



U.S. Department of Energy
Office of River Protection

1219405

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AUG 29 2011

11-TF-090

Ms. Jane A. Hedges, Program Manager
Nuclear Waste Program
State of Washington
Department of Ecology
3100 Port of Benton Blvd
Richland, Washington 99352

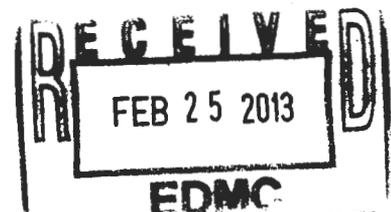
Dear Ms. Hedges:

SUBMITTAL OF DOCUMENTATION IN FULFILLMENT OF HANFORD FEDERAL FACILITY AGREEMENT AND CONSENT ORDER (HFFACO) MILESTONE M-045-100

- References:
1. Federal Facility Agreement and Consent Order Change Control Form M-45-09-01, Effective October 25, 2010. 0091367
 2. Agreement in Principle – Milestone M-045-100 “Catch Tank Assumed Leak” Response Plan 0098435

The U. S. Department of Energy, Office of River Protection is providing the attached document, Single-Shell Tank System Catch Tank Assumed Leak Response Plan, RPP-PLAN-48438 revision 1, in accordance with the HFFACO Milestone M-045-100 after discussing specific modifications to the document together with the State of Washington Department of Ecology staff on August 9th and 23rd, 2011. ORP would like to thank you and your staff for the collaborative effort. We believe our work together has yielded a plan that meets the requirements and needs of M-045-100.

If you have any questions, please contact me, or your staff may contact Christopher J. Kemp, Deputy Federal Project Director, Tank Farms Project at (509) 376-0649.

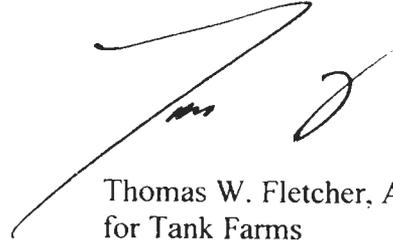


AUG 29 2011

Ms. Jane A. Hedges
11-TF-090

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Sincerely,

A handwritten signature in black ink, appearing to read 'Thomas W. Fletcher', with a large, sweeping flourish extending from the end of the signature.

Thomas W. Fletcher, Acting Assistant Manager
for Tank Farms

TF: CJK

Attachment

cc w/attach:

A. A. Fitz, Ecology

R. M. Carosino, RL

M. D. Silberstein, RL

J. W. Badden, WRPS

S. J. Eberlein, WRPS

S. E. Killoy, WRPS

WRPS Correspondence

**ATTACHMENT
TO**

11-TF-090

RPP-PLAN-48438 REV. 1

DOCUMENT RELEASE FORM

(1) Document Number: RPP-PLAN-48438		(2) Revision Number: 1	(3) Effective Date: 08/23/2011
(4) Document Type: <input type="checkbox"/> Digital Image <input type="checkbox"/> Hard copy <input checked="" type="checkbox"/> PDF <input type="checkbox"/> Video		(a) Number of pages (including the DRF) or 14 number of digital images	
(5) Release Type: <input type="checkbox"/> New <input type="checkbox"/> Cancel <input type="checkbox"/> Page Change <input checked="" type="checkbox"/> Complete Revision			
(6) Document Title: Single-Shell Tank System Catch Tank Assumed Leak Response Plan			
(7) Change/Release Description: Changes made in response to Washington State Department of Ecology comments on milestone document			
(8) Change Justification: TPA Action Plan Section 9 requires revision of DOE primary documents in response to Ecology comments.			
(9) Associated Structure, System, and Component (SSC) and Building Number:	(a) Structure Location: N/A	(c) Building Number: N/A	(e) Project Number: N/A
	(b) System Designator: N/A	(d) Equipment ID Number (EIN): N/A	
(10) Impacted Documents:	(a) Document Type N/A	(b) Document Number N/A	(c) Document Revision N/A
(11) Approvals:			
(a) Author (Print/Sign): J. W. Badden		Date: 08/23/2011	
(b) Reviewer (Optional, Print/Sign):			
K. J. Dunbar		Date: 8-23-11	Date: 08/23/2011
		Date:	Date:
		Date:	Date:
(c) Responsible Manager (Print/Sign): S. J. Eberlein		Date: 08/23/2011	
(12) Distribution:			
(a) Name	(b) MSIN	(a) Name	(b) MSIN
J. W. Badden	H6-13	J. W. Donnelly	R1-51
K. D. Quigley	H6-13	J. A. Voogd	R1-51
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<div style="border: 2px solid black; padding: 5px; display: inline-block;"> <p style="font-size: 1.2em; margin: 0;">AUG 23 2011</p> <p style="margin: 0;">DATE: HANFORD</p> <p style="margin: 0;">STA: 15 RELEASE</p> <p style="margin: 0;">ID: (85)</p> </div>			
(13) Clearance	(a) Cleared for Public Release <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	(b) Restricted Information? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	(c) Restriction Type:
(14) Clearance Review (Print/Sign): NANCY A FOUA & Nancy A Fouad			Date: 8/23/2011

Single-Shell Tank System Catch Tank Assumed Leak Response Plan

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U.S. Department of Energy Contract DE-AC27-08RV14800

EDT/ECN: DRF

UC:

Cost Center:

Charge Code:

B&R Code:

Total Pages: 14

Key Words: single-shell tank, double-contained receiver tank, leak response planning, miscellaneous underground tanks, monitored, unmonitored, formal leak assessment process

Abstract: This report contains information for completion of Hanford Federal Facility Agreement and Consent Order milestone M-045-100, and specifically discusses leak response planning for those catch tanks associated with the Single-Shell Tank System that are required to be monitored pursuant to RPP-9937, Single-Shell Tank System Leak Detection and Monitoring Functions and Requirements Document and that are also identified in the Hanford Facility Dangerous Waste Part A Permit Application, Form 3, Revision 12, for the Single-Shell Tank System.

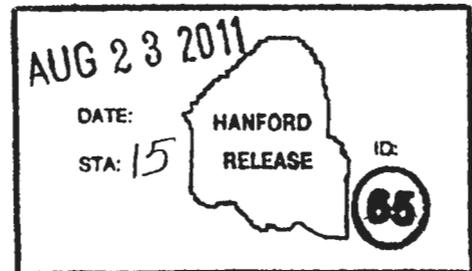
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Nancy A Fouad

Release Approval

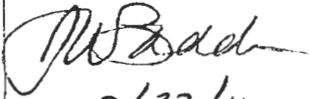
8/23/2011

Date



Release Stamp

Approved For Public Release

Tank Operations Contractor (TOC)		(1) Document Number:	
RECORD OF REVISION		RPP-PLAN-48438	
(2) Title:			
Single-Shell Tank System Catch Tank Assumed Leak Response Plan			
Change Control Record			
(3) Revision	(4) Description of Change – Replace, Add, and Delete Pages	Authorized for Release	
		(5) Resp. Engr. (print/sign/date)	(6) Resp. Mgr. (print/sign/date)
1 RS	Changes made in response to Washington State Department of Ecology comments on milestone document	J. W. Badden  8/23/11	S. J. Eberlein  08/23/11

Single-Shell Tank System Catch Tank Assumed Leak Response Plan

J. W. Badden

Washington River Protection Solutions LLC

Date Published

August 2011



Prepared for the U.S. Department of Energy
Office of River Protection

Contract No. DE-AC27-08RV14800

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LIST OF TERMS

Acronyms and Abbreviations

DCRT	double-contained receiver tank
Ecology	State of Washington Department of Ecology
HFFACO	<i>Hanford Federal Facility Agreement and Consent Order</i>
ORP	U.S. Department of Energy Office of River Protection
SST	single-shell tank
SST System Part A Permit Application	<i>Hanford Facility Dangerous Waste Part A Permit Application, Form 3, Revision 12, for the Single-Shell Tank System</i>

