Appendix 2

Responsiveness Summary

Action Memorandum

South Maybe Canyon Mine

Cross-Valley Fill

Responsiveness Summary

A summary of written comments received and the U.S. Forest Service's responses regarding the Engineering Evaluation / Cost Analysis (EE/CA) with respect to the South Maybe Canyon Mine Cross-Valley Fill are provided below. As required by the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), the Forest Service prepared a written response to significant comments received pursuant to 40 C.F.R. 300.820(a). Some commenters provided opinions that do not relate to the technical aspects of the preferred removal action alternative identified in the February 2011 EE/CA. The Forest Service did not consider these significant comments. The Forest Service did not address them in the response to comments.

The Forest Service received comments from five entities: Roger Turner; the Greater Yellowstone Coalition; the J.R. Simplot Company; P4 Production, LLC; and Nu-West Industries, Inc. The Forest Service grouped the comments into the following categories:

I. General Comments

II. Site Characterization

III. Contaminants of Potential Concern / Risk

IV. Removal Alternatives

Response to Comments

General Comments: 2, 4, 11, 12, 13, 37, 43, 44, 72, 138

Comment 2:

One commenter stated that "Comment: (A) It is unreasonable for 30,000 cubic yards of waste shale to be deposited in the French-Drain area of the CVF in the time-period reported of merely "several shifts". Even if 100-ton dump trucks were used, it would take hundreds of loads to the CVF to deposit this volume of material --hardly a matter of several shifts. In future RI/FS reports on this clean-up, the Forest Service should report more realistic time frames of the waste dumping and that Nu-West/Beker Mine managers likely knew the dumping was taking place and, given the structure of the CVF and French-drain, knew that precipitation would infiltrate through this waste to the French-drain and Maybe Creek, carrying with it contaminants that would violate a number of laws and regulations.

(B) The above section reports that the "Agencies" were consulted and approved leaving this waste in place. The correspondence and records of this should be documented and placed in the future.

Response:

Unauthorized placement of shale waste in the drain is documented in records from September, October, November, and December of 1978 when these incidents occurred. [1,2,3,4,5] BLM keeps the official records regarding the administration and development of Federal Phosphate Lease I-04.

Documented shale placement in the drain blanket occurred in several separate incidents between September and November 1978. Documentation in the BLM's records indicates the company did consult with the agencies. However, at Beker and Washington Construction's suggestion, the agencies concluded that more damage to the drain could result if removal were attempted. At the time, preserving flow continuity through the drain was the most significant concern. No action was determined to be appropriate in 1978 because flow into and through the drain would not be impeded by the shale. In 1978, neither BLM nor the Forest Service was aware of chemical contamination issues associated with phosphate waste rock disposal.

Comment 4:

One commenter stated that "The EE/CA should clarify that the concern over fugitive dust is not just visible emissions but redistribution of COPCs through wind-blown dust from the construction project. Soil sampling and analysis needs to be re-done after this removal action to re-assess COPCs in surrounding soil."

Response:

Air quality will be monitored during construction according to a Health and Safety Plan to protect site workers. Best Management Practices (BMPs) will be employed to minimize re-distribution of contaminants. For example, windblown dust can be mitigated during construction with the application of water, as dust abatement, on roads and work areas during construction. Some fugitive dust will occur during construction. A Monitoring Effectiveness Plan will be developed and conducted to ensure that the response action objectives have been achieved.

Comment 11:

One commenter stated that "We also think that the Forest Service should clarify in the EE/CA, by definition, what "community acceptance" means. In other words, what community is being referred to – Soda Springs, Caribou County, southeast Idaho, Greater Yellowstone, or something else? It would be unfortunate if the Forest Service intends "community" be defined so narrowly as to only include Soda Springs or Caribou County. It would be even more unfortunate if such a narrow definition permitted people of those communities to veto or significantly modify the proposed alternative. Again, it would be helpful if the EE/CA clarified this."

Response:

The Forest Service uses the definition of community acceptance as outlined in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).[6] With respect to a definition of "community," USEPA guidance on community involvement does not define "community." However, it is generally understood that "community" means the local public, communities, citizens, and interested parties. Using this concept, the community at the South Maybe Canyon Mine site is not limited to Soda Springs or Caribou County residents.

Comment 12:

In as much as a federal court has held that the USFS and other agencies are potentially responsible parties (PRP's) in this action, the analysis and proposed action cannot be viewed as unbiased. Any studies, reviews, conclusions, or proposed action should be reviewed and approved by the USEPA, IDEQ or other uninvolved third party to ensure its completeness and

the appropriateness of proposed actions. P4 is not taking any position on whether the EE/CA work is biased only that it may appear so and urges suitable independent review and approval to ensure its validity.

