Department of Energy
Office of Legacy Management

December 24, 2008

Mr. Paul Frohardt, Administrator
Colorado Water Quality Control Commission
OED-OEP-A5
4300 Cherry Creek Drive South
Denver, CO 80246-1530

Subject: U.S. Department of Energy's (DOE's) Rebuttal Statement for Proposed Revisions to Segments 4a, 4b, and 5 of Big Dry Creek (Walnut and Woman Creeks)

Dear Mr. Frohardt:

This is to transmit the enclosed original and 13 copies of the subject Rebuttal Statement.

If you have any questions or require additional information, please call me at (720) 377-9682 or Rick DiSalvo, Assistant Project Manager for DOE's Rocky Flats Legacy Management Contractor. Rick may be reached at (303) 819-7150.

Sincerely,

Scott R. Surovchak
LM Site Manager

cc:
C. Spreng, CDPHE
Administrative File (Thru A. Montoya)
Post Closure AR (Thru H. Young)
rc-rocky.flats (RFS 425.02)

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COLORADO WATER QUALITY CONTROL COMMISSION
STATE OF COLORADO

REBUTTAL STATEMENT OF THE U.S. DEPARTMENT OF ENERGY

REVISIONS TO SEGMENTS 4A, 4B, AND 5 OF BIG DRY CREEK (WALNUT AND WOMAN CREEKS) IN THE CLASSIFICATIONS AND NUMERIC STANDARDS FOR SOUTH PLATTE RIVER BASIN, LARAMIE RIVER BASIN, REPUBLICAN RIVER BASIN, SMOKY HILL RIVER BASIN, REGULATION #38 (5CCR 1002-38)

Introduction

This Rebuttal Statement addresses information presented in the Responsive Pre-Hearing Statement of the Colorado Water Quality Control Division (WQCD) and the Responsive Pre-Hearing Statement of the City and County of Broomfield and the Cities of Northglenn, Thornton, and Westminster (Cities). WQCD and the Cities have party status in this matter. This Rebuttal Statement also contains the U.S. Department of Energy's (DOE's) rebuttal of the Responsive Pre-Hearing Comments of the U.S. Environmental Protection Agency, Region 8, Water Quality Unit (EPA). EPA has mailing-list status in this matter.

This Rebuttal Statement is organized to respond to the WQCD Responsive Pre-Hearing Statement, the Cities' Responsive Pre-Hearing Statement, and EPA's Comments, in that order.

I. Rebuttal of the WQCD Responsive Pre-Hearing Statement

Section II A. Characterization of Current Condition and Attainment of Current Standards (Consideration of Policy 96-2 and Regulation 31)

WQCD states that DOE's proposed uranium criterion is protective of designated uses for Big Dry Creek Segments 4a, 4b, and 5. However, WQCD is concerned that the proposal is not consistent with Commission Policy 96-2 or the intent of Regulation 31, the Basic Standards.

DOE believes its proposal is entirely consistent with Policy 96-2 and the clear language of Regulation 31. The basic intent is stated in section 31.2, "Purpose":

> . . . [Regulation 31] is intended to implement the state Act by maintaining and improving the quality of the state surface waters. This regulation is based on the best available knowledge to insure the suitability of Colorado's waters for beneficial uses including public water supplies, domestic, agricultural, industrial and recreational uses, and the protection and propagation of terrestrial and aquatic life . . .

The WQCD Responsive Pre-Hearing Statement recognizes that DOE's proposed uranium criterion is protective of the designated uses for Big Dry Creek Segments 4a, 4b, and 5 (Responsive Pre-Hearing Statement II.A, p. 3). The DOE uranium proposal "ensures the suitability of [these] waters for beneficial uses," consistent with the stated regulatory intent.

DOE reiterates the information provided in the "Introduction" of its Pre-Hearing Statement regarding the substantial changes since 1989, which include the elimination of imported water, the completion of the cleanup and closure of Rocky Flats, and the selection of the final remedy and approval of the *Corrective Action Decision/Record of Decision for Rocky Flats Plant (USDOE) Peripheral Operable Unit and Central Operable Unit* (CAD/ROD) by EPA and the Colorado Department of Health and Environment (CDPHE). The CAD/ROD is included as Exhibit 1. The CAD/ROD is also posted on the Rocky Flats website, http://www.lm.doe.gov/land/sites/co/rocky_flats /cad_rod.htm.

The CAD/ROD is based on the information in DOE's *RCRA Facility Investigation-Remedial Investigation/Corrective Measures Study-Feasibility Study Report for the Rocky Flats Environmental Technology Site* (RI/FS) (DOE 2006), which was approved by EPA and CDPHE. The approval letter is included as Exhibit 2. The RI/FS is also posted on the Rocky Flats website, http://www .lm.doe.gov/land/sites/co/rocky_flats/rifs.htm.

