Order identifies them as follows: CD-0 Approve Mission Need, CD-1 Approve Alternative Selection and Cost Range, CD-2 Approve Performance Baseline, CD-3 Approve Start of Construction/Execution, and CD-4 Approve Start of Operations or Project Completion.

Each critical decision in the process is important to the proper management and execution of each capital acquisition project. The steps allow DOE to fully review and assess the progress, path forward, and the viability of the project. Where needed, DOE can direct changes to the project. The CD-2 decision point is particularly important as it represents the point at which the design is mature enough to develop a high quality cost estimate and schedule, and DOE typically has sufficient information to execute (or modify) a design and/or construction contract. At this point, confidence in the schedule should allow for the development of design and/or certain preliminary construction related milestones. Further, CD-3 represents the decision point at which the design is nearly complete, construction is authorized to commence, and construction work products have reached the point that development of milestones through construction completion can be established with the appropriate degree of certainty.

Technical Issue Resolution. DOE has undertaken a concerted effort to resolve the technical issues outlined above. In the fall of 2012, DOE assembled an independent group of experts to advise the Secretary of Energy on the technical issues associated with the WTP. In addition to on-site meetings at Hanford, DOE conducted 22 webinars, in which the Washington State Department of Ecology often participated, to identify remaining technical issues and begin to develop a path forward.

In response to the efforts of these independent experts, DOE assembled a Design Completion Team, comprised of personnel from the Office of River Protection, DOE contractors, and the National Laboratories, to provide leadership and oversight for resolution of the technical issues. The Design Completion Team established five technical sub-teams whose work was focused on particular issue areas: full-scale vessel testing, erosion/corrosion, in-service inspection and redundancy, black cell analysis, and identification of waste preconditioning requirements and facilities. The work of these teams has evolved such that the project is now focused on nine primary remaining technical issues for the Pretreatment Facility and, where applicable, the High Level Waste Facility: hydrogen gas release from vessel solids, criticality in process vessels, hydrogen in piping and ancillary vessels, pulse jet mixed vessel mixing*, erosion/corrosion*, in-service inspections*, vessel structural integrity*, facility ventilation*, and Pretreatment Facility waste preconditioning requirements (* denotes a degree of applicability to the High Level Waste Facility).

The teams are concentrating on resolving the technical issues associated with the High Level Waste Facility so that full resumption of engineering, design, and construction can be authorized. To that end, DOE has recently issued a Full Scale Vessel Testing (FSVT) plan that describes an approach to determining the resolution of some of the most difficult technical issues, including uncertainties in the mixing capabilities of pulse jet mixed vessels. A test vessel has been installed in the test facility and is being outfitted to allow for FSVT beginning in July 2014. The initial phase of this testing will allow DOE to determine the control strategies for operating the pulse jet mixers in order to prevent operations that could damage the internal structure of the vessels. Information from this testing will allow for verification of the design characteristics of the pulse jet mixed vessels in the High Level Waste Facility and the Pretreatment Facility. As this is the primary outstanding FSVT issue associated with the High Level Waste Facility, resolution will allow the facility's vessel design and operating parameters to be determined and/or verified. The same vessel will then be used for mixing testing that is primarily applicable to the Pretreatment Facility. DOE determined FSVT was needed to demonstrate that the Pretreatment Facility will function as designed and will operate safely in accordance with DOE's nuclear safety rules. As dictated by the initial test results, follow-on testing in other vessels will be performed. DOE expects FSVT to be complete in approximately three years.

After the applicable portions of FSVT are complete, DOE will need to implement any safety or operational improvements needed to enable the High Level Waste and Pretreatment Facilities to move forward. Among the improvements anticipated is the replacement of the existing high solids vessels within the Pretreatment Facility with potentially smaller, standardized vessels. This design change is expected to introduce a beneficial level of redundancy within the process systems contained in the Pretreatment Facility black cells.