1.0 INTRODUCTION

1.1 PURPOSE AND SCOPE

This plan contains information for completion of *Hanford Federal Facility Agreement and Consent Order* (Ecology et al. 1989) (HFFACO) milestone M-045-100, which states:

Submit to Ecology as an Agreement Primary Document a Catch Tank "assumed leak" response plan. This Plan will include criteria for declaring a tank an assumed leaker, response actions that will be taken, notifications, and provisions to ensure initiation of liquid removal within 90 days.

This plan specifically develops leak response planning for those catch tanks associated with the Single-Shell Tank (SST) System that are required to be monitored pursuant to RPP-9937, *Single-Shell Tank System Leak Detection and Monitoring Functions and Requirements Document* and that are also identified in the *Hanford Facility Dangerous Waste Part A Permit Application, Form 3, Revision 12, for the Single-Shell Tank System [WRPS 2010]* (SST System Part A Permit Application).

1.2 IDENTIFICATION AND DESCRIPTION OF SINGLE-SHELL TANK SYSTEM CATCH TANKS

Miscellaneous underground tanks consist of a number of different components. These include catch tanks, vaults and their associated tanks, cells/sumps, and double-contained receiver tanks (DCRT). For the purposes of this plan, these component types are termed "catch tanks." Catch tanks discussed in this plan do not include 100- or 200-series SSTs, valve pits or boxes, diversion boxes, seal pots, or other miscellaneous pits.

There are three basic types of catch tanks. The first is a single tank with no vault or secondary containment. The second type is a primary tank within a vault or secondary containment. The third type is a DCRT, which was typically used to support waste transfers prior to being taken out of service. It consists of a primary tank within a cement vault, but also had additional instrumentation and active ventilation to support waste transfers. Ventilation systems for DCRTs have been inactivated or isolated. This section addresses leak detection and intrusion detection requirements for all three types of tanks.

RPP-9937 identifies which catch tanks are required to be monitored as well as the frequency of monitoring. RPP-9937 is a primary document approved by the State of Washington Department of Ecology (Ecology) under the HFFACO Action Plan, Section 9.0. A listing of monitored and unmonitored SST System catch tanks contained in the SST System Part A Permit Application and required to be monitored in RPP-9937 is shown in Table 1.

Table 1. Monitored and Unmonitored Catch Tanks Associated with the Single-Shell Tank System

Monitored Catch Tanks	Unmonitored Catch Tanks	
240-S-302 ^a 241-A-302A 241-A-302B ^a 241-A-350 241-A-417 241-AX-152 241-AZ-151* 241-ER-311 241-EW-151 241-S-304 241-TX-302B ^a 241-TX-302C 241-U-301B 241-UX-302A 244-A DCRT (Tank and Sump) 244-AR Vault Tank 001, 002, 003, 004 Sump 001, 002, 003 244-CR Vault Tank 003 244-BX (Tank and Sump) 244-S (Tank and Sump) 244-TX (Tank and Sump)	241-AX-151 241-AZ-154 ^b 241-B-301 241-B-302B 241-BX-302A 241-BX-302B 241-BX-302C 241-BY-ITS1-TK1* 241-BY-ITS1-TK2* 241-C-301 241-ER-311A 241-S-302A 241-S-302B 241-SX-302 241-T-301B 241-TX-302A 241-TX-302BR 241-TX-302XB 241-TY-302A 241-TY-302B	244-BXR Vault Tank 011, 001, 002, 003 Sump 011, 001, 002, 003 244-CR Vault Tank 001, 002, 011 Sump 011, 001, 002, 003 244-U ^c (Tank and Sump) 244-UR Vault Tank 001, 002, 003, 004 Sump 001, 002, 003, 004 244-TXR Vault Tank 001, 002, 003 Sump 001, 002, 003

DCRT = Double Contained Receiver Tank

* Tank is not part of the Single-Shell Tank System as noted in the *Hanford Facility Dangerous Waste Part A Permit Application, Revision 12, for the Single-Shell Tank System*, but has been added for completeness as these tanks have been previously discussed in other documentation associated with the Single-Shell Tank System.

