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REVIEW COMMENTS ON QAPjP OF DOE/RL-88-36 FI/CMS WORK PLAN DRAFT C FOR 100-HR-3

SUBJECT: Review of Project Specific Quality Assurance Plan (QAPjP) for the 100-HR-3 Operable Unit (Appendix "A" of 100-HR-3 Work Plan Draft C).

REFERENCE DOCUMENTS:
#1 TPA Document #89-10 of 5/89 and Rev #1 of 9/90 and Rev #2 of 9/91
#2 QAMS-004 of 9/80 and QAMS-005 of 12/80
#3 DQO for Remedial Response Activities Document EPA/540/G-87/003 Of 3/87-Description of Requirements
#4 DQO for Remedial Response Activities Document EPA/540/G-87/004 of 3/87-A RI/FS Example of a DQO Case Study
#5 WHC-EP-0383 of 12/90 - QAPP for Env Engineering/Technology/Permitting
#6 DOE Letter 91-ERB-171 of 9/30/91 (RI/FS Work Plan Review Instructions)

GENERAL COMMENTS:
- o The document reviewed, Appendix "A" of Work Plan, is the QAPjP, the project specific QA plan. It addresses QA requirements. The QAPjP frequently references sections of the Work Plan to fulfill QA requirements. The referenced sections were reviewed for compliances.
- o Each numbered comment below is a non-compliance to the indicated DOE/EPA QA criteria. The EPA QA criteria are found in the documents #1, #2, #3, #4, and #5 of "Reference Documents". The comments are in the specified format.
- o The document reviewed is a TPA Primary Document and represents the result of a continuous consensus/decision process between DOE/EPA/WDOE.
- o The QAPjP is a project specific document. The final version it is expected would consider and incorporate such comments, as necessary, appropriately.
- o The FI/CMS Limited Field Investigation work (LFI) in this Work Plan (WP) is limited to Surface Water and Sediment, Vadose Zone, Ground Water, Air, and Ecological Investigations. WP Table 2-1 and Table 3-1 show Contaminant Sources for investigation. Table C-2 shows investigation/analysis work.
- o The comments are made keeping in mind the above features and that quality achievement is a line responsibility.

COMMENT #1: QAMS-005 Sec 5.5 & QAPjP Sec 3.0 (Pg A-3) -Data Quality Objectives for Measurements

o The QAPjP refers to Work Plan (WP) Sec 4.1.1, Sec 4.1.2, and Sec 4.2.1.5. The QAPjP states that Sec 4.2.1.5 provides justification for established DQOs. Sec 4.2.1.5 is not present in the WP or in the QAPjP.

o Table QAPjP-1 lists various pollutants and the analytical Methods to be used to quantify them. Precision and accuracy statements for the selected method (in Table QAPjP-1) are not linked to the experimental conditions or detection limits for each pollutant, as required by QAMS-005.

o In Table QAPjP-1: "Precision" is defined "Relative Percent Difference"(RPD). The EPA document EPA/540/G-87/003 illustrates the use of the "Relative Standard Deviation" (RSD) and "Variances" (S) for evaluating data values of like samples analyzed with like procedures at various laboratories and to determine the acceptable range of values. WHC must formalise RPD usage as RPD use is not illustrated in the EPA/DQO documents.

COMMENT #2: QAMS-005 Sec 5.6 & QAPjP Sec 4.0 (Pg A-8) - Sampling Procedures
QAMS-005 Sec 5.7 & QAPjP Sec 5.0 (pg A-12) - Sample Custody

The QAPjP refers to WHC-CM-7-7 for Project Specific Sampling Procedures. WHC-CM-7-7 has many procedures that describe segments of the Sampling Effort but

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there is no procedure in WHC-CM-7-7 for project specific "Sample Labelling" or for "Frequency of Sampling" or for "Sampling Time Variant Data". The existing procedure for "Sample Custody" does not provide tracking mechanisms for the labelled sample that have the same rigor as that described in QAMS-005. Table QAPjP-2 has inadequate information to perform project specific "Sample Site Selection". Project specific procedures for Geodetic Control indicated in WP Sec 5.1.2.2 to be present in QAPjP are not found there. Procedures in Table QAPjP-2 are generic not project specific and some are yet to be done (TBD).