Response:

The commenter seems to suggest that when the Forest Service may have to spend money on a cleanup, it should turn over the Forest Service's decision-making role to a third party that lacks authority to manage the National Forests. Such an approach is contrary to law. The Forest Service is charged with managing National Forest System land, including taking cleanup actions under CERCLA, whether the United States might be liable, or not. The President delegated CERCLA authority to the Forest Service, through the U.S. Department of Agriculture, by Executive Order 12580 where a release of hazardous substances is on or the sole source of the release is from land under the Forest Service's jurisdiction, custody, or control. The cross valley fill that is the subject of the proposed removal action is located entirely on National Forest System land, which is land under the Forest Service's jurisdiction, custody, or control. As required by the National Oil and Hazardous Substances Pollution Contingency Plan (40 C.F.R. Part 300), the Forest Service made the EE/CA available for public comment. The public review process provides an opportunity for interested and knowledgeable parties to raise issues with the analysis and proposed action. The Forest Service has considered and responded to approximately 120 significant comments before selecting a cross valley fill capping action.

Comment 13:

One commenter noted that "The Site Characterization is focused almost exclusively on selenium even when as the referenced Herring and Grauch (2004) states, "The Meade Peak [Formation] is [a] phosphatic black shale that is notably enriched in several trace elements compared to most other black shales and even to many other phosphatic black shales. Compared to the average world -shale composition, the Meade Peak waste-rock is exceptionally enriched in Ag [Silver], Cd [Cadmium], Cr [Chromium], Se [Selenium], U [Uranium], and Zn [Zinc]."

Response:

For the purpose of the removal action, selenium is the primary contaminant of concern. While other contaminants are present within the shale, the release of selenium alone is sufficient to warrant a removal response action. The Forest Service believes that a cap to prevent infiltration and consequently, the release of selenium, will address the release of other identified contaminants of concern. A Remedial Investigation and Feasibility Study will be performed subsequent to this removal action to address concerns and risks that remain after the action is implemented. Monitoring for other contaminants of potential concern will continue.

Comment 37:

One commenter stated "I appreciate the opportunity to comment on the USFS's EE/CA report for the South Maybe Canyon Mine Cross Valley Fill. While we recognize the tremendous amount of work completed to date, the report as presently written lacks sufficient quality information for the public to intelligently and properly evaluate the USFS's proposed actions on. The recent decision by Judge Winmill further complicates this process as this report now appears to be the favored action proposed by one of the PRP's, without the input or acceptance of the other PRP's and no independent, third party review or approval."

Response:

The President delegated the authority to make CERCLA removal action decisions to the Secretary of Agriculture (who subsequently re-delegated that authority to the Forest Service) for sites like South Maybe Canyon where the source of the contamination is on National Forest System land.[7] That authority does not rest on whether or not the United States is a potentially responsible party at a site. The Forest Service followed the requirements outlined in CERCLA and its implementing regulations (40 C.F.R. Part 300), as well as EPA Guidance, with respect to developing and selecting a removal action to address the cross valley fill. This process included the solicitation, consideration of, and response to public comments, including those from PRPs like Nu-West, as well as other interested parties. Third party "approval" of the selected removal action is not appropriate. The Forest Service, not a third party, holds the President's delegated CERCLA authority.

Comment 43:

Another commenter stated that "Overall the document does not provide sufficient information and analysis to support development of the removal action alternatives or the evaluation of the effectiveness of those alternatives. Simplot believes that the EECA should be rewritten to provide more specific information and analysis and then reissued for public review and comment. Simplot does not believe that the EECA, in its current form, provides the necessary technical analysis to justify selection of Alternative 4. There are other approaches that may provide similar results and at a lower cost."

Response:

As stated in response to the previous comment, the Forest Service followed EPA guidance to develop the EE/CA. EPA guidance states "It [EE/CA] should contain only those data necessary to support the selection of a response alternative, and rely upon existing documentation whenever possible."[8] The EE/CA presents sufficient information to evaluate the alternatives and identifies Alternative 4 as the recommended alternative.

Comment 44:

One commenter stated that "The EECA Report relies almost exclusively on the data collected by Nu-West in accordance with the 1998 AOC, but there is no background information given regarding the scope or current status of the work performed by Nu-West, nor is Nu-West credited with the collection of data used to develop the EECA. Is the Site Investigation complete, and if so, have the Site Investigation Reports submitted by Nu-West been accepted by the USFS as final reports that can be used as the basis for risk screening and evaluation of alternatives?"

Response:

Nu-West Industries Inc. and Nu-West Mining Inc. completed a Site Investigation pursuant to an Administrative Order on Consent with the Forest Service. Data from that report is available in the Administrative Record and was used as the primary data source in the preparation of the South Maybe EE/CA for an interim removal action.

