To: Ann Kenny

From: Ching-Pi Wang

Cc: Jeannie Summerhays
Steve Alexander

Date: January 23, 2002

Subj: Review of Third Runway Embankment Fill Monitoring Plan,
401 Certification Condition E.3
Port of Seattle, November 2001

Per your request via Jeannie Summerhays by memorandum dated January 8th, 2001, I have reviewed the Embankment Fill Monitoring Plan (EFMP) document and provide the following comments:

1. The document should provide detailed logic tree flow diagrams for the tiers and stages of sampling and action for all phases. I have provided an example logic tree flow diagram for the Groundwater Staged Screening that includes the comments provided in this memorandum (Figure 1). Similar logic tree flow diagrams should be provided in the EFMP for "tiers" sampling, Interim Seepage Quality Screening, Post Construction Embankment Seepage and Groundwater Monitoring, Seepage Staged Screening, and Groundwater Staged Screening.

2. Page 4, Section 3.1, last sentence. The "appropriate statistical methods" should be described in detail in an appendix in the EFMP. The proposed statistical methods should be reviewed and approved by Ecology staff.

3. Page 4, Section 3.2. Ecology staff should look at the proposed well locations in the field to gain familiarity with the site.

4. Page 5, Section 3.3, first sentence. Same comment as number 2. The statistical method(s) for establishing statistical baseline should be described in detail in the EFMP. The proposed statistical method(s) should be reviewed and approved by Ecology staff.

5. Page 6, Section 3.5, first bullet. The phrase "significantly elevated levels" needs to be defined. Ecology should consider substituting the phrase with "any elevated levels above appropriate criteria".

6. Page 6, Section 3.5, second bullet. Ecology should consider requesting the Port to conduct in-situ groundwater sampling along the flow path from the toe of the embankment to the receptor points to verify predicted dilution/attenuation factor for groundwater. Sampling for verification of predicted dilution/attenuation factor should be conducted if the Port implements Stage 2 of the post-baseline ground water monitoring screening process as described in the last paragraph on page 6.

7. Page 7, Section 4.1, first and second paragraphs of section. Ecology should review and approve of proposed seepage monitoring locations and any changes to proposed seepage monitoring locations.

8. Page 8, Section 4.4, first bullet, first paragraph of bullet. The Port should screen the interim seepage quality data against background surface water data and applicable freshwater ambient water quality criteria adjusted for the practical quantification limits. Ecology and the Port should use the side by side comparisons to determine the most appropriate screening criteria.

9. Page 8, Section 4.4, first bullet, second paragraph of bullet. Ecology should consider requesting the Port to conduct in-situ groundwater sampling along the flow path from the toe of the embankment to the receptor points to verify the predicted dilution/attenuation factor for groundwater.

10. Page 8, Section 4.4 second bullet. A site-specific dilution/attenuation factor will probably result in a dilution/attenuation factor greater than the default value of 10. Ecology should consider requesting the Port to conduct in-situ groundwater sampling along the flowpath to the receptor point to verify the either the site-specific or default dilution/attenuation factor.

11. Page 9, second paragraph. Define the phrase "exceeding applicable water quality criteria". For example, is exceedance any concentration above the water quality criteria?

12. Page 9, Section 5.0, first paragraph under section. A flow diagram would be most helpful to the reader not intimately familiar with the tiered approach. See comment number 1.

13. Page 10, third bullet. The term "significantly exceed" should be defined. See comment number 5.

14. Page 10, Section 5.2, second paragraph under section. Ecology should review and approve of proposed seepage monitoring locations and any changes to proposed seepage monitoring locations.

15. Page 11, Section 5.3. The 8-year time period for groundwater monitoring seems to be insufficient given the prediction of up to seven years for completion of embankment construction. As proposed, the 8 year period would include baseline, construction, and post-construction monitoring. It seems more appropriate to specify monitoring during baseline and construction phases, and 8 years of post-construction monitoring. The 8-year period may be an arbitrary number proposed by the Port or it may be based on groundwater travel time.

16. Page 12, Section 5.5.1, first and second bullets. Ecology should have the Port conduct in-situ groundwater monitoring to verify either the default or site-specific dilution/attenuation factors.

17. Page 13, Section 5.5.2, first bullet. Define the phrase "significantly elevated levels". See comment number 5.

18. Page 13, Section 5.5.2, second bullet. Ecology should have the Port conduct in-situ groundwater monitoring to verify either the default or site-specific dilution/attenuation factors.