Although FSVT is a key part of the technical issue resolution process, it is not the only part. Erosion testing is also on-going and the results will be used to confirm or modify the design margins for WTP piping and vessels. Finally, to fully identify the outstanding technical issues, DOE recently completed a high level waste systems design review. This review identified a number of outstanding issues including the ventilation balancing issue. A similar review will be conducted for the Pretreatment Facility.

Because technical issue resolution is progressing for the High Level Waste Facility, DOE authorized limited production engineering in March 2014. This production engineering is expected to ramp up over the course of the year, and will be followed by an increase in construction activities when appropriate. Based on our current analysis and testing plans, including FSVT, resolution of key technical issues is expected to take approximately one year for the High Level Waste Facility and approximately three years for the Pretreatment Facility.

Direct Feed LAW. Concurrent with efforts to resolve technical issues, DOE has examined different approaches that would allow the vitrification of tank wastes to begin as soon as practicable, without waiting for completion of the Pretreatment Facility. Through the implementation of DFLAW, which is discussed in the *Hanford Tank Waste Retrieval, Treatment, and Disposition Framework* (Sept. 24, 2013), DOE believes that it would be possible and

advantageous to feed processed supernate directly to the Low Activity Waste Facility for vitrification before completion of the Pretreatment Facility.

To begin vitrification of the liquid low activity waste as soon as practicable, additional infrastructure beyond the WTP facilities already under construction will be necessary. A specialized pretreatment facility will be needed to remove a substantial amount of the solids and cesium from the supernate prior to transfer to the Low Activity Waste Facility. This facility is known as the Low Activity Waste Pretreatment System. DOE believes it has sufficient information about the facility and the technologies available (e.g., ion exchange columns and solids filtration systems that are commonly used throughout the chemical processing industry) to project a completion date. In addition, although some redesign is needed for the Low Activity Waste Facility, the Analytical Laboratory, and Balance of Facilities to allow for DFLAW, because there are no known significant technical issues with these facilities, DOE believes it can commit that DFLAW will be ready to vitrify supernate no later than December 31, 2022.

DFLAW has significant benefits, the most important of which is DOE could begin treating the supernate without awaiting resolution of the technical issues that have delayed completion of the Pretreatment Facility. In addition, DFLAW would provide flexibility and redundancy by providing an avenue for waste processing in the event of a future outage in the Pretreatment Facility. Operating DFLAW would also provide DOE valuable experience with the vitrification process and associated technologies that could improve performance and reduce risks as the remainder of the WTP facilities are brought on line. Finally, the continued operation of DFLAW over time will free up double shell tank space and enable the completion of the tank waste treatment mission sooner than would occur without DFLAW.

Tank Waste Characterization and Staging. One of the keys to resolving the technical issues in both the tank farms and the WTP is the Tank Waste Characterization and Staging (TWCS) capability (currently envisioned as one or more appropriately-sized vessels in a stand-alone facility). Mixing, sampling, and preconditioning are required to ensure the waste acceptance criteria for the Pretreatment Facility and possibly for the High Level Waste Facility are met. However, recent analysis demonstrates that, contrary to previous expectations, waste mixing and sampling cannot be accomplished effectively in the double shell tanks at Hanford. TWCS will enable tank farm waste to be particle sized, mixed, sampled, characterized, and fed to the Pretreatment Facility in a predictable and consistent manner. It also will provide a method of managing waste projected to be more technically difficult to process. Lastly, it will reduce the testing parameters required for FSVT and support the Pretreatment Facility technical issue resolution activities. DOE anticipates completing the first stage of the critical decision process for TWCS under DOE Order 413.3B (mission need approval) within the next three months.

At the time the Consent Decree was entered in 2010, the WTP had an approved and current baseline and design, and construction was ongoing through existing contracts. Once the technical issues are resolved, DOE will develop new baselines for the facilities of the WTP and modify contracts as required. Because there are no known significant issues in the Low Activity Waste Facility, the baseline for this facility and the Analytical Laboratory and Balance of Facilities will be modified first. However, work has and will continue in these facilities during the rebaselining effort.