Comments 72, 74:

One commenter had comments about the history of the site.

> 72. Section 2.1. The historic background is very brief and improperly omits numerous key dates and events such as:
>
> - The government's role in permitting the mine and designing the Cross-Valley Fill (CVF) waste rock dump.
> - The changes in the mine plan requested by the government.
> -The agencies concluded that the mis-placed "... waste shales would not likely have any appreciable impact on the effectiveness of the rock drain." This clarification should be added to the EE/CA.
> - In 1996, the USFS directed Nu-West to "revegetate" the surface of the CVF which reduced runoff to the chert blanket.
>
> 74. Section 2.1. No regulatory history was included in the EE/CA. Key missing items include but are not limited to:
> - Approval of the SIR in April 2007.
> - Submission of the DRAFT EE/CA 90 days later on July 2007 as required by AOC.

Response:

Nu-West provided numerous comments on the site history presented in the EE/CA that do not relate to the selection of the removal action alternative. These comments are not addressed in the

Forest Service's response to comments. The Forest Service notes that it does not necessarily agree with the substance of this category of Nu-West's comments.

Comment 138:

One commenter stated that "Section 7.3.1.2, page 78. "... Alternative 2 would not achieve ... nor conform to the beneficial use restoration goals in the Caribou-Targhee National Forest Land and Resource Management Plan would not occur." Additional details are required to support this statement."

Response:

Page RFP 3-11, of the Revised Forest Plan for the Caribou National Forest, lists the Desired Future Conditions for Minerals and Geology with the land management goals.[9] Goal 1 states "On mined lands and other drastically disturbed lands, maintain or reestablish hydrologic function, integrity, quality and other surface resource values within the capability of affected lands." Alternative 2 permits surface infiltration into the CVF and directs surface runoff back into the CVF, allowing infiltration water to continue to leach contaminants from the Site. Thus, Alternative 2 does not meet the referenced Goal 1 because it does not restore the integrity of the watershed, water quality or other surface resource values within the capability of the affected lands.

II. Site Characterization

A. Data Presented in the EE/CA

Several commenters discussed the surface water, ground water, and vegetation data presented in the EE/CA.

Surface Water and Ground Water

Comments 82, 84, 86, 91, 92, 93, 94, 95, 110:

One commenter has several comments related to surface water flow data:

> 82. Section 2.4.3, page 14. Only flow data up to 2006 was discussed. Recent data (2007-2010) should be included and/or discussed. Also see Figure 2.6.
>
> 84. Section 2.4.3, page 16. Only discusses spring data from 2006. Does not discuss data collected in 2009 and 2010 collected by MSE. All pertinent data should be included.

86. Figure 2.6. Flow data past 2006 are available and should be included in the text and figures.

91. Section 2.6.1, page 21. Selenium concentrations at SW-2 have not increased over the last 10 years; the fluctuations are a result of natural variation dependent on the snowpack.

92. Section 2.6.1, page 21. Table 2-2 and Table 2-3. Tables only present data from 2006. Data from the other 12 years should be presented and discussed.

93. Section 2.6.1, page 25. High loads are discussed but there is no explanation that the loads are high because both flows and concentrations were higher than previous years.

94. Figure 2.7. Figure only presents 2006 data. No discussion as to why only 2006 are presented. All pertinent data should be presented and considered.

95. Section 2.6.2, page 25. Discusses 2006 groundwater data and 2009 MSE groundwater data. This makes it sound like no other data are available when in fact over 10 years of data are available. All available data should be analyzed.

110. Figure 4.2. Again uses only 2006 flow data. Flow data from all the years should be shown and/or discussed.

Response:

Data collected at the South Maybe Canyon site from 2007-2009 is consistent with surface water and ground water data collected previously.

Selenium monitoring conducted by Nu-West from 1997 through 2008 is shown in Table 2.2 of the EE/CA.[10] During this period, selenium concentrations in surface water collected during spring runoff increased in concentration from 1.43 mg/L in 1998 to 3.14 mg/L in 2008 at SW-2. There is variation in the annual selenium concentrations reported in the EE/CA. Several variables can influence concentrations. Generally, overall climate and seasonal precipitation can have a bearing on selenium concentrations exiting the toe of the CVF. Weather events can influence the timing of sample collection, which may lead to variation in the annually reported selenium concentrations. The concentrations of selenium from 1997 to 2009 from SW-2 to SW-13 were consistently hundreds of times in excess of 0.005 mg/L, which is the State of Idaho's chronic criterion for cold water biota.