The remedy is being implemented under the *Rocky Flats Legacy Management Agreement* (RFLMA), entered into by CDPHE, EPA, and DOE. The RFLMA is included as Exhibit 3. The RFLMA is also posted on the Rocky Flats website, http://www.lm.doe.gov/land /sites/co/rocky_flats/rflma.htm.

Without acknowledging that proposals to change a site-specific standard must be consistent with Policy 92-6, a review of the clear language of Regulation 31 and Policy 92-6 shows that DOE's proposal complies with the criteria for WQCC consideration and thus, per se, meets the intent of Regulation 31 in that regard.

Policy 92-6 states:

> **III. <u>Policy</u>**
>
> For those pollutants identified as priority toxic pollutants under Section 307(a) of the federal Clean Water Act, or any other pollutants that may present a risk to human health, it is the policy of the Commission to establish water quality criteria and standards for both surface and ground water that provide a reasonable certainty of protecting the public from adverse risks to their health. This policy is implemented through adoption of statewide water quality standards for manmade organic chemicals and table value criteria for naturally occurring toxic pollutants. Water quality standards for naturally occurring toxic pollutants are established on a site-specific basis.

The Policy then addresses the establishment of "**Statewide Standards and Table Value Criteria** for Domestic Water Supply" (section III.1), "Water +Fish" (section III.2), and "Fish Ingestion" (emphasis added). The Commission has already established the table value standard for uranium in its 2005 rulemaking, and DOE is not proposing a different table value. We assume that the current table value was, therefore, established in accordance with the Policy.

DOE is proposing to change the current site-specific standard for uranium, gross alpha, and gross beta. Gross alpha and gross beta do not have a statewide standard or table value in Regulation 31, and uranium is the only naturally occurring radioactive toxic pollutant that is a Rocky Flats analyte of interest (AOI) under the CAD/ROD (although some uranium is anthropogenic). DOE is not proposing a statewide basic standard or table value for gross alpha and gross beta; hence, the proposal is not inconsistent with the Policy. Other aspects of the proposal to eliminate the segment-specific gross alpha and gross beta standards are discussed in more detail below.

The Policy also addresses the establishment of "Site-Specific Standards" (section III.4), as follows:

> 4. Site-Specific Standards
>
> a. Naturally occurring toxics. Site-specific surface or ground water quality standards will be based on the table value criteria unless the 85th percentile of ambient water data for a pollutant exceeds the table value, or site-specific information (e.g., economic impacts of compliance, site-specific risk analysis) warrants the adoption of different standards in accordance with section 31.7(1)(b)(ii) of [Regulation 31] . . .
>
> b. Non-naturally occurring toxics. Site-specific surface or ground water quality standards for non-naturally occurring toxics will be the statewide standard unless site-specific information (e.g., economic impacts of compliance, site-specific risk analysis[fn]) demonstrates that different standards are warranted.
>
> fn Site-specific standards may be more stringent or less stringent than statewide standards where warranted by evidence brought forth in a rulemaking hearing. Note that a less stringent site-specific standard may not imply a lesser degree of risk protection where it is based on a detailed, site-specific risk assessment, supported by defensible scientific data and field observations, that results in refined exposure assumptions.

DOE's proposal is to adopt the uranium table value standard as the site-specific standard. Regulation 31, section 31.7(1)(b)(ii), states:

> (ii) <u>Ambient Quality-Based Standards</u>

> For state surface waters where evidence has been presented that the natural or irreversible man-induced ambient water quality levels are higher than specific numeric levels contained in tables I, II, and III, but are determined adequate to protect classified uses, the Commission may adopt site-specific chronic standards equal to the 85th percentile of the available representative data. Site-specific acute standards shall be based on the 95th percentile value of the available representative data. For temperature, chronic (MWAT) and acute (DM) standards will be set at a level that would be exceeded once in a three-year frequency.

DOE's evidence is related to uranium levels that are influenced by the presence of naturally occurring uranium and that may exceed the current segment-specific standards due to changed conditions. But, at this time, DOE is not proposing to adopt a segment-specific standard that is, "higher than specific numeric levels contained in [table III]."

