



February 23, 1993
Project No. 40104.11

Mr. Randy Ogg
EG&G Rocky Flats, Inc.
Rocky Flats Plant
P.O. Box 464
Golden, CO 80402-0464

Re: Supplemental Sampling Plan for Soil Borings Within Pond 207A

Dear Randy:

Since the 207B- Series ponds and Pond 207C are currently inaccessible, comprehensive understanding of hydrogeologic conditions controlling vertical contaminant migration beneath Pond 207A is extremely important. In order to better understand these hydrogeologic conditions, additional sampling of alluvial soil and installation of a deep bedrock boring are proposed. Details of these supplemental programs are presented below.

I Sampling of Alluvial Materials Below Pond 207A

Depths to the bedrock surface around the Solar Ponds range from an estimated 5 to 15 feet based on current and historical drilling records and evaluation of bedrock surface trends. Alluvial sampling to these depths have yielded between one and three six-foot composite samples. Alluvial borings inside Pond 207A are expected to encounter a maximum alluvial thickness of six to ten feet based on comparisons of pond bottom elevations with the current interpretation of the bedrock surface below Pond 207A. Alluvial material will be even thinner than calculated because the thickness of the pond liner and subgrade bed is not accounted for. Liner and subgrade is estimated to be approximately 8 inches thick from 1963 engineering drawings, but may vary in actual constructed thickness.

Minimal alluvial thickness beneath Pond 207A will limit the number of samples collected under the current OU4 field sampling plan, which includes a full analysis suite for each 6 foot composite sample and sampling for volatile organic analysis every other 2 foot core run. The following proposed sampling plan is a contingency for anticipated conditions, and will allow collection of supplemental alluvial samples to enable resolution of vertical contaminant distributions within the Pond 207A vadose zone alluvium.

ADMIN RECORD

Quality through teamwork
DOCUMENT CLASSIFICATION
REVIEW WAIVER PER
CLASSIFICATION OFFICE

A-DU04-000464



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For all drilling and sampling of alluvial materials beneath Pond 207A, supplemental soil sampling of nitrate, TAL metals, and radionuclides is recommended. Nitrate, TAL metals, and radionuclides are documented pond contaminants. These parameters also represent the range of expected contaminant mobilities expected at OU4, with nitrate being very mobile, and the TAL metals and radionuclides being relatively immobile. Samples for lower priority analytes will continue to be collected as specified in the OU4 field sampling plan.

Attachment A presents a schematic of proposed supplemental sample frequency within Pond 207A alluvial boreholes. Samples for nitrate and TAL Metals will be collected from every 2 foot run, and radionuclide samples will be collected from every 4 foot run. A full suite of samples will also be collected from each 6 foot core run for comparison to adjacent alluvial soil sampling results and to provide better resolution of the vertical extent of contaminant migration into the bedrock.

The contingency sampling plan will be documented in a document change notice (DCN) to the current OU4 field sampling plan and implemented by the field geologist and sample technician. This plan relies on core recovery of approximately 60%, since additional soil volumes are required for analysis. It should be noted that residual core for lithologic logging may be compromised.

II Drilling and Sampling Bedrock Below Pond 207A

A deep bedrock borehole will be drilled and sampled within Pond 207A as part of the Phase I RFI/RI Field Program. This deep drilling is justified in Technical Memorandum (TM) No. 2, Modifications to Field Activities, and documents the deletion of bedrock drilling in boring 42693 and addition of bedrock drilling in boring 42193 within Pond 207A.

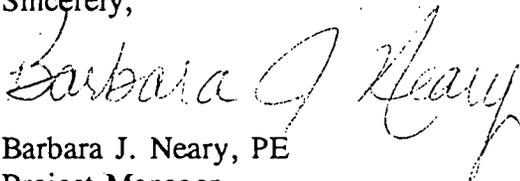
As specified in TM No. 2 of the Final Phase I RFI/RI Work Plan for OU4, alluvial and bedrock samples will be collected from borehole 42193 in Pond 207A. Alluvial soil in the Pond 207A deep boring will be sampled according to the supplemental sampling plan described in Item I above. Below the bedrock contact, which may consist of weathered claystone or subcropping sandstone, the standard OU4 field sampling plan procedures will be followed and samples will be composited from 6 foot core runs until the target depth is attained. Target depths will be either the first saturated bedrock zone, or contact with a non-subcropping bedrock sandstone. The total depth for this deep borehole is expected to be approximately 40-50 feet below the surface of the pond.

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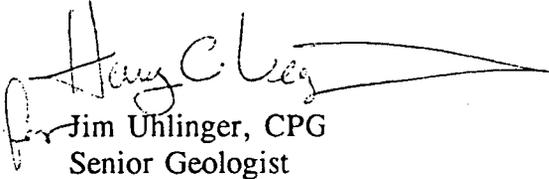
Drilling and sampling deep bedrock requires isolating the alluvial or subcropping bedrock sandstone interval with PVC casing to limit possible cross contamination of shallow and bedrock depths. PVC casing is proposed to be used as the surface casing to isolate surficial materials instead of steel as indicated in EMD OPS GT.3, since borehole abandonment will most likely require that the surface casing be left in place. An abandoned PVC casing will present less of an obstruction during future construction or demolition activities within Pond 207A than a steel casing. This deviation from the SOP will be documented in a DCN.