EE/CA Table 2.2 presents data from 1997-2008. The EE/CA provided 2009 data in Appendices A-1 and A-2. Table 2.3 presents the 2006 selenium load data for Maybe Creek to illustrate how load changes throughout the season from low flow in March to a peak during the spring run-off period in May, returning again to a low point by August. Data from 2006 sufficiently reflects how the selenium load correlates with seasonal flow each year. Consequently, the Forest Service did not present 12 years of data, as the trend for each of the 12 years is similar to the trend

illustrated by the 2006 data. Figures 2.7 and 2.8 demonstrate the correlation with flow volume and concentration. Figure 2.10 demonstrates how the annual load is directly related flow rate and concentration.

Vegetation

Comment 96:

One commenter stated that "Section 2.6.3. Background vegetation values are not presented; no context is provided to determine if vegetation is impacted."

Response:

Table 4.28 in Nu-West/TRC's South Maybe Canyon Site Investigation lists plants and their selenium concentrations for "vegetation collected at Stations outside the influence of Maybe Creek (upland stations)."[11] Table 4.29 in the South Maybe Site Investigation, prepared by Nu-West/TRC, provides a comparison of upland (baseline) vegetation, against plants in the areas of potential impact including the floodplain of Maybe Creek, in stream, the ponds, and on top of the CVF. Mean selenium concentrations in all types of plants in these affected areas were generally from seven to 30 times greater than for similar plants in the upland area.

Soil

Comment 97:

One commenter stated that "Section 2. There is no discussion of soils and sediment results in Section 2. However, soil and sediment concentrations are used in the streamlined risk assessment to justify the removal action. Soil and sediment data should be discussed in Section 2."

Response:

The Forest Service inadvertently omitted soil and sediment from the discussion on nature and extent of contamination in Section 2.6. However, the EE/CA discusses soil and sediment data in Sections 3.1.2 and 3.1.3.[12] While selenium in soil and sediment is a significant concern at the Site, elevated levels of selenium in surface water is the primary driver for this removal action.

Precipitation

Comment 108:

> Section 4.2, page 46. There is no basis provided to explain or justify the precipitation correction factor.

Response:

The first and second paragraphs in Section 4.2 in the EE/CA (page 46), explains that measured precipitation from weather stations that Nu-West maintains at the CVF and Dry Valley Mine differs from that measured at the Natural Resources Conservation Service (NRCS) Slug Creek Divide SNOTEL.[13,14] Slug Creek Divide receives more precipitation than reported by Nu-West for the CVF and Dry Valley Mine. The Forest Service's consultant, MSE, developed a correction factor to compensate for the difference because the NRCS site at Slug Creek Divide provides a more complete history and data set than do the Nu-West sites. Adjustments to reflect conditions on the CVF are similar and consistent with adjustments Nu-West and its contractor, TRC, submitted to the Forest Service in Nu-West's draft 2008 EE/CA.

B. Modeling Efforts to Demonstrate Reduction in Infiltration to the CVF and Reduction in Selenium Loading

There were several comments related to modeling the reduction in selenium loading.

Comments 35, 69, 139, 145, 148:

> 35. Section 7.3.1.1 discusses and draws conclusions on the degree of protection gained by the various alternatives apparently based solely upon subjective opinions of a PRP. Predictive modeling can and should be used to estimate the reduction in COPC loading for each alternative.
>
> > - The report states in discussion of Alternative 4 "Conformance with the ... goal ... would result from implementation ... " However, no objective evidence is provided that the water quality would meet applicable water quality standards. In fact, the report on page 86 states "However, all alternatives associated with this interim Removal Action will not achieve complete compliance with this ARAR."
> > - Insufficient work has been done to estimate the reduction in pounds of selenium, tell the reader what that equates to in terms of compliance with water quality standards. Further, no discussion is given for other COPCs.
> > - Page 81 of the EE/CA indicates Alternative 4 will reduce peak Se loads at SW-2 to less than 5 lbs/day. What will the predicted Se and Cd fluxes be at the same location for alternatives 1-3?
>
> 69. The following statements are not supported by technical analyses presented in the EECA Report (or documents referenced by the EECA Report) and should be removed:

- Capture and diversion, of the 70-80% of all the water that contacts the CVF, would provide downstream flow at the discharge point that complies with water quality standards.
- Substantial flow reductions in discharge from the toe of the fill at SW-2 would carry a smaller dissolved load of contaminants from the fill.
- The consequential decrease in the total load of selenium discharging from the CVF should eventually result in downstream locations of Maybe Creek coming into compliance with federal AWQC and Idaho Water Quality Standards sooner than Alternatives 2 and 3.

139. Section 7.3.1.2, page 80. Claims "Alternative 4 will reduce Se loads from 11 lbs/day to less than 5." No data or modeling results were provided to support this statement.