COMMENT #3: QAMS-005 Sec 5.8 & QAPjP Sec 6.0 -Calibration Procedures/Frequency.
QAMS-005 Sec 5.9 & QAPjP Sec 7.0 -Analytical Procedures (Pg A12/13)
The QAPjP refers to Tables QAPjP-1 and QAPjP-3 for achieving compliance with criteria requirements. These tables identify ASTM standards and EPA documents through which compliance would be achieved. Project specific Standard Operating Procedures (SOPs) describing Calibration of each pollutant measurement system, with planned recalibration frequencies with information on calibration standards is not in the QAPjP or the WP. Since all requirements of any analytical test standard may not be applicable to all situations, specific analysis procedures for each pollutant are required but are missing. The analysis work is partly a "Purchased Service" and partly performed in-house by WHC: example radio assays. Project specific procedures for in-house analysis, analytical levels, and instrument sensitivity/calibration/frequency are not stated. Analytical levels, which make precision and accuracy statements useful, are not given in the QAPjP or in Work Plan for the selected methods.

COMMENT #4: QAMS-005 Sec 5.10 & QAPjP Sec 8.0 (Pg A-13/15)-Data Reduction, Validation, and Reporting.
The QAPjP lists criteria that shall be contained in procedures used for the validation of data. The criteria that is listed does not provide adequate information or include the data reduction scheme for each measured parameter, the set of principal criteria to be used to validate data/integrity, or the reporting scheme and/or flow-chart for the planned data flow for the entire data collection process. This applies to the in-house effort and as applicable to purchased services.

COMMENT #5: QAMS-005 Sec 5.14 & QAPjP 12.0 (Pg A-19) - Routine Procedures to Assess Data Precision, Accuracy, and Completeness.
The QAPjP states that statistical techniques may be used to perform this activity. If such techniques are used then the required written instructions shall be generated. QAMS-005 requires that the specific procedures needed to perform any task(s) on a routine basis must include statistical detail and must be described for all environmental measurement and monitoring. These procedures are not described in the Work Plan or the QAPjP for the in-house work and/or applicable strategy for the purchased services as applicable.

COMMENT #6: QAMS-005 Sec 6.0 - QAPjP vs Project Work Plans
A significant number of the QA elements are addressed minimally in the QAPjP and the details on these elements are integral to the Work Plan. QAMS-005 requires a "QA Project Plan Locator Page" be provided that enables reference of QA elements/WP text for assessing QA compliance. This page is missing.

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5. Document Number(s)/Title(s)	6. Program/Project/ Building Number	7. Reviewer	8. Organization/Group	9. Location/Phone
RCRA Facility Investigation/ Corrective Measures Study Work Plan for the 100-HR-3 Operable Unit		Bill Fryer Mike Gasser Chris Wilber	GSSC	6-9830

17. Comment Submittal Approval:

Organization Manager (Optional) _____ Date _____

10. Agreement with indicated comment disposition(s)

Reviewer _____ Date _____

Project/Cognizant Engineer _____

11. CLOSED

Reviewer _____ Date _____

Project/Cognizant Engineer _____

12. Item	13. Comment(s)/Discrepancy(s) (Provide technical justification for the comment and detailed recommendation of the action required to correct/ resolve the discrepancy/problem indicated.)	14. Hold Point	15. Disposition (Provide justification if NOT accepted.)	16. Status
1.	Page WP 1-1, Sec. 1.0, Par. 1, Sen. 4: This sentence should also included "State of Washington only waste".			
2.	Page WP 1-6, Sec. 1.4, Par. 1, Item #4: The QAPjP has no reference. At the very least refer the reader to Appendix A.			
3.	Page WP 1F-1, Figure 1-1: Identify the location of the boundary of the Hanford site.			
4.	Page WP 1F-2, Figure 1-2: The text indicates that the operable unit will cover portions of the 600 area yet the figure does not identify the location of this area. Add a statement to the effect that the 600 area includes all that area within the Hanford site boundary that does not have another numeric designation.			