Overview of the Proposal

This proposal envisions a new approach to completing all of the objectives of the Consent Decree through a commitment to begin vitrifying tank waste via DFLAW as soon as practicable while simultaneous progress is made to resolve technical issues related to the Pretreatment Facility and the High Level Waste Facility. The proposal embodies a hybrid approach by providing a set of near-term, fixed deadlines in a new appendix to be added to the Consent Decree (Appendix D), along with a commitment by DOE to propose and establish future milestones on a rolling basis, with specific timeframes, once technical issues are resolved and sufficient information is available on which to base milestones pursuant to the DOE Order 413.3B process and through development of new and revised performance baselines and contracts where necessary. This hybrid approach will require a comprehensive amendment of the WTP milestones contained in the Consent Decree, as well as more limited amendments to the tank waste retrieval milestones in light of the technical issues and other factors addressed above. DOE commits to completing hot commissioning DFLAW by December 31, 2022.

The set of Appendix D milestones proposed below contains the initial steps for implementing the Low Activity Waste Pretreatment System and TWCS (milestones D-1 and D-3) along with the December 31, 2022 end date (milestone D-2) by which DOE will complete hot commissioning of DFLAW. Because completing DFLAW hot commissioning depends upon the Analytical Laboratory, the Balance of Facilities, and the Low Activity Waste Facility also being ready to start vitrifying waste, these facilities as well as the Low Activity Waste Pretreatment System must also complete hot commissioning by that date. Appendix D also includes milestones for critical steps to resolve technical issues associated with the Pretreatment Facility and the High Level Waste Facility (milestones D-4 through D-7) and for obtaining conditional authorization to proceed with some High Level Waste Facility activities (milestone D-8). All of these milestones contain commitments that DOE, based on present knowledge, is confident it can achieve with the goal of eventually achieving initial plant operations for WTP, albeit on a revised timeframe. DOE expects that completion of these initial milestones will enable DOE to propose additional key process and construction milestones, as described below.

For the new Low Activity Waste Pretreatment System and TWCS, the establishment of additional milestones beyond D-1 and D-3 would be governed by the DOE Order 413.3B process. For example, DOE would be required to propose design and/or certain preliminary construction milestones within 60 days after DOE approves a performance baseline and a contract for construction of that facility is executed. The same process would apply to the TWCS project, though DOE anticipates that additional lag time between CD-2 and CD-3 may be necessary for construction of TWCS to coordinate with the construction of the Pretreatment Facility and the High Level Waste Facility. These requirements are set out in Paragraphs 3(b) (for the Low Activity Waste Pretreatment System) and 3(c) (for TWCS) of the proposal below.

For each of the WTP capital facilities already covered by the existing Consent Decree, DOE would propose new construction milestones once all relevant technical issues have been resolved, DOE has approved a modified baseline, and DOE has executed a contract modification for those facilities. For the Low Activity Waste Facility, the Analytical Laboratory, and the

Balance of Facilities, which are not limited by the resolution of technical issues and for which DOE commits to completing hot commissioning no later than December 31, 2022, as part of the DFLAW hot commissioning date, DOE would be required to propose interim construction milestones within 60 days after approving changes to the facility baseline and executing a modified contract for that facility. Finally, upon successful resolution of the technical issues affecting the Pretreatment Facility, DOE will provide notice to the State and promptly propose a milestone for conditional authorization to proceed with engineering and procurement. Once DOE approves changes to the baselines and executes contract modifications for the Pretreatment Facility and the High Level Waste Facility, DOE will be required, within 60 days, to propose construction milestones through completion of each facility. Commissioning and operating the High Level Waste Facility is currently dependent on the completion of the Pretreatment Facility. Therefore, once DOE approves a performance baseline for the Pretreatment Facility, DOE will, within 60 days after execution of a contract modification for the Pretreatment Facility, propose milestones for cold commissioning and hot commissioning of the Pretreatment Facility and the High Level Waste Facility, and initial plant operations for the WTP.