143. Section 7.3.1.4, page 81. Claims "Alternative 4 will reduce Se loads from 11 lbs/day to less than 5." No data or modeling results were provided to support this statement and needs to be included so the calculations can be verified.

148. Section 8.1, page 86. Claims overall loading from the CVF would be reduced by 70 to 80%. This is the first time this reduction is discussed. No data were provided to support this statement. If a model was used to make this calculation details of the model must be provided.

Response:

The commenter quoted the EE/CA out of context with respect to conformance of goals. The statement in the EE/CA on page 80 regarding Alternative 4 is "Cap features to limit or eliminate contaminant bioaccumulation would improve conformance with the Caribou-Targhee Land and Resource Management plan. Conformance with the Caribou-Targhee Land and Resource Management plan goal of restoring pre-mine beneficial uses would result from implementation of this alternative."[15] The discussion in this section of the EE/CA focused on how a cap would address bioaccumulation of contaminants (in plants), not restoring surface water quality.

It is difficult to estimate with any certainty what corresponding selenium (and other COC) concentrations might be associated with the anticipated decreased load of selenium (measured in lbs/day) entering Maybe Creek. The contribution of baseflow from the springs under the CVF (measured in cubic feet per second) will not be quantified until drain down of the CVF occurs after Alternative 4 is implemented. Until baseflow is quantified, accurate contaminant concentrations cannot be calculated.

The fluxes for selenium and cadmium for Alternatives 1, 2, and 3 are difficult to estimate because infiltration from precipitation will still occur if any of these three alternatives are implemented. Because annual precipitation is variable, it is difficult to quantify a change in contaminant concentration. It is likely that there would be little reduction in concentration with Alternative 1 since it similar to existing conditions. Alternative 2 would likely result in some reduction in COC concentrations because infiltration is limited with the addition of a cap on the top deck of the CVF. Alternative 3 would likely result in greater reductions in concentrations than Alternative 2, but not as much as Alternative 4 because Alternative 3 still introduces water into the chert blanket.

Table 4.1 in the EE/CA shows the potential amount of precipitation that falls on the CVF each year. Taking in to account, evaporation, transpiration, runoff and sublimation, it is estimated that 70 to 80% of all water that contacts the surface of the CVF is available to be captured and diverted downstream. Since this would be clean water that has not contacted seleniferous waste shale, it is expected to meet water quality criteria.

Table 2.3 in the EE/CA shows that the selenium load calculated at SW-2 on May 1, 2006 was 37.10 lbs/day and October 16, 2006, it was 2.14 lbs/day. (The average selenium load for 2006 was estimated to be 11.59 lbs/day.) Seasonal infiltration into and through the CVF is lowest in late summer and early fall. Autumn is the time of year when flow measured at SW-2 is the lowest. The lowest selenium loads exiting the CVF also occur in the fall. (See Appendix A-3.) Based on empirical data, it is reasonable to believe that reducing infiltration into the CVF would result in selenium loads dropping to less than 5 lbs/day once Alternative 4 is implemented. Because the selenium load measured at SW-2 is expected to decrease once Alternative 4 is implemented and clean water will be delivered to a downstream location on Maybe Creek, surface water concentrations at the downstream locations may meet ARARs sooner. The Forest Service recognizes that while this is an indication of improvement, surface water must meet criteria throughout the stream to meet ARARs.

Modeling conducted by Nu-West/TRC in their draft Engineering Evaluation/Cost Analysis submitted to the Forest Service in 2008 used the Hydrologic Evaluation of Landfill Performance (HELP) model to estimate infiltration performance of several capping alternatives they proposed. Nu-West's Alternative 3, as presented, is similar to the top deck cap proposed by the Forest Service in Alternatives 3 and 4. Nu-West provided their model outputs to the Forest Service and also reported those outputs in their draft EE/CA. Their modeling results show a 99.6% reduction in infiltration as a product of capping the top deck of the CVF using only a geosynthetic membrane. Further, Nu-West/TRC described infiltration in their water balance as interflow. Capping reduces interflow by 99.6%. Interflow carries most of the dissolved Se to the discharge point at SW-2. By subtracting the effect of the cap from the total flow discharge at SW-2,

reductions in load of 77% - 83% for the years 1999 through 2003 and again from 2005 through 2006 were estimated. Data from 2004 were not included because of data collection problems.

Nu-West/TRC's modeling results are available in an Appendix to their 2008 draft EE/CA. Their 2008 draft EE/CA is located in the administrative record at the Soda Springs Ranger District.

Comment 114:

Section 5.0. The text states the smaller emergent flows will be easier to manage if further treatment is determined to be necessary. This is presumptive and not appropriate for a removal action.