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5.	Page WP 2-1, Sec. 2.1.1, Par. 2, Sen. 5: The WPPSS reactors are not under construction, but have been mothballed for potential future completion. No current construction is taking place at these unfinished facilities. Also in the last sentence of the paragraph: The 1100 and 3000 Areas are not located between Richland and the 300 area, more correctly they are located northwest of Richland.			
6.	Page WP 2-5, Sec. 2.1.5, Par. 1: The relationship between the 100-N area and the 100-HR-3 groundwater unit needs to be clarified. A figure and text indicating what is included in the 100-HR-3 operable unit is needed.			
7.	Page WP 2-5, Sec. 2.1.6, Par. 2: The first sentence states that the pond has received non-hazardous and non-radioactive waste, yet the 3rd sentence states the pond is currently receiving "corrosive demineralizer recharge effluent". The word "corrosive" has specific regulator significance in relation to Hazardous Waste classification. If the effluent falls between Ph 2.5-12.5, the word corrosive be deleted. Also, this paragraph is using the present tense in its discussion of effluent discharges. I do not believe the mineralizer is still in operation. Check its status and correct the text if appropriate.			
8.	Page WP 2-9, Sec. 2.2.2.2.1, Ringold Formation: The text description does not match Figure 2-5. In particular, the FSA unit, according to the cross-section, is present along the axis of the asymmetrical syncline and pinches out along the northern limb, yet the text indicates it is not present along the this limb of the syncline. Also, the FSD1 unit described in the text cannot be found on the cross-section.			

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9.	Hanford Formation: The paragraph does not clearly state the presence or absence of the "Touchet Beds" in the 100 Area nor their position within the Hanford Formation.			
10.	Page WP 2-10, Sec. 2.2.3: A discussion of the artificial recharge at the Hanford site needs to be added. The artificial recharge to the site has caused large local increases in the saturated thickness of the unconfined aquifer and changes in flow directions, with locally total reversals in flow directions. The effects on the confined aquifer, consisting of the interflow sediments located between the basalt flows is unknown. This discussion should be inclusive of B-Pond, ground water mounds associated with the reactors, recharge due to irrigation and increased flow in the unconfined aquifer to Dry and Cold Creeks. Also a discussion of the interflow sediments in the Gable gap area in conjunction with flow directions, contaminant plumes, and recharge of the confined aquifers is needed.			
11.	Page WP 2-12, Sec. 2.2.3.2.2., Par. 2, Last Sentence: Figure 2-5 does not show the location of the FSD1 unit.			
12.	Page WP 2-17, Sec. 2.2.5.1, Sen. 1: Remove "annual" from the sentence. The reference to 7.6-27.9 cm is the range of annual precipitation that can fall at the site.			
13.	Page WP 2-23, Sec. 2.2.6.2.2, Birds of Prey, Par. 1, Last Sentence: Clarify this sentence; it does not make sense as written.			
14.	Page WP 2-25, Sec. 2.2.7.1: The status of N-reactor is no longer "cold standby"; correct the text.			

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15.	Page WP 2F-2, Figure 2-2: This figure does not match up with the one presented in the 100-DR-1 (Figure 2-2). The shapes, for example of the "coal storage area" are different along with the call outs used for this structure.			
16.	Page WP 2F-4, Figure 2-4: The pattern used for the basalt in the figure looks like the pattern used in the legend for gravels.			
17.	Page WP 2F-5, Figure 2-5: The axes of the Wahluke Syncline and Gable Mt. Anticline should be shown either in the plan view of this figure or in a separate figure which also shows the units present at the surface. Also the figure does not contain a north arrow. Additionally, the stratigraphy of the area west of well 199-B3-2 appears inconsistent with the reported depositional environment of the unit.			
18.	Page WP 2F-8, Figure 2-8: State the time frame for which this map represents the potentiometric surface.			
19.	Page WP 2T-2, Table 2-2: The nature of miscellaneous contaminants should be mentioned as a footnote or within the text (Sec. 2.1.3, Par. 2).			
20.	Page WP 3-2, Sec. 3.1.3.1: The definition for background water quality should be defined by hydro-stratigraphic units and not with a blanket statement that the water quality of the unconfined aquifer is the "background" for the site. The water quality for the unconfined aquifer will be different than that found in the confined aquifer consisting of interbed sediments.			
21.	Page WP 3-6, Sec. 3.1.3.2.1, Par. 3: Figures showing the areal distribution of this data would help the reader in interpreting its meaning.			