^a Tank is not required to be monitored per RPP-9937, *Single-Shell Tank System Leak Detection and Monitoring Functions and Requirements Document*.

^b Stopped monitoring in July 2008. Tank is empty and has been isolated.

^c Never in service.

The majority of unmonitored catch tanks have little or no current information available to ascertain whether a leak occurred. Most of these do not have any history of data being collected since at least 1980. These tanks are not discussed further in this plan.

2.0 CRITERIA FOR DECLARING A MONITORED CATCH TANK AN ASSUMED LEAKER

Tank Farm operational guidance documentation (TFC-ENG-CHEM-D-42, "Tank Leak Assessment Process") identifies a process for investigating, evaluating, and reporting a potential leak from a tank being monitored in accordance with RPP-9937. The process will result in the classification of a catch tank as either "sound" or as an "assumed leaker."

2.1 SPECIFICATION LIMITS FOR CATCH TANKS

Specification limits for triggering the TFC-ENG-CHEM-D-42 tank leak assessment for catch tanks and miscellaneous vessels are established in Section 4.0 of OSD-T-151-00031, *Operating Specifications for Tank Farm Leak Detection and Single-Shell Tank Intrusion Detection*. According to OSD-T-151-00031, trend analysis is conducted for each monitored catch tank. Trend analysis consists of monitoring for a decrease from the trend established by previous readings of tank content levels. In general, tanks with very stable levels have baselines assigned and are subject to a fixed decrease criterion that is dependent on the accuracy of the instrumentation and stability of the tank. Tank liquid level measurements that change significantly on a regular basis, such that maintaining a valid baseline is impractical, are evaluated using trend analysis. Trend analysis compares the most recent value with the previous data trend and looks for a change that exceeds the specification limit. The technical basis for establishment of these limits is also contained in Section 4.0 of OSD-T-151-00031.

2.2 EXCEEDENCE OF TANK LEVEL SPECIFICATION LIMITS

Any data point that is outside allowable specification limits will require evaluation according to TFC-ENG-CHEM-D-42. This evaluation typically takes 30 to 45 days but may take longer based on data needs. This evaluation will include:

- Rechecking monitoring equipment
- Resampling data to verify repeatability
- Resampling data on a weekly basis
- Evaluating alternate causes for exceedance
- If exceedance is verified, commencing a formal leak assessment process
- Preparing final assessment report and releasing it as an engineering document.

The formal leak assessment process as specified in TFC-ENG-CHEM-D-42 is based on probabilistic analysis to assess the mathematical likelihood (probability) that a specific tank is leaking or has leaked. Should the formal leak assessment process verify that a catch tank leak is likely occurring based on the probability analysis, the catch tank will be declared an assumed leaker.

3.0 RESPONSE ACTIONS FOR A CATCH TANK ASSUMED LEAKER

The U.S. Department of Energy Office of River Protection (ORP) will evaluate any catch tank declared an assumed leaker for its potential threat to human health and the environment on a case-by-case basis considering factors such as waste volume, waste characteristics, tank construction, tank location, and leak volume (Figure 1). The ORP will provide its evaluation to Ecology within 30 days of making a leak determination along with its recommendation to follow one of two tracks: either initiating a short-term response, or initiating an options analysis. Initiating a short-term response is defined as initiating liquid removal within 90 days of completing the evaluation. If tank-specific circumstances preclude liquid removal within 90 days, ORP will notify Ecology of the circumstances which preclude removal, and submit to Ecology an alternate schedule.