This proposal reflects the substantial level of unpredictability associated with these unique facilities that pose significant technical obstacles, with nuclear safety implications, at a time of fiscal uncertainty and constraint. It commits DOE to establishing new and realistic milestones while resolving technical issues needed to achieve WTP operations and advancing the overall mission by directly feeding and vitrifying supernate as soon as practicable. DOE's proposal also recognizes that this path forward will require new facilities that must undergo critical planning, design, and decision procedures, before DOE can reasonably develop accurate construction budget and schedules.

By formally linking the establishment of milestones to DOE Order 413.3B and equivalent internal project approval points, this proposal is consistent with DOE's internal decision-making processes for capital acquisition projects and thereby enhances the certainty and achievability of the resulting milestones. It also provides transparency and accountability to the State on key steps during the capital acquisition process, including the ability for DOE and the State to track progress on these facilities as they move through the process, and it provides a basis to propose additional milestones for inclusion in the Consent Decree to ensure their expeditious and timely completion. As DOE proposes new milestones, the State will have the ability to agree to or reject the milestones, and both parties will retain the option to engage in dispute resolution or seek judicial intervention, if necessary, in the milestone-setting process.

This proposal also includes more limited modifications to the tank waste retrieval milestones in Appendix B of the Consent Decree to account for the delays associated with tank retrievals, and to take advantages of newly realized efficiencies, as discussed above. First, DOE proposes to extend the milestone for completion of "C Farm" tank retrievals by substituting September 30, 2015, for the existing September 30, 2014, milestone date. Second, in place of the current December 31, 2017, milestone for initiating startup of retrieval in five additional tanks, DOE proposes to substitute three milestones calling for the initiation of retrieval in two additional tanks by the end of 2017, two more by the end of 2019, and five additional tanks by 2021. The final milestone for completion of retrieval in nine tanks will remain September 30, 2022. These proposed changes allow DOE to take advantage of lessons learned to more

efficiently carry out the retrieval mission while still completing retrieval of the waste on the original schedule.

Specific Amendments

Amendments for WTP Construction and Startup

- The milestone dates in Consent Decree Section IV-A and Appendix A that have not passed are vacated and are superseded by the new milestones in Appendix D and additional milestones that will be established pursuant to Paragraphs 3 and 4 of Appendix D, as set forth below.
- The following provisions are added to the Consent Decree as new “Appendix D: WTP Consent Decree Modified Milestones, Schedule, Assumptions”:
 1. Definitions
 - a. “Performance Baseline” as established in the Project Execution Plan, defines the Total Project Cost, CD-4 completion date, performance and scope commitment to which DOE must execute a project and is based on an approved funding profile. The Performance Baseline includes the entire project budget (total cost of the project that includes contingency).
 - b. “Critical Decision” or “CD” stages refer to the five decision points through which a capital acquisition project proceeds under DOE Order 413.3B. Each CD (CD-0, CD-1, etc.) marks an authorization to increase the commitment of resources by DOE and requires successful completion of the preceding phase or CD. The amount of time between decisions will vary.
 - c. “DOE Order 413.3B” means Department of Energy Order 413.3B, *Program and Project Management for the Acquisition of Capital Assets* (Nov. 29, 2010).
 - d. “Low Activity Waste Pretreatment System” (LAWPS) means an installed capability or constructed facility with the ability to receive tank supernate, remove the cesium and majority of the solids, and transfer the supernate to the Low Activity Waste Facility. Removed solids and cesium may be either isolated for future processing or returned to the tank farms.
 - e. “Tank Waste Characterization and Sampling” (TWCS) means a facility that will receive, particle size, mix, enable sampling, stage, and provide tank waste to the Pretreatment Facility in accordance with the waste acceptance criteria.
 - f. “Pulse Jet Mixer Control Testing in Vessel RLD-8T” means the series of activities undertaken to demonstrate effective control of pulse jet mixer

firing sequences and effects (such as overblows) that are needed to ensure the long term operability of the pulse jet mixer control system.