Response:

This referenced EE/CA statement is true. A smaller flow of water is easier to manage than a larger flow of water. A small volume of water is easier to capture, has less potential energy, and increases the range and decreases the cost of alternatives that may be effective, if monitoring after the completion of the removal action and the RI/FS find that further actions are necessary. Contrary to the comment, it is essential to good planning to anticipate potential future remedial actions and the contribution of a removal action to those actions.[16] In this case such consideration does not presume that water treatment will be part of a long-term remedial action. However, given the likelihood that capping will substantially reduce, but will not eliminate, contaminant loading, it would be foolish to ignore possible water treatment.

There were several comments related to water treatment.

Comments 135, 127, 137, 71:

> 135. Section 7.3.1.1, page 75. Alternative 4 states additional treatment may be needed, but there is no support for this statement.
>
> 127. Section 7.2.4, page 70. States water treatment is needed, but there is no documentation supporting the need for future water treatment.
>
> 137. Section 7.3.1.2, page 78. 1st paragraph, "Because other portions of the dump will not receive treatment, hazardous substance concentration at SW-2 is expected to continue to exceed AWQC." The statement cannot be verified with the information provided. The basis upon which this statement is made needs to be included. Any modeling that was conducted needs to be included.

71. Executive Summary, page 3. This section improperly presumes without technical analysis or justification water treatment will be required. This section should be revised to remove discussion of water treatment.

Response:

These comments are similar to comment 114. Alternative 4 is not likely to achieve compliance with ARARs once implemented. A Remedial Investigation and Feasibility Study will be conducted to further investigate the Site. Information presented in the Site Investigation for Maybe Canyon and the nine subsequent supplements indicates the CVF will continue to discharge water, at least seasonally, after construction of the removal action is complete. Water quality will be monitored at SW-2 and other locations to determine effectiveness of the removal action. That data will be considered in the RI/FS to determine what further response actions, if any, are necessary.

Two commenters had comments related to modeling the reduction of infiltration expected by the different alternatives.

Comments 67, 120, 124, 140, 142, and 147:

67. Page 81 "Estimates presented to the Forest Service show that the cap on the top deck will reduce infiltration in this area by at least 95%." These estimates should be provided to the public in the draft EE/CA.

120. Section 7.2.2, page 66. Either option would reduce infiltration by more than 95%. No modeling data were provided to support this statement.

124. Section 7.2.3, page 68. Would reduce infiltration by more than 95%. No modeling data were provided to support this statement and it cannot be verified. This statement is also on page 81.

140. Section 7.3.1.3, page 81. Claims that the cap would reduce infiltration by more than 95%. No modeling data or calculations were provided to support this statement.

142. Section 7.3.1.4, page 82. Claims the cap would reduce infiltration by more than 95%. No data or modeling results were provided to support this statement and needs to be included so the calculations can be verified.

147. Section 8.1, page 86. Claims the cap would reduce infiltration by more than 95%. No modeling data or calculations were provided to support this statement and needs to be included so the calculations can be verified.

Response:

The basis for the expected infiltration rate after installation includes 1) material specifications provided by the manufacturers of geosynthetic liners; and 2) evaluation of documentation of geosynthetic liner performance at other sites under similar conditions. MSE engineers evaluated welded 60-mil HDPE caps and manufacturers' geomembrane materials and concluded that such materials generally reduce infiltration by more than 95%. As with any response action, proper installation, oversight, and construction monitoring are critical elements to ensure the materials meet the expected performance.

Comment 116:

Section 6.1.4, page 56. The text states that grading the CVF would reduce the volume of water infiltrating the waste rock. This is not correct. Grading the surface will increase infiltration rates because of the disturbed surfaces.

Response:

Grading will likely slightly reduce infiltration by eliminating ponding. Nu-West's July 24, 2007, Draft EE/CA indicates at page 93: "Meteoric Water: The surface, or top deck, of the CVF would be graded from west to east at a grade of approximately 3.5% to promote runoff and reduce contact time with seleniferous rock." The Forest Service agrees with the commenter's implicit point, as reflected in the final EE/CA and the Action Memorandum, that grading alone will do little to address contamination resulting from precipitation entering the CVF.

C. Transport Pathways

Comment 50:

Selenium concentrations in groundwater exceed the drinking water standard of 0.05 mg/L. The transport pathways to groundwater are not described in this section, and there is no working conceptual model presented (or referenced) in the report that describes contaminant transport to groundwater. This information, if known, is directly relevant to the development of removal action objectives for the CVF and should be presented in the EECA report.

Response:

Groundwater, while a concern at this site, is not specifically addressed as part of the source control action for the CVF. Although addressing surface water is the main focus of this removal action, it is anticipated that the removal action may also reduce selenium in ground water. Ground water associated with the South Maybe Mine Site will be further evaluated in a remedial investigation and feasibility study once cap construction is complete.