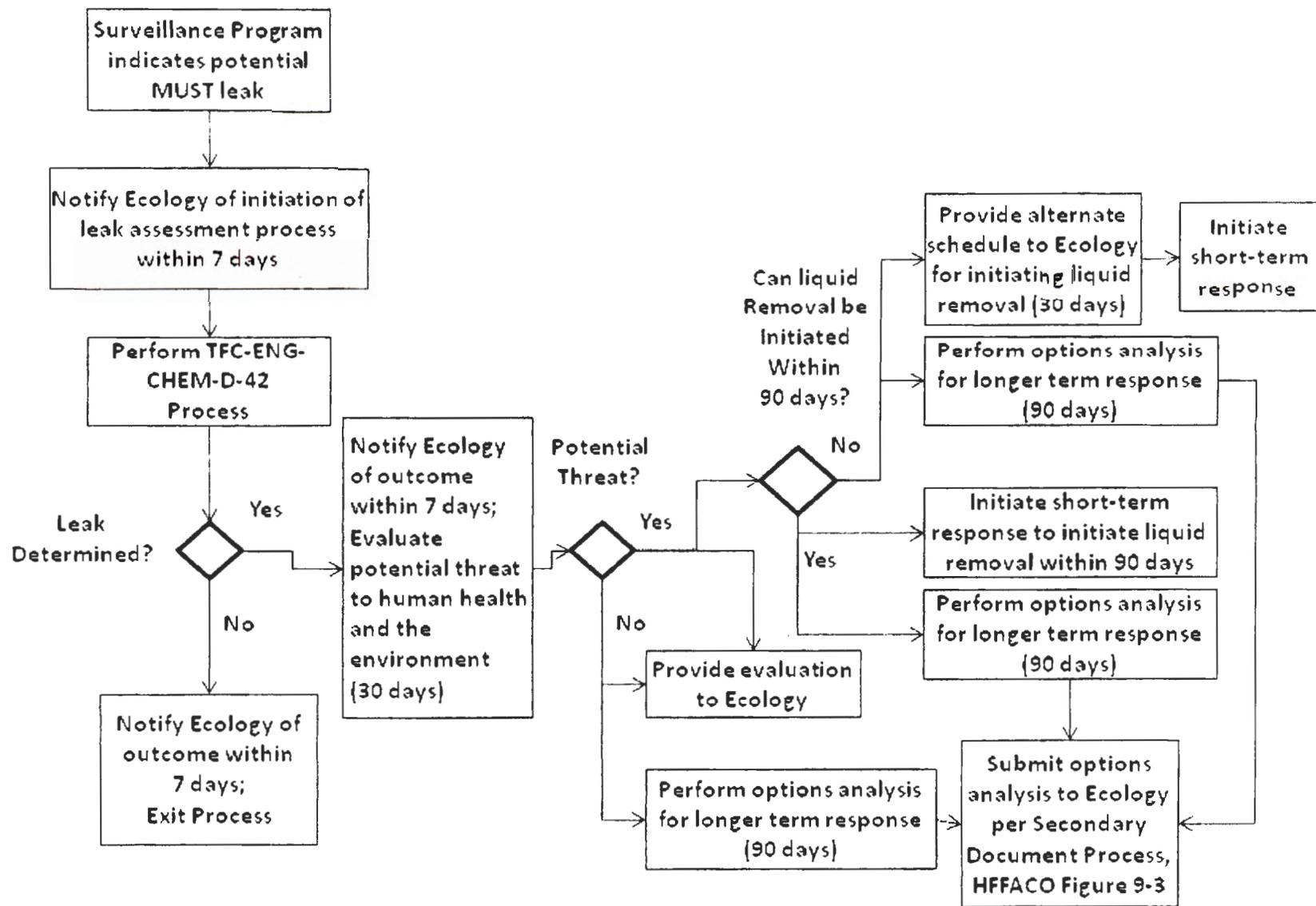
Whether or not a short-term response is recommended, an options analysis will be initiated on any catch tank declared an assumed leaker. The purpose of the options analysis is to recommend longer-term response actions in parallel with the option of initiating liquid removal within 90 days.