- g. “Phase 2 Vessel Testing” means the second series of tests for a specific tank design that will test the ability to mix solids in the vessel to prevent inadvertent criticality and hydrogen gas accumulation greater than the Lower Flammability Level in the tank headspace.
- h. “Erosion Wear Design Basis for Pretreatment Vessels” means the calculations, analysis, and identified modifications required to ensure sufficient vessel and piping wall thickness along with plant operating parameters to prevent pipe or vessel failures due to erosion.
- i. “Melter #1 Refractory Installation” means completion of the installation of the refractory bricks in the Low Activity Waste Facility Melter #1. Installation includes physically placing the bricks, securing the bricks, and completion acceptance. (Note: This does not include Gas Barrier Lid refractory.)
- j. “DFLAW Hot Commissioning Complete” means the point at which the Low Activity Waste Facility has demonstrated its ability to produce immobilized low activity waste glass of acceptable quality. The waste will be delivered to the Low Activity Waste Facility through the Low Activity Waste Pretreatment System.
- k. “Conditional Authorization to Proceed with Engineering and Procurement for the High Level Waste Facility” means the specific approvals granted by the Manager of the Office of River Protection to resume these activities.

2. WTP Construction and Startup

Each milestone set forth below shall be completed by the specified date for that milestone:

Project	Description	Date
D-1	Low Activity Waste Pretreatment System Approve Alternative Selection and Cost Range (CD-1) Decision Made	9/30/2015
D-2	DFLAW Hot Commissioning Complete	12/31/2022
D-3	TWCS Approve Alternative Selection and Cost Range (CD-1) Decision Made	6/30/2017
D-4	Initiate Pulse Jet Mixer Control Testing in Vessel RLD-8T	3/31/2015
D-5	Initiate Phase 2 Vessel Testing	9/30/2016

D-6	Confirm the Erosion Wear Design Basis for Pretreatment Vessels Based Upon Testing and Analysis	6/30/2016
D-7	Complete LAW Melter #1 Refractory Installation	6/30/2015
D-8	Conditional Authorization to Proceed with Engineering and Procurement for the High Level Waste Facility	12/31/2014

3. Establishment of Additional Appendix D Milestones

- a. This Paragraph 3 shall govern the establishment of new milestones for the WTP and the associated support facilities: the Low Activity Waste Facility, the High Level Waste Facility, the Pretreatment Facility, the Analytical Laboratory, the Balance of Facilities, the Low Activity Waste Pretreatment System, and TWCS.
- b. Establishment of DFLAW Milestones and Milestones for the Low Activity Waste Pretreatment System
 - i. DOE shall complete Hot Commissioning of DFLAW by December 31, 2022, as set forth in milestone D-2.
 - ii. With regard to the Low Activity Waste Pretreatment System, DOE’s critical decision on alternatives selection (CD-1) shall be made not later than September 30, 2015, as set forth in milestone D-1.
 - iii. Within 60 days of a critical decision approving the Low Activity Waste Pretreatment System at milestone D-1 pursuant to DOE Order 413.3B, DOE will propose a milestone for the CD-2 decision.
 - iv. After a critical decision has been made approving the Low Activity Waste Pretreatment System at the CD-2 stage pursuant to DOE Order 413.3B, DOE will, within 60 days after execution of a contract or contract modification for such facility, propose design and/or certain preliminary construction milestones for that facility.
 - v. After a critical decision has been made approving the Low Activity Waste Pretreatment System at the CD-3 stage pursuant to DOE Order 413.3B, DOE will, within 60 days after execution of a contract or contract modification for such facility, propose new and/or modified construction milestones for that facility through completion of Low Activity Waste Pretreatment System Hot Commissioning.