Section III.4(b) of the Policy seems consistent with Regulation 31.7 (b), "Numeric Standards," which provides:

> Numeric standards will be assigned based on the evidence presented at the classification and numeric-standard-setting hearings. Numeric standards may not necessarily be assigned for all constituents listed in the tables. In making this determination, the Commission will consider the likelihood of such constituents being present in the waters in question naturally or due to point or nonpoint sources, and shall consider the significance of the constituents with respect to protection of the classified uses. Entities having specific water quality data for the waters being classified, such as 208 agencies, local municipalities and industries, and citizens' groups, the Water Quality Control Division, state and federal agencies, environmental organizations, and other interested persons are encouraged to present such information.
>
> The Commission may use any of the following approaches to establish site-specific numeric standards, as it determines appropriate with respect to specific state surface waters. Existing site-specific standards shall remain in effect until superseded by revised standards promulgated pursuant to this section:
>
> (i) <u>Table Value Standards</u>
>
> The Commission may apply the numeric levels set forth in tables I, II, and III as site-specific standards when those levels are determined to be appropriate to protect the applicable classified uses, and the available site-specific information does not indicate that . . . approaches [in subsections (ii), (iii), or (iv)] to numeric standards would be more appropriate . . . The numeric levels for various parameters in tables I, II, and III, are levels determined by the Commission after careful analysis of all available information and are generally considered to protect the beneficial use classifications. They are intended to guide the Commission and others at the use classification and numeric-standard-setting hearings.

DOE's proposal is consistent with the Policy, being protective of the applicable classified use. Further, the proposal notes that uranium is present naturally at levels that are well above the current segment-specific standard.

Subsection (ii), discussed previously, and subsection (iv), related to surface waters in wetlands, do not apply to DOE's proposal. Subsection (iii) refers to instances where a Use Attainability Analysis or other site-specific analysis is prepared, so that the Commission may adopt a site-specific standard determined to be appropriate based on the study. DOE's site-specific analysis includes the information in the Pre-Hearing Statement and in this Rebuttal Statement.

As noted previously, the WQCD PRPHS agrees that the proposed uranium standard is protective of beneficial uses, and DOE believes that the proposal's adoption by the Commission, after consideration of relevant information, would be fully consistent with Regulation 31.

B. Section II A. Characterization of Current Conditions and Attainment of Current Standards (Attainment of Chronic Criteria)

The WQCD Responsive Pre-Hearing Statement recommended that DOE provide its raw surface water data for uranium, gross alpha, and gross beta for the previous 5 years to assess the attainment of chronic criteria. The surface water data is provided in Exhibit 4, but it consists of more than 5 years of data, to illustrate the changed conditions resulting from cleanup and closure. Five years of post-closure surface water data are not available, so DOE's proposal is necessarily based on measurements indicating that surface water uranium levels could exceed the current standard at RFLMA-compliance monitoring points, and that the uranium levels are predominantly naturally occurring. Exhibit 5 shows water discharge volume data to supplement the data provided in DOE's Pre-Hearing Statement, Table 1, "Annual Discharge Volume in Acre-Feet," for comparison of pre-closure and post-closure conditions.

The uranium in groundwater at Rocky Flats is predominantly natural, as determined prior to closure, through hundreds of samples analyzed by Los Alamos National Laboratory (LANL), using high-resolution analytical methods. The results are in the LANL Report, *Quantitative Evaluation of Mixture Components in RFETS Uranium Isotopic Analysis*, LA-UR-05-7223. Post-closure high-resolution analysis of targeted groundwater and surface-water locations has also been conducted, and results to date show that the uranium content continues to be predominantly natural. Exhibit 6 contains the LANL reports for pre-and post-closure sampling results. These reports are also available on the Rocky Flats website, http://www.lm.doe.gov/land/sites/co /rocky_flats/rocky.htm, in the "Stakeholder Relations" tab.

The post-closure results are in the LANL reports—*Thermal Ionization Mass Spectrometry Uranium Results for October 2007 RFETS Waters*, LA-UR-07-7737,

Thermal Ionization Mass Spectrometry Uranium Results for September 2008 RFETS Waters, LA-UR-08-06102 and *Thermal Ionization Mass Spectrometry Uranium Results for November 2008 RFETS Waters*, LA-UR-08-08031. These reports are available at the aforementioned Rocky Flats website address.

The figures in Exhibit 7 show the locations of the LANL samples, and pre- and post-closure results for selected locations. The pre- and post-closure results figures are similar to Figures 1 and 2 in DOE's Pre-Hearing Statement, but they have been updated to include additional LANL data received since DOE's Pre-Hearing Statement was composed. Data used for the figures in Exhibit 7 are included in Exhibit 4. As shown in Exhibit 7, the current uranium standard is exceeded at some locations upstream of the RFLMA-compliance monitoring points. The Solar Ponds Plume Treatment System (SPPTS) is in place to collect and treat the anthropogenic-uranium-contaminated groundwater plume, in accordance with the CAD/ROD, and is discussed in more detail below.

C. Section II B. Interpretation of the Basic Standard (Lowest Practical Level Considerations)

The WQCD Responsive Pre-Hearing Statement recommended that DOE characterize what it considers the lowest practical level achievable. Although WQCD refers to several sections of the regulations for the lowest practical level for radionuclides, Regulation 38.5(3)(b) provides that the uranium level in surface waters shall be maintained at the "lowest practicable level."