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22.	Page WP 3-7, Sec. 3.1.4.1, Par. 2, Last Sentence: The Table reference in this sentence should be checked. It appears that it should be referring to Figure 3-7 instead of Figure 3-6.			
23.	Page WP 3-9, Sec. 3.1.4.3: Why is a discussion on river bottom sediments included in this work plan when the definition of the north boundary of the 100-HR-3 ground water unit is the banks of the river (Chapter 2.0 and Figure 2-1). If this operable unit is inclusive of the river sediment contamination, then the unit boundaries should to be redefined.			
24.	Page WP 3-11, Sec. 3.1.6.1.1.: A description of the plants species that were sampled for this study should be included. Different plant species can bio-accumulate and/or tolerate different elements to varying degrees.			
25.	Page WP 3-11, Sec. 3.1.6.2.1, Sen. 5: The median values of Sr and Cs shown in the referenced Figure 3-14 are for the years 1984-1989 and not for 1989 alone. Correct the table or the text.			
26.	Page WP 3-18, Sec. 3.2.5: This section should also include the proposed list of additional MCLs which have been proposed but not formally accepted.			
27.	Page WP 3-19, Sec. 3.3.1.2, Par. 2, Sen. 2: Sec. 3.1 does not cover inventories of contaminants located in the respective environmental media.			
28.	Page WP 3-23, Sec. 3.3.2.1, Par. 2: The reason given for eliminating several radionuclides is not adequately quantified. It would be helpful if the percentage or total activity contributed by the eliminated radionuclides was presented so that the reader could confirm that this is warranted by inspection of the data.			

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29.	Page WP 3-26, Sec. 3.3.3, Par. 2: Table 3-21 caption states that this table is listing contaminants of interest and not a general contamination screening parameters as the text states. Also the terminology in this paragraph is confusing at best. The use of screening parameters and contaminant of interest is confusing. The text needs to be clarified.			
30.	Page WP 3-26, Sec. 3.3.4.1 & 3.3.4.2: It is premature to make the statement that no imminent endangerment exists without doing a risk analysis. How can you by a casual examination of the data determine that you will not have an increase in deaths over 1 in 100,000 or 1 in 1,000,000.			
31.	Page WP 3-30, Sec. 3.4.3, 4th Bullet: The description of reverse osmosis needs to be expanded.			
32.	Page WP 3F-2, Figure 3-2: The "prefix omitted for clarity" should be added to the legend comment on prefixes.			
33.	Page WP 3F-4, Figure 3-4, Page WP 3F-5, Figure 3-5: The pattern used in the lower left-hand corner of the figure is not explained in the legend. Either add to the legend the outcrop pattern for basalts or remove it from the figure.			
34.	Page WP 3F-14, Figure 3-14: The number of samples (N) for each of the years for Cs and Sr should be shown on the figure so that a determination on the significance of these median values can be seen.			

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35.	Page WP 3F-15, Figure 3-15: In the areas where major process effluent wastes were discharged to the soil column, saturated flow conditions probably existed from the surface downward. The contaminants once in the ground water system would then flow directly to the river. Some of these contaminants, such as tritium, have little to no interaction with the soils that they flow through. As such, a flow line on the figure should go from "Infiltration" to "Groundwater" by-passing "Soil" as a secondary source. Additionally, a line should go from "Soils" to "Direct Contact" to take into account exposure of burrowing animals.			
36.	Page WP 3T-3, Table 3-3: State in a footnote how the background was determined.			
37.	Page WP 4T-1a, Table 4-1: A review of data needs should be done. Some of the data needs apply to the "Qualitative Risk Assessment","CMS", and "IRM".			
38.	Page WP 5-8, Sec. 5.1.5.4: This section should state if the geophysical logs will be run in a cased or uncased boreholes.			
39.	Page WP 5-11, Sec. 5.1.6.1: No reference is given to procedures for the abandonment of a well. The text in the second paragraph after the bullets states that abandonment may be required. List references to abandonment procedures.			
40.	Page WP 5-12, Sec. 5.1.6.2.1, Par. 4, Sen. 2: The meaning of "prepared" is not clear, please clarify.			
41.	Page WP 5-13, Sec. 5.1.6.2.3, Par. 1: A discussion should be added that indicates if the soil samples to be collected are to be disturbed or undisturbed.			