- vi. DOE shall execute a contract or contract modification (if needed) identified in this Paragraph 3(b) as expeditiously as practicable after the associated CD-2 or CD-3 approval.
- c. Establishment of Milestones for the TWCS Project
- i. Within 60 days of the alternatives selection (CD-1) approving the new capital facility for the TWCS project at milestone D-3 pursuant to DOE Order 413.3B, DOE will propose a milestone for the CD-2 decision.
 - ii. After a critical decision approving the new capital facility for the TWCS project at the CD-2 stage pursuant to DOE Order 413.3B, DOE will, within 60 days after execution of a contract or contract modification for such facility, propose design and/or certain preliminary construction milestones for that proposed facility.
 - iii. After a critical decision approving the new capital facility for the TWCS project at the CD-3 stage pursuant to DOE Order 413.3B, DOE will, within 60 days after execution of a contract or contract modification for such facility, propose new and/or modified construction milestones for the completion of that proposed facility.
 - iv. DOE shall execute a contract or contract modification identified in this Paragraph 3(c) as expeditiously as practicable after the associated CD-2 or CD-3 approval.
- d. Establishment of Design and Construction Milestones for the Low Activity Waste Facility, Analytical Laboratory Facility, and Balance of Facilities
- i. At such time as DOE approves a performance baseline for the Low Activity Waste Facility, Analytical Laboratory Facility, and Balance of Facilities, DOE will, within 60 days after execution of a contract modification for such facilities, propose construction milestones for the completion of those facilities.
 - ii. DOE shall execute a contract or contract modification identified in this Paragraph 3(d) as expeditiously as practicable after approval of the performance baseline.
- e. Establishment of Design and Construction Milestones for the Pretreatment and High Level Waste Facilities
- i. Within 60 days of providing the notice of the resolution of all technical issues required by Paragraph 4(e) below with respect to the Pretreatment Facility, DOE will propose a milestone by which

DOE will provide conditional authorization to proceed with engineering and procurement with respect to the Pretreatment Facility.

- ii. At such time as DOE approves a performance baseline for the High Level Waste Facility, DOE will, within 60 days after execution of a contract modification for such facility, propose construction milestones through completion of the High Level Waste Facility.
- iii. At such time as DOE approves a performance baseline for the Pretreatment Facility, DOE will, within 60 days after execution of a contract modification for the Pretreatment Facility, propose milestones for construction through completion of the Pretreatment Facility, cold commissioning and hot commissioning of the Pretreatment Facility and the High Level Waste Facility, and initial plant operations for the WTP.
- iv. DOE shall execute a contract or contract modification identified in this Paragraph 3(e) as expeditiously as practicable after approval of the performance baseline.

4. Technical Issue Resolution

- a. This Paragraph shall apply to the following unresolved technical issues associated with the WTP: hydrogen gas events in pulse jet mixed vessels and in piping and ancillary vessels; criticality in vessels in the Pretreatment Facility; pulse jet mixer control; erosion and localized corrosion in WTP vessels and piping; and ventilation balancing.
- b. Not later than 12 months after the Consent Decree has been modified according to this proposal, DOE shall submit to the State a report detailing the progress made on the unresolved technical issues identified in Paragraph 4(a) and the steps DOE plans over the subsequent 24 months toward resolution of these issues.
- c. Upon completion of each technical resolution milestone D-4 through D-7 and the associated design changes, and any other technical resolution milestone established pursuant to this Paragraph 4(c) and the associated design changes, DOE will propose as expeditiously as practicable any appropriate new milestones for resolving that particular technical issue.
- d. Until such time as DOE resolves each of the technical issues identified in Paragraph 4(a) and notifies the State of such resolution in writing as provided in Paragraph 4(e) below, DOE shall brief the Washington State Department of Ecology, either in person or by teleconference or other electronic means, every 90 days to advise the Washington State

Department of Ecology on DOE's progress towards resolving these technical issues.

- e. DOE shall notify the State in writing as expeditiously as practicable after DOE makes each of the following determinations:
 - i. that DOE has resolved any of the technical issues in Paragraph 4(a) and made the associated design changes;
 - ii. that DOE has resolved all of the significant technical issues pertaining to the Pretreatment Facility and made the associated design changes; and
 - iii. that DOE has resolved all of the significant technical issues pertaining to the HLW Facility and made the associated design changes.