The WQCD Pre-Hearing Statement seems to imply that Regulation 31.7(b), discussed above, regarding consideration of various factors in establishing site-specific standards, may not consider such factors in relation to the lowest practical level. We believe that the Commission may consider such factors as the presence of naturally occurring uranium impacts, actual water uses, and exposure information related to risk in evaluating DOE's proposal.

The SPPTS was constructed to collect and treat contaminated groundwater from the Solar Ponds Plume, a portion of which contains the predominantly anthropogenic uranium contamination. A range of options was evaluated by DOE for the treatment of uranium-contaminated groundwater, and the SPPTS was determined to be the preferred alternative, after consideration of Comprehensive Environmental Response, Compensation, and Liability Act criteria, as summarized in sections 13 and 17 of the CAD/ROD.

The WQCD Responsive Pre-Hearing Statement included as Exhibit 2 EPA's "National Primary Drinking Water Regulations; Radionuclides; Final Rule" (*Federal Register*, December 7, 2000, vol. 65, no. 236, p. 76708–76753) (Final Rule). In promulgating the uranium maximum contaminant level (MCL), as described in the Final Rule, EPA noted that while water treatment to achieve a lower uranium level is feasible, "the benefits do

not justify the costs at the feasible level [20 micrograms per liter (ug/L)] and the net benefits are maximized at [the MCL] that is still protective of kidney toxicity and carcinogenicity with an adequate margin of safety" (Final Rule, p. 76715).

As pointed out in DOE's Pre-Hearing Statement, we are unaware of any use of Big Dry Creek water for actual water supply (p. 2–3). In addition, a Rocky Flats Comprehensive Risk Assessment was performed as part of DOE's RI/FS. The summary of the Comprehensive Risk Assessment is included in section 10 of the CAD/ROD. Institutional controls are in place in the Central Operable Unit (which includes the former industrial area at Rocky Flats); the use of surface water or groundwater is prohibited, except for remedy-related purposes. The institutional controls for the Central Operable Unit are incorporated into RFLMA Attachment 2, Table 4 (p. 23), and they are also embodied in an environmental covenant granted by DOE to CDPHE. The covenant is recorded by Reception Number 2006148295 in Jefferson County, Colorado.

The Rocky Flats National Wildlife Refuge has been established in the Peripheral Operable Unit (which surrounds the Central Operable Unit). The Comprehensive Risk Assessment evaluated the risks to the wildlife-refuge worker as the reasonably maximally exposed individual for the future land use of Rocky Flats. Section 9 of the CAD/ROD describes the current and potential future land and resource uses. The Comprehensive Risk Assessment showed that exposure to contaminated groundwater and surface water is an insignificant pathway, and that the risk is insignificant (below 10^{-6} incremental cancer risk level).

Thus, DOE is treating the groundwater plume that contains anthropogenic uranium and will continue to do so in accordance with RFLMA requirements. However, the presence of elevated concentrations of natural-uranium contamination—and the other factors presented by DOE in its proposal—should be considered by the Commission to support adopting the uranium MCL as the segment standards.

As pointed out in DOE's Pre-Hearing Statement, "Operational and Economic Considerations" (p. 5), DOE believes that the presence of natural uranium at elevated concentrations should be considered to support a change in the segment standards to the MCL.

D. Section II C. Consideration of Human-Health Effects of Uranium

The WQCD Responsive Pre-Hearing Statement states that the uranium-exposure-specific value calculated in accordance with Policy 96-2, equation 1-1, for protecting the domestic water supply from non-carcinogenic effects, should be considered instead of the uranium MCL, "in the absence of contradictory information."

That calculation results in a value that is very close to the current standards, which DOE believes are already unrealistic based on the levels of natural uranium in groundwater that impacts surface water quality through the natural hydrologic cycle (i.e., groundwater

discharge to surface water). As discussed above, the information provided by DOE to support its petition is consistent with Policy 96-2.

E. Section II D. Rationale for Removal of Gross Alpha and Gross Beta Radiation Standards

Regarding the DOE proposal to remove the gross alpha and gross beta standards, the WQCD Responsive Pre-Hearing Statement recommended that DOE provide information addressing what beta and alpha emitters occur at Rocky Flats and what standards to address those constituents currently apply or would be helpful additions.

The Responsive Pre-Hearing Statement also recommended that DOE address whether these standards account for cumulative impacts or serve as indicators of change, and that DOE provide the analysis supporting the conclusion that uranium and gross alpha data were well correlated.

Sections 6 and 7 of the CAD/ROD describe the characterization and sampling approach leading to the identification of AOIs at Rocky Flats. Based on the evaluation of extensive site-characterization data, gross alpha and gross beta radiation are AOIs in the CAD/ROD for Rocky Flats. The alpha emitter AOIs are plutonium-239/240, americium-241, uranium-233/234, uranium-235, and uranium-238. Specific beta emitter isotopes, such as naturally occurring potassium-40, fallout-related strontium-90, and fallout-related cesium-137, were detected during characterization, but no beta emitter AOIs were identified at Rocky Flats.

