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100 NPL Agreement/Change Control Form

Date Submitted:

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 Change     Agreement     Information  
 Operable Unit: 100-DR-1

 Document Number and Title:  
 100-DR-1 Revised Treatability Scope and Objectives

 Date Document Last Issued:  
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**Summary Description:**

Signatures are for concurrence with the revised scope and objectives for the 100-DR-1 pilot scale soil washing test (attached). The scope and objectives were discussed in a comment working meeting held 10/26/94.

The major change to the agreement is to delete testing with electrolyte and to add the sampling and analysis requirements.

**Justification and Impact of Change:**

This agreement does not impact previous schedules or established TPA milestones. Recent bench scale data indicates buildup of radionuclides in the electrolyte. Buildup of the radionuclides makes utilizing the electrolyte less attractive because further treatment steps are needed. Therefore the Tri-Parties agreed to delete the use of electrolyte from the test. Only one test will be run.

Sampling and analysis requirements have been cut back as a cost savings.

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11/21/94  
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11/28/94  
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11-29-94  
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Per Action Plan for Implementation of the Hanford Consent Order and Compliance Agreement Section 9.3



## 1.0 REQUIREMENTS AND SCOPE

- 1.1 A shake down test will be performed in which equipment is set up, operating experience is obtained, and operating parameters for the test are selected.
- 1.2 The field tests will consist of 2 parts: a. wet sieving with water only; and b. by wet sieving and attrition scrubbing with water only. Processes will include a trommel, screens, attrition scrubber, dewatering screens, a clarifier, and recycling of process water.
- 1.3 Field tests will process soil particles < 150 mm (6 in) dia. at 10 ton/hr. Time of processing and amount to be determined by field engineer. The system will operate during normal working hours. RL estimates 100 tons of processed soil may be an adequate amount if the system works well. An undetermined amount of soil will be processed in shake-down tests.
- 1.4 Target Performance Goals (TPG's) for the test will be accessible soil levels for radionuclides included in WHC-CM-7-5, Environmental Compliance Manual (1988) Table 6.2 for:

$^{60}\text{Co}$ ,  $^{134}\text{Cs}$ ,  $^{137}\text{Cs}$ ,  $^{152}\text{Eu}$ ,  $^{154}\text{Eu}$ ,  $^{155}\text{Eu}$ ,  $^{90}\text{Sr}$ ,  $^{235}\text{U}$ ,  $^{238}\text{U}$ ,  $^{239/240}\text{Pu}$ .

(eg. 30 pCi/g for  $^{137}\text{Cs}$ )

Results of the pilot scale soil washing test at 116-D-1B will also be evaluated over a range of residuals down to levels, down to those listed in the Test Plan (DOE/RL-92-15, Rev. 0 [eg. 3 pCi/g for  $^{137}\text{Cs}$ ]).

- 1.5 Offsite TCLP analyses will be conducted for fine soils < 0.25 mm and for 2 mm to 0.25 mm soils. In addition, radiochemical analyses of TCLP extract will be performed off-site.
- 1.6 In addition to field tests, water treatment recycle tests will be conducted in the laboratory using available sediment from the bench scale testing. These include:
  - Bench scale recycle batch processes prior to field testing. Contaminant buildup and other process factors will be assessed. Water treatment will include flocculation and filtration.
- 1.7 Contaminated soils < 0.25 mm will be placed in appropriate containers and handled in accordance with the waste control plan. Remaining soils are to be returned to the site after the test is completed. Process effluent will be evaporated or otherwise handled in accordance with the waste control plan.

## 2.0 OBJECTIVES AND MEASUREMENTS

- 2.1 Verify Chemical and radioactivity analyses of processed soils from the pilot scale treatability test are consistent with laboratory scale treatability test results.

Samples and composite samples will be collected and analyzed as specified in the Sample and Analysis Plan (SAP) (Attached).

- 2.2 Verify the percent reduction (by wt) that can be achieved for the soils processed is consistent with laboratory indications.

Sieve soils to determine the percent of soil particles in each size fraction before and after processing.

- 2.3 Assess water treatment requirements and recycling needs, including efficiency of treatment in removing contaminants from process effluent, and contaminant build up.

EPA Level II and V analyses will be conducted for feed water, effluent prior to treatment, and treated effluent samples.

- 2.4 Provide data on performance of the process equipment to allow scale-up to a full-scale system (eg. 100 ton/hr).

- o Determine operating utility requirements (chemical consumption, power, water etc.)
- o Record Settings of Equipment Controls
- o Determine Energy Input Requirements.
- o Determine Soil Water feed ratios, chemical ratios, pressure, flow rates, etc.

- 2.5 Assess emissions and/or environmental impacts.

Record and report ALARA practices, air monitoring results, exposure levels, if any, detected by Health Physics Personnel.

- 2.6 Use real time radiation monitors

Install sodium iodide detectors to monitor processed soils. Data will be used as needed to make field changes required to improve system performance, and to assess the viability of real time monitors for process control.

- 2.7 Data Validation

Ten percent of all data will be validated using methodologies agreed to by all three parties.