5. Process and Standards for Establishing New Milestones

- a. If the State agrees to DOE's proposal to establish a new milestone under Paragraphs 3 or 4 above, the parties shall submit an appropriate amendment for approval of the new milestone by the Court. If the parties cannot agree upon the establishment of a new milestone within a reasonable time, not to exceed 60 calendar days from the date of DOE's proposal (unless the State and DOE agree to a longer period of time), then either party may seek relief from the Court by filing a petition with the Court within 40 calendar days after the completion of the 60-day negotiation period.
- b. Milestones added to Appendix D through the procedure set forth in this Paragraph: (1) shall be in furtherance of, and shall not extend beyond, the establishment of initial plant operations for the WTP, as defined in Paragraph IV-A-3 of the Consent Decree; and (2) shall be based on considerations of achievability within the proposed timeframe taking into account all relevant factors, including available funding, technical issues, safety, the need to coordinate construction milestones and schedules among the WTP facilities, and any other factors that might foreseeably affect the facility's schedule.

6. Conforming Provisions

- a. Except as set forth in Paragraph 5 above, amendment of milestones established pursuant to this Appendix D shall be governed by the standards and procedures in Section VII of the Consent Decree.

- b. The milestones and schedule set forth in Appendix D above are subject to the WTP Construction and Startup Concerns and Assumptions set forth in Paragraph 2 of Appendix A.
 - c. DOE shall provide the notice required by Section IV-C-3 of the Consent Decree, as applicable, with respect to milestones established pursuant to this Appendix D.
 - d. Section IX-C of the Consent Decree shall be applicable to any DOE requests for extensions of milestones established pursuant to this Appendix D.
7. Savings Provision: Nothing in this Consent Decree shall be interpreted to require DOE to undertake any obligation that is inconsistent with applicable law.
- Paragraph XV-B of the Consent Decree (Effective and Termination Dates) is stricken and replaced with the following: “This Consent Decree shall terminate when the milestones in Appendix B and Appendix D have been met, and initial plant operations for the Waste Treatment Plant, as defined in Paragraph IV-A-3 of the Consent Decree, have been achieved. As appropriate, a Party, or the Parties jointly, will notify the Court of this event by a motion to terminate the Consent Decree.”

Amendments for Single Shell Tank Waste Retrievals

- The deadline in Paragraph IV-B-1 of the Consent Decree is changed from September 30, 2014, to September 30, 2015.
- The following milestones are substituted for the milestones in Appendix B of the CD:

Project	Description	Date
B-1	Complete retrieval of tank wastes from the following remaining single shell tanks in Waste Management Area C: C-101, C-102, C-105, C-107, C-110, and C-111	9/30/2015
B-2	Subject to the requirements of Section IV-B-3, DOE will advise the Washington State Department of Ecology of the nine single shell tanks from which waste will be retrieved by 2022. Subject to the requirements of Section IV-B-3, DOE may substitute any of the identified nine single shell tanks and advise the Washington State Department of Ecology accordingly.	9/30/2014
B-3	Initiate startup of retrieval in two of the single shell tanks referred to in B-2	12/31/2017
B-4	Initiate startup of retrieval in two additional single shell tanks referred to in B-2	12/31/2019

B-5	Initiate startup of retrieval in five additional single shell tanks referred to in B-2	12/31/2021
B-6	Complete retrieval of tank wastes from the nine single shell tanks selected to satisfy B-2	9/30/2022

Conclusion

DOE remains committed to completing the WTP as soon as practicable and advancing DOE's long-term commitment to completing the tank waste mission at the Hanford site. DOE comes to that commitment with a fuller understanding of the challenges and risks involved with a project of this magnitude at a time of fiscal uncertainty. That understanding forms the basis for the milestone approach in this proposal. DOE looks forward to working with the State to establish a path forward that is sustainable and advances the tank waste mission in an expedient manner consistent with the safety of the workforce, the public, and the environment.