Standards are in place for the alpha-emitting radionuclides uranium, americium, and plutonium so that impacts from each AOI may be evaluated. Gross alpha and gross beta would not serve as indicators of change where the AOIs are already directly evaluated.

Exhibit 8 is a graph showing uranium activity concentration versus gross alpha and gross beta activity concentrations. Exhibit 8 includes the data for the comparison. This exhibit incorporates the post-closure results for surface water and groundwater. The correlation is indicated by the trend line and associated correlation coefficient (R^2). The high R^2 values indicate that there are very good correlations between uranium and gross alpha, gross beta, and the sum of gross alpha and gross beta.

The WQCD Responsive Pre-Hearing Statement notes that these standards were adopted in 1989, "due to the risk of discharge of radionuclides from the Rocky Flats Plant . . ."; it also states that "[a]t their adoption, these standards were considered necessary to protect the designated uses" (II D, p. 5). WQCD asks what has changed since 1989 regarding perceived risks, what substances have been eliminated, what knowledge has changed, and what new standards have been adopted since the original adoption of these standards.

To address these questions, DOE reiterates the information provided in the "Introduction" of its Pre-Hearing Statement regarding the substantial changes in surface water volumes since 1989, the selection of the final remedy, and the approval of the CAD/ROD.

It should be noted that WQCC has not adopted a statewide basic standard for gross alpha or gross beta in Regulation 31. The Final Rule notice includes, on p. 76748, the regulation for gross alpha and gross beta (Title 49, *Code of Federal Regulations*, Section 141.66 [49 CFR 141.66]), and was cited in DOE's Pre-Hearing Statement as well.

The WQCD Responsive Pre-Hearing Statement states that DOE has not addressed why these standards are not necessary (IID, p. 5). However, the DOE Pre-Hearing Statement does state its rationale for this proposal:

> EPA-promulgated MCLs (dose based 4 millirem per year) for gross beta in the *Code of Federal Regulations*, Title 49, Section 141.66 (d) (49 CFR 141.66 [d]) apply to manmade beta-emitting radionuclides (besides tritium and strontium-90), and these are not analytes of interest at Rocky Flats.
>
> The EPA-promulgated MCL for gross alpha in 49 CFR 141.66 (c) that applies to alpha-emitting radionuclides (excluding radium-226 and uranium) is 15 picocuries per liter (pCi/L). The basic and site-specific standard for plutonium and americium is 0.15 pCi/L, which is well below the gross alpha MCL. The gross alpha results in Table 2 appear well correlated to the uranium results, so a site-specific standard seems redundant.

II. Rebuttal of the Cities' Responsive Pre-Hearing Statement

The Cities' Responsive Pre-Hearing Statement cites Regulation 31.11(2) and states that it is too early to determine the lowest practical level for radionuclides. It refers to the Written Testimony of Shirley Garcia (Testimony) for a discussion of the various reasons the level cannot be determined at this time. This Rebuttal addresses the reasons set forth in the Testimony.

As part of this Rebuttal to the Cities' Responsive Pre-Hearing Statement, DOE incorporates but does not restate here the information presented above in the Rebuttal to the WQCD Responsive Pre-Hearing Statement. Additional rebuttal to the Testimony is presented below.

A. Alternate "No-Change" Proposal of the Cities

The Testimony objects to DOE's proposal because of site hydrology, residual contamination, and an assumed need for additional data and time. These factors are addressed below. Also, the Testimony states, "Relaxation of these standards could lead to a restriction of downstream uses and potential increased costs for water suppliers" (p. 2).

No information to support this assertion was provided. DOE has provided information that there is no downstream use of the water from these segments; therefore, it is not logical to suggest that a "relaxation" of standards would lead to a restriction of this non-use. Further, the Standley Lake Protection Project is completed (DOE Pre-Hearing Statement, p. 3). The Commission has already determined that the promulgated statewide standard for uranium, the MCL, is protective of the water supply use.

1. Hydrology

The Testimony cites DOE's previous observation that stable hydrologic conditions, which would support determination of ambient conditions, would be expected to take some time after closure. DOE believes that WQCD typically uses 5 years of data to establish ambient conditions. Approximately 3 years of post-closure data are available.

DOE asserts that the ambient-based uranium, gross alpha, and gross beta standards established in 1989 do not reflect the current conditions at Rocky Flats, and that the uranium MCL is appropriate under these conditions.

The changed conditions at Rocky Flats resulted from cleanup and closure activities completed in late 2005.