19. Page 13, Section 5.5.2, third bullet. Stage 3 will be implemented if Stage 2 screening indicates that significantly elevated levels for

constituents of concern threaten to impact the quality of water of the state. Stage 3 is a modeling proposal. Ecology should consider requiring the Port to implement remedial actions concurrent or in lieu of modeling if State 2 screening indicates impact to water quality.

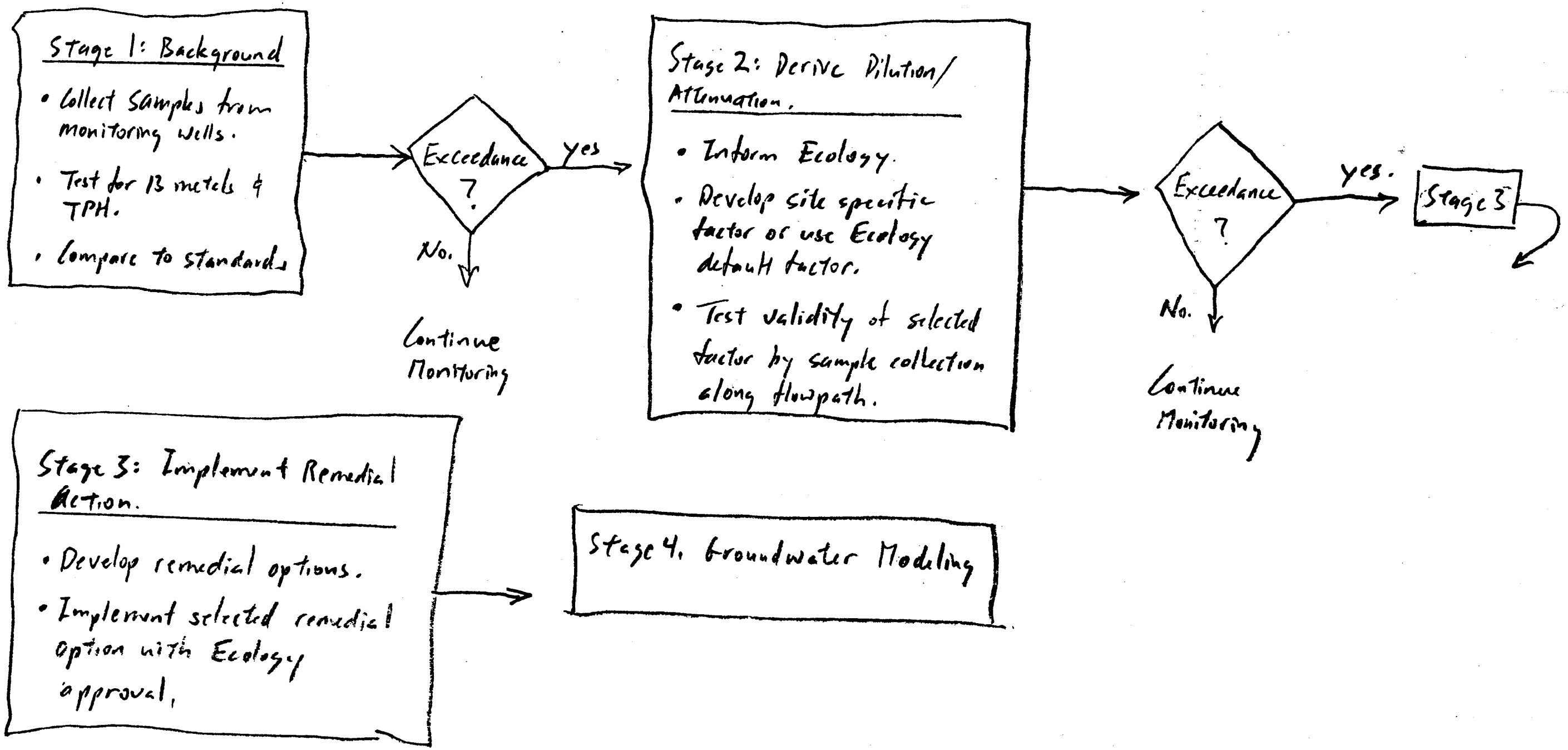
20. Page 14, Section 6.0, last sentence. Ecology should be notified immediately if applicable water quality criteria are exceeded.

21. Page 14, Section 7.0. Add the following sentences. The Port will identify corrective action options. The Port will implement the corrective action options that may be required by Ecology.

REVISIONS
BY _____ DATE _____ TO EO ____
BY _____ DATE _____ TO EO ____

FILE 3rd Runway Fill Monitoring Plan
SUBJECT _____
SHEET 1 OF 1

Figure 1. Example Logic Tree Diagram for Groundwater Staged Screening. Third Runway Embankment Fill Monitoring Plan.



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