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42.	Page WP 5-19, Sec. 5.1.11.4: A statement should be added that states that synergistic effects of the contaminants will be identified and addressed.			
43.	Page WP 5-26, Sec. 5.2.3.5, Sen. 1: Will the selection of the preferred corrective measure be negotiated between DOE, Ecology, and EPA, please clarify.			
44.	Page WP 7F-1, Figure 7-1: The rational for having the two branches; RFI/CMS coordinators, Hanford site Technical Resource Team, is not apparent. These two branches could easily be combined and improve potential communication problems and time delays due to paper work shuffle.			
45.	Page WP 7F-1, Figure 7-1: It is stated in the box for the "RFI/CMS coordinator" that the structure of this branch of the organization chart "will be determined" at some future date. Figure 7-2 apparently shows the organization branch that was called out as "will be determined". Please clarify.			
46.	Page WP 7F-3, Figure 7-3: Should a solid line connect "H&S Officer" to "Industrial Hygiene and Safety"? Re-examine the flow chart to determine if this is needed.			
47.	Page WP 7T-1, Table 7-1: There are two identical subject headings "Geotechnical and civil engineering" which should be combined or an explanation added to the table explaining why they are different.			
48.	Page A-1, Sec. 1.3, Par. 1: The reference "Ecology et al. 1990" should be checked. I believe it should be "Ecology et al. 1990a".			

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49.	Page B-3, Sec. 1.4, Par. 2: An explanation should be added to indicate what the additional 8 hours of training covers. It is assumed by this reader to represent the 8 hr supervisory course required by 40 CFR 1910.120 for all supervisors. Clarify.			
50.	Page B-4, Sec. 2.1.1, Bullet 1: Strike from the text the word "certain". Medication required outside of medical emergencies should not be taken into the exclusion zone.			
51.	Page B-11, Sec. 5.0, Sen. 3: Work should NOT be initiated or continued until all health and safety equipment is in place.			
52.	Page B-12, Sec. 6.0, Last sentence: Replace "may" with "will". The regulations state that engineering controls and work practices will be undertaken to protect the worker from exposure and that Personal Protection will not be used as a substitute for these controls.			
53.	Page D 2-5, Sec. 4.0, Par. 2, Last Sentence: This sentence should be changed to reflect the fact that there will always be some uncertainty.			
54.	<u>Editorial Comments</u> Page WP 2-7, Sec. 2.2.2.1.2, Sen. 1: "theoletic" is misspelled: "tholeiitic".			
55.	Page WP 2-8, Sec. 2.2.2.1.5, Sen. 7: "beds" should be changed to the "Touchet Beds" for clarity.			
56.	Page WP 2-25, Sec. 2.2.6.4, Par. 1: "resourece" and "productie" are misspelled.			
57.	Page WP 3T-14, Table 3-14: Data in the plutonium column should have a zero place in front of the decimal point.			
58.	Page WP 4T-1a, Table 4-1: Typo under "Data needs": "Source Date" should be changed to "Source Data".			

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59.	Appendix B, Page C-4, Sec. 2.3, Par. 2: Correct the spelling of "pubic" to "public".			

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15.	Page WP 2-20, Sec. 2.2.3.1.2 and Page WP 2F-7, Figure 2-7: Description of this "confined aquifer" is unacceptable for these reasons: • Figure 2-7 shows the "Upper Confined Aquifer" to be about 20 feet thick, between approximate elevations 90 feet and 110 feet, while the text implies that there are two stacked confined aquifers, one of which is 80 feet thick. • In the case that the 80 feet thick upper "confined aquifer" (text) and the "Confined Layer" (Figure 2-7) are meant to be a confining hydrogeologic unit, as is believed to be the case, then an explanation is needed to clarify why a part of "the silty clayey sand to sandy silty clay" is an aquifer, whereas another part of exactly the same lithology is an aquiclude or an aquitard. Is it possible that there is no "upper confining aquifer" at all, and Well 199-H4-15C(Q) just happened to tap a few sandy interbeds that could be found anywhere within the confining interval coinciding with the lower portion of the Ringold Formation?			
16.	Page WP 2-21, Sec. 2.2.3.1.3 and 2.2.3.1.4: It seems obvious that the upper portion of the Ringold Formation (silty sand and gravelly silty sand) and the Hanford Formation (lower saturated part) constitute a single unconfined aquifer (as evidenced by having water table at exactly the same level) regardless of differences in hydraulic conductivity between various parts of the same aquifer. This should be acknowledged in the text.			