The Testimony notes several instances of DOE "remedial activities" since 2006 that involved soil disturbances, and it states that these "do not conform to the restrictions agreed upon in [the RFLMA]." In fact, all DOE activities have conformed exactly to those restrictions, after consultation with CDPHE (and EPA, as appropriate). The Cities apparently believe that no maintenance, repair, or adjustments to site conditions that existed upon the completion of cleanup and closure were anticipated or needed to implement the remedy requirements. This assertion is not correct, and such activities are contemplated in the RFLMA. The RFLMA, paragraph 34, provides as follows:

> The Parties recognize that in implementing approved response actions, field modifications may be necessary. DOE may implement field modifications that are consistent with the intent of the approved action after receiving oral approval from CDPHE. All such oral approvals shall be documented in a contact record. Notwithstanding Part 10 of this Agreement, no public notice is required for such field modifications. (p. 15)

RFLMA prohibits soil-disturbing activities as provided in the "Institutional Controls for the Central Operable Unit," RFLMA Attachment 2, Table 4 (p. 23). In accordance with the institutional controls, among other things, soil-disturbing activities are authorized for remedy-related purposes and by pre-approved procedures. The activities, which are remedial because they are conducted in conformance with the remedy and RFLMA requirements, were conducted in full accordance with those requirements, including CDPHE's review and approval of DOE-proposed activities, as documented in contact records. The information review for soil-disturbing activities includes the evaluation of any subsurface contaminated areas and remaining infrastructure to determine what, if

any, steps are needed to address the possibility that residual contamination could be mobilized.

Further, these activities are proof that DOE takes a proactive approach to implementing the remedy requirements, and they are not intended, as the Testimony seems to imply, to make changes that will impact the hydrology preventing its stabilization. One example of the proactive nature of DOE's activities is the improvements being made to the SPPTS, as discussed below.

There are a number of other misstatements or misconceptions in the Hydrology section of the Testimony (p.2-3), which are addressed point by point below.

- The recent Original Landfill geotechnical investigation (which included digging eight test pits and drilling seven bore holes to bedrock for geotechnical characterization of the soils and associated installation of instrumentation) is used as an example of soil-disturbing activities. This work was undertaken to address small, localized areas on the approximately 20-acre cover, the construction of which was completed in 2005, prior to site closure. The engineering evaluation concluded that the localized observations did not indicate significant cover instability or performance problems, but several improvements could be made to ensure that seeps and run-on/runoff water were directed to other existing drainage features. These improvements have been completed, and required maintenance of the cover, which normally includes periodic adjustments to diversion berms, is appropriate to address these conditions. These actions are not expected to significantly affect the hydrology or the changes to hydrology that may result from cleanup and closure changes affecting lower surface water volumes at Rocky Flats.

- The plume treatment systems intercept and collect groundwater with impervious barriers keyed into bedrock. Because of the nature of groundwater movement at Rocky Flats, these barriers (which range in length from approximately 300 to 1,200 feet) are the most feasible way to collect groundwater for treatment. The placement of the barriers depended on a number of factors, and CDPHE and EPA recognized, and accepted, that plume areas downgradient of the barrier were not collected. The objective of the systems is to reduce contaminant load to surface water from groundwater so that the beneficial uses of surface water are protected.

- The East Trenches Plume is not contaminated with uranium. The East Trenches Plume Treatment System is designed to intercept and treat groundwater contaminated with organics (although it could treat uranium contamination, if it were present). This topic is, therefore, not relevant to DOE's proposal.

- The Solar Ponds Plume is not contaminated with plutonium or americium, and that portion which is contaminated with volatile organics has a very limited extent (it does not extend even halfway to the treatment system, and it extends even less

toward the downgradient surface water feature). The SPPTS is designed to intercept and treat groundwater contaminated with nitrate and uranium (although it could treat volatile organics, if this contamination were to ever migrate that far).

- "Non-contiguous plumes" is apparently a reference to individual groundwater well data showing localized contamination that does not extend to adjacent wells, and thus does not have the potential to significantly impact surface water. Groundwater contamination evidenced by individual wells is not representative of a plume, which can be mapped and in which the movement and transport of contaminants, including those that could impact surface water quality, can be observed. Plumes that present a potential impact to surface water quality are addressed by treatment systems.

- It is true that improvements have been made and that further improvements are planned for the SPPTS. Potential improvements to the performance of the treatment media are also being evaluated. As approved under the RFLMA, which is documented in Contact Record 2008-08 and included as Exhibit 9, upgrades to the SPPTS have recently been constructed to collect and treat more of the Solar Ponds Plume water to reduce uranium loading in North Walnut Creek. Additional upgrades to the SPPTS treatment media arrangement and capacity for uranium treatment will be made in the next several months, after approval under the RFLMA. DOE is not yet able to quantify the uranium-removal performance of the upgraded SPPTS. These steps show that DOE is taking a proactive approach and intends to properly implement the remedy. Again, this has no bearing on the basis for DOE's proposal but is in accordance with the RFLMA, paragraph 34. The SPPTS will continue to be operated, maintained, and improved (if necessary) unless and until discontinuance of the treatment is approved under RFLMA requirements. As a result of improvements that have already been implemented, additional contaminated water is being collected for treatment.