Comment 51:

One commenter stated "Release mechanisms are briefly described but transport pathways from the CVF are not. Are transport pathways from the CVF known and characterized? If so, why have they not been presented for consideration with removal action objectives and removal action alternatives?"

Response:

Transport pathways were discussed on page 34 of the EE/CA: "The primary release mechanisms of COPCs from waste rock are erosion, dissolution of oxidation salts, leaching by infiltration and percolation, and surface water runoff. Each of these primary release mechanisms transports hazardous substances along multiple exposure pathways..."

This EE/CA focuses on source control action to address the selenium contamination emanating from the CVF. The removal action objectives presented in the EE/CA are appropriate for this action. Not all transport pathways are completely characterized (e.g., ground water); however, the Forest Service anticipates initiating a remedial investigation / feasibility study for the Site when construction is complete for this removal action. The anticipated RI/FS will address any transport pathways not addressed in the EE/CA.

D. <u>Sources of Contamination</u>

Comments 48, 133, 134:

Two commenters had comments on the source of contamination.

> 48. This section describes an incident that approximately 30,000 cubic yards (yd^3) of shale were deposited in the chert blanket. Based on this reported event, the EECA makes a distinction between removal alternative 3 and 4 by adding a cap to the chert blanket area. There is no evidence that this action will provide additional protection of human health and the environment and in fact, the information provided in the EECA indicates that the shale material could not be a significant continuing source to water, as illustrated

by the following mass balance calculation. The EECA describes the material volume as being 30,000 yd^3. Using an average rock density (1.8 tons/yd^3) and average selenium concentration in shale (13 mg/Kg), as reported in the EECA, yields an estimate of selenium originally in this shale at approximately 1,400 pounds. The average total rate of selenium release from the CVF reported in the EECA is somewhere in the region of 11.5 lbs/day (Table 2.3). Since the event, reported in 1978, 33 years have passed. If all selenium had been released from the 30,000 yd^3 of shale over this period, the contribution to the total amount released would be approximately 1 % (1,400 pounds in the shale divided by the average total release [11.5 pounds per day*365 days*33 years]). If the assumption were correct (that the shale in the chert blanket has contributed 1 % of the total selenium emanating from the CVF toe) than all the selenium in that material would already be used up. For selenium still to be released from this material, the release rate would have to be significantly less than 1% (i.e., significantly less than 0.15 pounds per day for current conditions). Therefore this material could not be a significant ongoing source.

133. Section 7.3 .1.1, page 74. Alterative 2 should not assume that misplaced waste shale is a significant contributor of contamination.

134. Section 7.3.1.1, page 75. Alternative 3 should not assume that misplaced waste shale is a significant contributor of contamination.

Response:

The Forest Service believes that the misplaced shale in the French drain contributes to the selenium leaching out of the waste shale and contamination in Maybe Creek. Several documents in the historic record provide evidence that tens of thousands of yards of waste shale, the greatest known source of selenium at the site, was placed along the bottom of Maybe Canyon as well as within the chert blanket and drain. (See Response to Comment #2.) There was no volume comparison in Comment 48; it is difficult to quantify the release of selenium from the misplaced shale because preferential flow limits the contact with water at any specific time. Irrespective of the presence of shale in the chert blanket, Alternative 4 reduces the quantity of water entering and exiting the CVF which will facilitate managing contaminated water if the future RI/FS demonstrates that further response actions are needed.

Comments 38, 47:

There were two comments related to site characterization studies.

38. Site Investigation & Model. Basic information needed for the public to understand the conditions at the site and the objective of early action is not provided. A conceptual site

model describing the source and fate of water entering the cross valley fill (CVF) under current conditions and associated selenium transport should be presented. Also, it is not clear what data or studies were used for the site characterization. In fact, there are NO references in the EECA as to the specific sources of site characterization data, studies completed to characterize site conditions, or accompanying conclusions as to the extent of contamination.

47. What data or previous studies served as the basis for the site characterization presented in this section? If the Site Investigation reports submitted by Nu-West are the primary basis for the characterization of the CVF setting, source characterization, and nature and extent of contamination then references to the appropriate source documents should be included in the EECA report. Without such references, it is impossible to substantiate the numerous unsupported conclusions presented in the EECA report (e.g. ., p. 20: "Selenium is the most widespread and concentrated contaminant of potential concern at the Site.")

Response:

Nu-West produced a Site Investigation Report (SIR) in 1999, and nine supplemental SIRs from 2001 to 2009. These reports are listed in the References of the EE/CA and located in the administrative record for this action. The Forest Service utilized the information in the SIRs along with other historical information to develop the characterization of the source (section 2.5). Section 2.5 presents the source and fate of water entering the CVF. There is sufficient information presented in the EE/CA for the public to understand the conditions at the Site and the objectives for this interim action (see RAO section).