Response actions will be specific to the circumstances surrounding the leaking catch tank. Factors such as volume of liquid and solid residuals, composition of residuals, tank access, presence of secondary containment, worker safety issues, and availability of sampling and analysis data will need to be considered. Specific mitigation actions for catch tanks may include:

- a. Performing no mitigation actions for tanks with little or no free liquid; continued monitoring and surveillance
- b. Pumping free liquids
- c. Using absorbents to stabilize free liquids
- d. Evaporating tank contents using "in situ" techniques.
- e. Grout-filling the tank (with allowance for later removal of the tank)
- f. Removal, treatment (as necessary), and disposal of the tank and contents.

The tank-specific options analysis will be developed in a report and submitted to Ecology for their review. The options analysis will follow the process flow for reviewing and commenting on secondary documents described in HFFACO Section 9.2.3 and HFFACO Figure 9-3.

Figure 1. Catch Tank Assumed Leaker Response Process



4.0 NOTIFICATIONS AND PROVISIONS FOR INITIATION OF LIQUID REMOVAL WITHIN NINETY DAYS

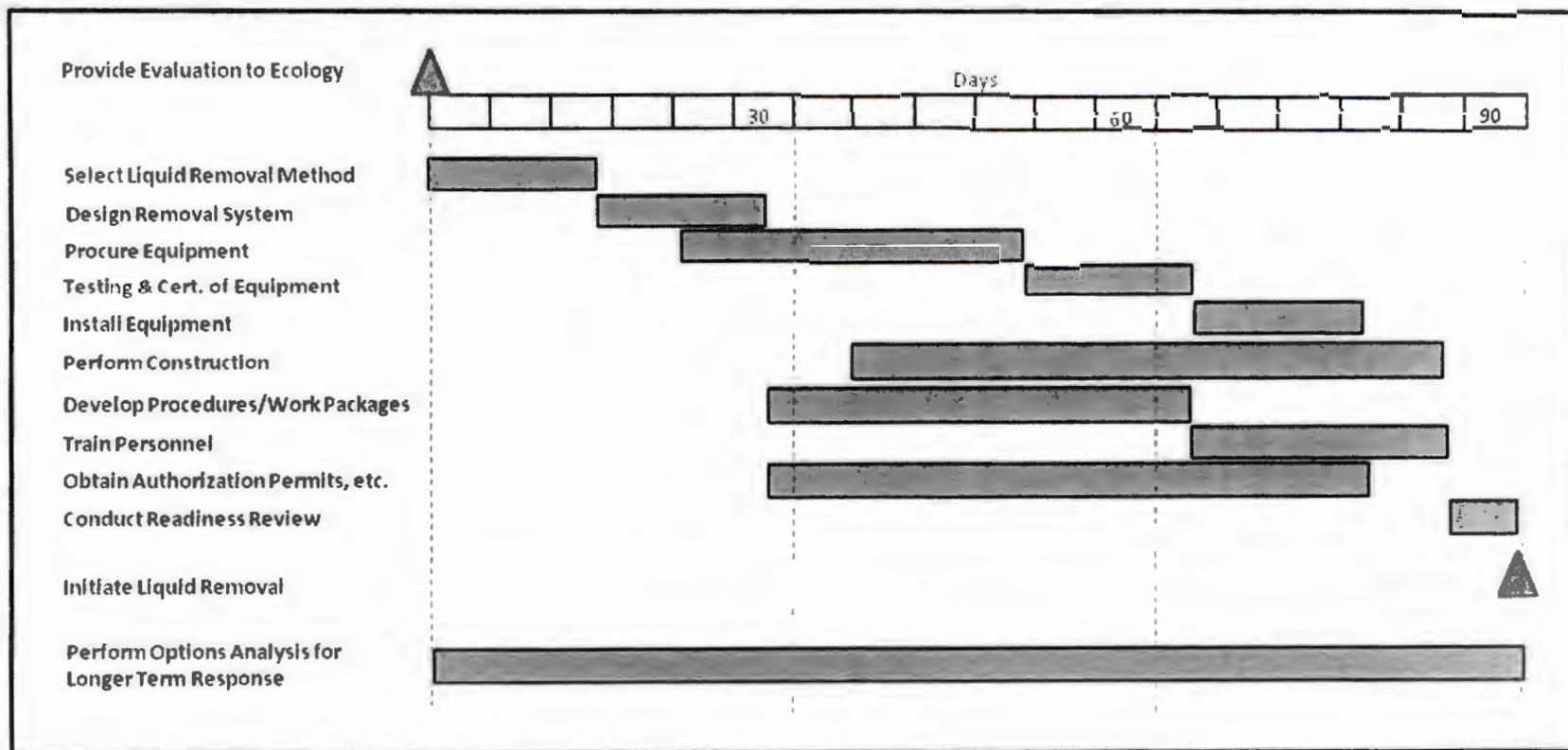
Any data point that is outside allowable specification limits will require evaluation according to TFC-ENG-CHEM-D-42. The ORP will notify Ecology, in writing, within seven (7) days of starting such evaluation. Thereafter, ORP will report on the status of the evaluation at the monthly meeting of the ORP and Ecology project managers. Should the formal leak assessment process verify that a catch tank leak is likely occurring based on the probability analysis, the catch tank will be declared an assumed leaker. The ORP will notify Ecology, in writing, within seven (7) days of declaring an assumed leaker.