2. Residual Contamination

As the Testimony points out, residual contamination is well documented and well known, and was taken into consideration in the selection of the final remedy in the CAD/ROD. The arguments put forward in the Testimony do not recognize that the MCL is adequately protective of the water supply's beneficial use. Also, the current ambient-based standard is based on conditions during plant operations, which, because of imported water, included average discharge water volumes of approximately 140,000 gallons per day for fiscal years 1993 through 2005, with maximum flows of up to 500,000 gallons per day during active production prior to 1993. While the flows are now significantly lower because of the elimination of precipitation runoff from impervious surfaces (parking lots, roads, and buildings) and the elimination of imported water and sewer treatment plant effluent, the uranium in groundwater contributing to base flow and predominance of natural uranium is not significantly changed.

Under these circumstances, DOE believes its proposal is reasonable, and appropriate.

3. Additional Data, Additional Time

The cited comment from GEI Consultants was submitted during the public review of DOE's *Interim Measure/Interim Remedial Action for Groundwater at the Rocky Flats Environmental Technology Site*, (groundwater IM/IRA) (DOE 2005) and was considered by DOE, EPA and CDPHE before selection of the SPPTS as the groundwater remedial action to address the potential risk groundwater uranium. The Groundwater IM/IRA approval letter from EPA and CDPHE is included as Exhibit 10. The SPPTS is also a component of the final remedy in the CAD/ROD. DOE believes that the MCL is protective of surface water impacted by groundwater uranium contamination.

The Testimony presents a hypothetical example of the activity if 25 percent of the uranium were enriched uranium. This example has no basis in reality at Rocky Flats. There is no evidence of significant enriched uranium contamination in groundwater or surface water remotely approaching the hypothetical levels cited in the Testimony, and thus, it is grossly speculative. In fact, the LANL reports show that anthropogenic uranium fractions consist of depleted uranium, with very small fraction (much less than 1 percent) attributable to enriched uranium, which is also consistent with the results of the RI/FS. The Testimony does not include a similar evaluation of anthropogenic depleted uranium (which consists of U-238 and is depleted of U-235). Given the fact that anthropogenic uranium contamination is depleted uranium, the activity would in fact be lower than the activity for natural uranium on a mass-to-mass basis. For example, a sample with 100 percent depleted uranium of 30 ug/L would have an activity concentration of approximately 15 pCi/L, based on the depleted uranium specific activity listed in 49 CFR 434, "Activity-mass relationships for uranium and thorium", of 5×10^{-7} curies per gram, It should be noted that the promulgated MCL for gross alpha of 15 pCi/L excludes uranium, which has the separate 30 ug/L MCL. (See the Final Rule, p. 76748; 40 CFR 141.66[c].) Thus, the Testimony's example equating uranium activity to gross alpha activity MCLs ignores the exclusion of uranium in the definition.

The Testimony criticizes the number of LANL samples for various locations for being insufficient to determine the isotopic ratios of the uranium. DOE believes that the post-closure samples are sufficient for comparison to the extensive pre-closure information to establish that the post-closure conditions still indicate the predominance of natural uranium. Since August 2007, DOE consulted several times with representatives of the Cities to elicit specific data requests to address concerns; a specific request was eventually made in August 2008, and that request, to perform LANL analysis for pond waters, was acted on. The LANL samples are expensive ($11,000 per batch of six samples), and it takes many months to obtain validated data results. DOE believes that the post-closure LANL information is adequate to demonstrate that the post-closure results are consistent with the pre-closure results.

Rather than waiting for more data, DOE is proposing the changes because there is a reasonable indication that the current ambient standards are not representative of post-closure ambient conditions; they could be exceeded at the RFLMA-compliance points, and by that time, it would be too late to promptly explore possible changes to the site-specific standard. This rulemaking affords WQCC time to consider DOE's proposal before the upcoming spring runoff season, which may produce volumes of water that could, for example, require DOE to discharge water from the terminal ponds. Given that the MCL is protective and a standard lower than the MCL but above the current standard cannot reasonably and logically be determined, the MCL would provide an appropriate operational parameter.

DOE makes all analytical data available to the public by posting them on the Rocky Flats website. The analytical data are also submitted to CDPHE and EPA, in accordance with RFLMA. Evaluation of data trends, unexpected results, and the like would not be eliminated by the adoption of the uranium MCL as the standard for these segments.

III. EPA Comments Rebuttal

EPA's Comments raise several of the same points that the WQCD Responsive Pre-Hearing Statement does. As part of this Rebuttal to EPA's Comments, DOE incorporates but does not restate here the information presented above in the Rebuttal to the WQCD Responsive Pre-Hearing Statement.