Please review the attached figure and proposed sampling plan as soon as possible, and call with any questions. If acceptable, these procedures will be implemented in Pond 207A, anticipated to commence in one week.

Sincerely,



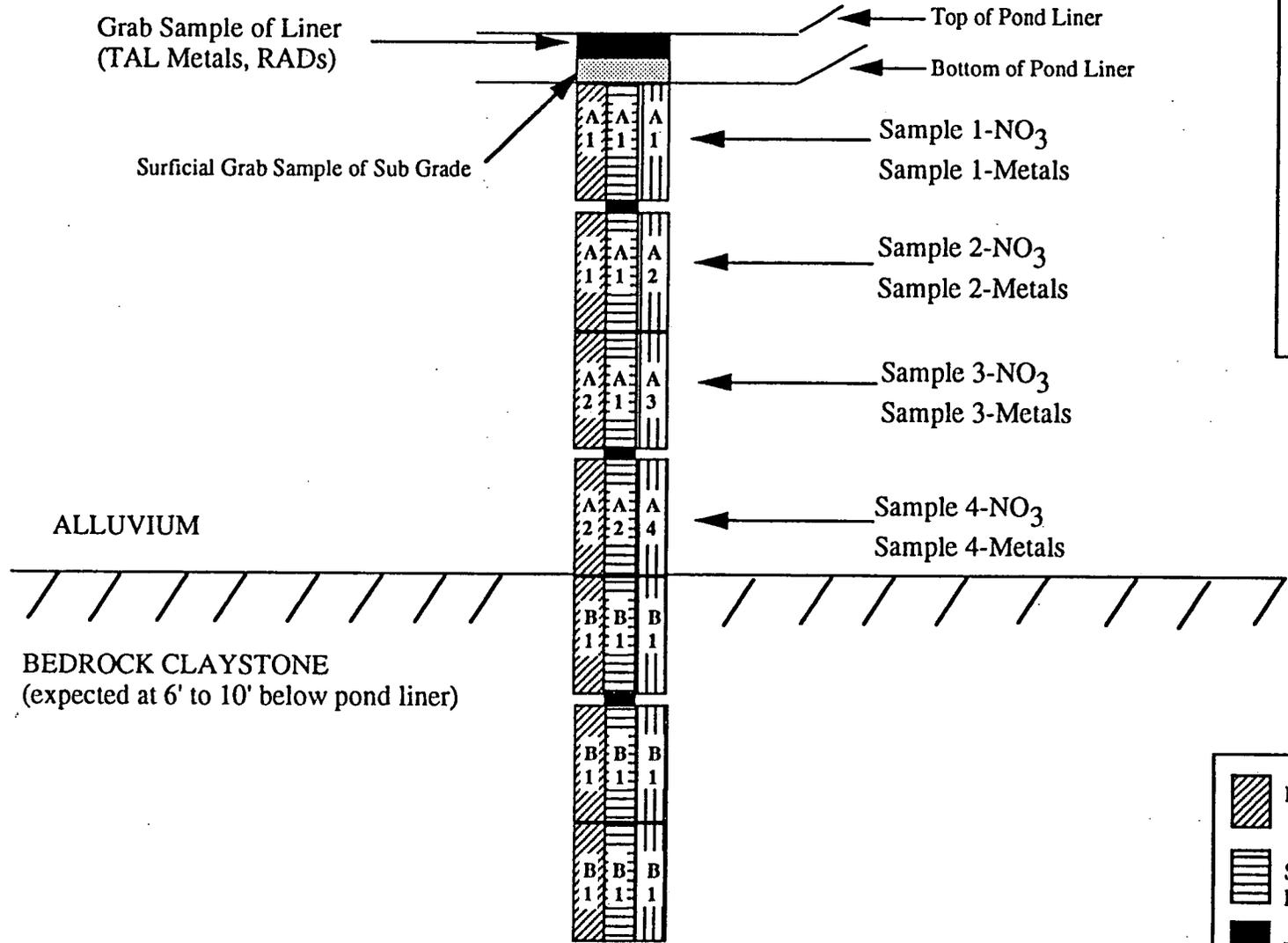
Barbara J. Neary, PE
Project Manager



for Jim Uhlinger, CPG
Senior Geologist

cc: S. Paris, EG&G
K. Ruger, EG&G
J. Flook, AEC
H. Leighton, AEC
C. Grose, AEC
J. Uhlinger, AEC

Proposed Alluvial Bore Hole Sampling within Pond 207A



Volumetric Calculations per 2'sampler spoon	
NO ₃	240 ml
TAL Metals	240 ml
RADs	250 ml
VOA	240 ml
SVOC	80 ml
Cyanide/Sulfide	80 ml
RAD Screen	<u>35 ml</u>
	1165 ml
Total Volume = 1930ml	
1165/1930 ml =	
60% Recovery Required	

	RADs* (4' composite)
	SVOS/Pesticides/PCBs, Cyanide/Sulfide Radiological Screen (6' composite)
	VOA (3" sleeves every 4')
	NO ₃ and TAL Metals (2' composite)

TD expected at approximately 14' unless boring encounters
BR Subcropping SS then continue to drill/sample 6'
composites for full suite to 4-6' into Claystone

*Analyzed for: U233/234, 235, 236, 238;
Plutonium/Americium; Cesium 137 &
Strontium 90; Gross Alpha & Beta; Tritium