Within 30 days of declaring an assumed leaker, ORP will complete an evaluation of potential threat to human health and the environment, and will provide that evaluation to Ecology along with ORP's recommendation for initiating either a short-term response or an options analysis. If ORP recommends initiating a short-term response, the initiation of liquid removal shall commence within 90 days of recommending a short-term response to Ecology, unless ORP notifies Ecology that tank-specific circumstances preclude liquid removal within 90 days (and provides an alternate schedule).

A general schedule showing key activities required for 90-day response to an assumed leaker is shown in Figure 2. A detailed schedule will depend on specific circumstances. The options analysis will be completed within 90 days regardless of the outcome of the evaluation.

If liquid or other response actions for an assumed leaker have the likelihood of displacing other ORP work scope, the ORP project manager is responsible for notifying Ecology in accordance with the provisions of HFFACO Action Plan Section 11.8D, or other applicable HFFACO requirements.

Figure 2. General Ninety Day Response for a Catch Tank Assumed Leaker That Poses a Potential Threat to Human Health and the Environment



5.0 REFERENCES

- Ecology, EPA, and DOE, 1989, *Hanford Federal Facility Agreement and Consent Order – Tri-Party Agreement*, 2 vols., as amended, State of Washington Department of Ecology, U.S. Environmental Protection Agency, and U.S. Department of Energy, Olympia, Washington.
- OSD-T-151-00031, 2010, *Operating Specifications for Tank Farm Leak Detection and Single-Shell Tank Intrusion Detection*, Rev. G-4, Washington River Protection Solutions, LLC, Richland, Washington.
- RPP-9937, 2008, *Single-Shell Tank System Leak Detection and Monitoring Functions and Requirements Document*, Rev. 3, CH2M HILL Hanford Group, Inc., Richland, Washington.
- TFC-ENG-CHEM-D-42, Rev. B-2, “Tank Leak Assessment Process,” Washington River Protection Solutions, LLC, Richland, Washington.
- WRPS, 2010, *Hanford Facility Dangerous Waste Part A Permit Application, Form 3, Revision 12. for the Single-Shell Tank System*, Washington River Protection Solutions, LLC, Richland, Washington.