A. Clarification of Proposed Changes

EPA suggested that DOE provide a redline strikeout of portions of Regulation 38 that would be changed under the proposal. The proposed changes to Table 2 are shown below. This differs slightly from the Pre-Hearing Notice regarding the uranium standard being proposed, in that the MCL is not shown as replacing the current uranium standard. Since the statewide basic standard for uranium is a statewide metal standard, and not a radionuclide standard, the table footnote regarding statewide radionuclide standards would not include uranium. The DOE proposal is to adopt the statewide basic uranium standard in Regulation 38, Table 2.

Proposed additions are shown with <u>double underlining</u>, and deletions are shown with ~~strikeouts~~.

Table 2
SITE-SPECIFIC RADIONUCLIDE STANDARDS*
(in Picocuries/Liter <u>unless other units shown</u>)
The radionuclides listed below shall be maintained at the lowest practical level, and in no case shall they be increased by any cause attributable to municipal, industrial, or agricultural practices to exceed the site-specific numeric standards.

A. Ambient-based site-specific standards:				
	Segment 2 Standley	Segment 3 Great	Segment 4a Segment 5	Segment 4a Segment 4b

	Lake	Western Reservoir	Woman Creek	Segment 5 Walnut Creek
Gross Alpha	6	5	~~7~~	~~11~~
Gross Beta	9	12	~~8~~	~~19~~
Plutonium	.03	.03	0.15** ***	0.15** ***
Americium	.03	.03	0.15** ***	0.15** ***
Tritium	500	500	500	500
Uranium	3	4	~~11~~ 30 ug/L	~~10~~ 30 ug/L

*Statewide standards also apply for radionuclides not listed above.
**0.15pCi/l Statewide Basic Standards.
***For plutonium and americium measurements in Segment 5 in Woman Creek and Segment 5 in Walnut Creek, attainment will be assessed based on the results of a 12-month flow-weighted rolling average concentration (computed monthly).

B. Acceptable Standard

EPA agrees that the DOE-proposed uranium standard would be acceptable, but it offers a more stringent value, which is the same as that suggested by WQCD. See the Rebuttal to the WQCD Responsive Pre-Hearing Statement, Section II C, "Consideration of Human-Health Effects of Uranium," above.

C. Deletion of Gross Alpha and Gross Beta Standard

EPA states that the DOE-proposed deletion might be acceptable but that DOE should clarify the rationale. This raises the same questions as WQCD. See the Rebuttal to the WQCD Responsive Pre-Hearing Statement, Section II D, "Rationale for Removal of Gross Alpha and Gross Beta Radiation Standards," above.

IV. Exhibits

Exhibit #	Title/Subject
1	CAD/ROD
2	RI/FS approval letter
3	RFLMA
4	Uranium water data and surface water location uranium concentration graphs
5	Water discharge volumes
6	LANL reports
7	Maps (Figures 1, 2, 3) showing pre-and post-closure LANL sampling locations and data
8	Comparison of uranium, gross alpha, and gross beta data
9	Contact Record 2008-08
10	Groundwater IM/IRA approval letter

V. References

DOE, 2005, *Interim Measure/Interim Remedial Action for Groundwater at the Rocky Flats Environmental Technology Site*, U.S. Department of Energy, June 21, 2005.

DOE, 2006, *RCRA Facility Investigation-Remedial Investigation/Corrective Measures Study-Feasibility Study Report for the Rocky Flats Environmental Technology Site*, U.S. Department of Energy, June 2006.

Respectfully submitted this _____ day of December 2008.

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CERTIFICATE OF SERVICE

I do hereby certify that a true and exact copy of the Department of Energy's Rebuttal Statement, in the matter of the rulemaking hearing for consideration of revisions to segments 4a, 4b, and 5 of Big Dry Creek (Walnut and Woman Creeks) in the Classifications and Numeric Standards for South Platte River Basin, Laramie River Basin, Republican River Basin, Smoky Hill River Basin, Regulation #38 (5 CCR 1002-38), except for Exhibits 1, 3 and 6 which were sent by Federal Express because of their size, was e-mailed to the following on the _____ day of December 2008:

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By:_____
Richard DiSalvo

CERTIFICATE OF SERVICE

I do hereby certify that a true and exact copy of Exhibits 1, 3 and 6, the Department of Energy's Rebuttal Statement in the matter of the rulemaking hearing for consideration of revisions to segments 4a, 4b, and 5 of Big Dry Creek (Walnut and Woman Creeks) in the Classifications and Numeric Standards for South Platte River Basin, Laramie River Basin, Republican River Basin, Smoky Hill River Basin, Regulation #38 (5 CCR 1002-38), was sent by Federal Express to the following on the _____ day of December 2008:

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