Comment 17:

One commenter stated that "It appears on the surface the site investigation activities performed at South Maybe Canyon Mine are not consistent with other investigations at other CERCLA sites across southeast Idaho."

Response:

The Forest Service is not sure as to which aspect of site investigation activities that the commenter feels are inconsistent with other investigations in southeast Idaho. Site investigation activities at the South Maybe Mine CVF are not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

Comment 36:

The week of May 11, 2009 surface water sample results at SW-2 for Se are 1.10 and 2.56 mg/L respectively, please clarify the big difference in results. The two numbers were a lot closer in the weeks of June 8, 2009 and October 19, 2009. Are the 2009 surface and groundwater results validated from an independent 3rd party data validator? If so the report needs to direct the reviewer where these reports can be found so data quality and usability can be assessed. Please also include the link or location of the Project QAPP and all surface water, groundwater, and soil & vegetation SOP's.

Response: The surface water sample result of 2.56 mg/l selenium was inadvertently associated with sampling location SW-2; it is the field duplicate associated with sampling location SP-3. This result is close to the sample result of 2.54 mg/l selenium at SP-3. In 2009 and 2010, the Forest Service conducted the surface water and ground water sampling at the South Maybe Canyon Mine site and that data was validated by a third party consultant. The data validation reports and project QAPP are located in the administrative record for the site.

Comment 49:

A number of potential sources of contamination to Maybe Creek are identified here, but the relative importance of these different sources is not explained. As stated, the CVF is known to cause exceedances of surface water quality standards in Maybe Creek surface water; the effects of contributions from other potential sources on creek water quality, if any, have not been investigated fully and have not been quantified.

Response:

The EE/CA specifically addresses the CVF as a source of selenium to Maybe Creek and concludes that it is a significant selenium source. Further investigation of other sources of contaminants to Maybe Creek will be performed in a remedial investigation and feasibility study.

III. Contaminants of Potential Concern / Risk / ARARs

A. <u>Contaminants of Potential Concern</u>

There were two comments related to selenium loading and that Alternative Four is an unnecessary expense.

29. One commenter stated that "Section 6.1.4 and subsequent alternatives based upon this discussion are flawed because the EE/CA doesn't present any SPLP or column leachate tests for

the chert blanket material in the CVF. Reports such as The North Rasmussen Ridge EIS, 2003, and "Final Report to the Idaho Phosphate Working Group Geochemical Technical Review", by MFG, Inc- August 5, 2005, show that selenium leachate concentrations are site specific and whole rock analysis may not reflect relative contribution by the various rock types. This analysis should be done to evaluate Alternative 2 and Alternative 3 vs. Alternative 4. The analysis may show the chert as having minimal addition of Se flux to Maybe Creek and discount alternative 4 as an unnecessary additional expense."

128. Another commenter stated that "Section 7.2.4 page 70. Alternative 4 includes covering the chert blanket. This area is not contributing to the selenium load. The added expense to the cap is not justified.

Response:

Site-specific data show that selenium and other COPCs are leaching out of the CVF into Maybe Creek at levels above water quality standards. The EE/CA did not present SPLP or column leachate test results for the chert blanket because they are not appropriate methods to use. The water quality standard for selenium is measured as total selenium, not the water soluble portion that leaches out as measured from an SPLP test.

Even if the chert does not contribute to additional selenium flux, Alternatives 2 and 3 are not as protective of human health and the environment. Alternative 2 is limited to regrading and capping the surface of the CVF and does not reduce infiltration of water into the CVF chert blanket or the CVF slopes, where it would come into contact with selenium containing shales. Alternative 3 does not prevent water from entering the chert blanket and coming into contact with the seleniferous waste rock that was mistakenly placed in the chert blanket during construction. Further, Alternative 4 reduces the quantity of water entering and exiting the CVF, which will facilitate managing contaminated water if the future RI/FS demonstrates that further response actions are needed. Alternative 4 is the preferred alternative because it would best meet the RAOs of minimizing infiltration on the surface of the CVF and capturing and isolating precipitation runoff from the CVF surface to reduce flow within the fill.

Comment 103:

One commenter noted that "Section 3.1.2, page 35. Used maximum sediment values for each constituent instead of doing a statistical analysis of the data. Also if this is a focused EE/CA for the CVF, there are no sediments on the CVF."

Response:

The sediment samples that referenced in the EE/CA are in Maybe Creek, downstream of the toe of the CVF. The Forest Service used maximum detected concentrations in the streamlined risk assessment because Nu-West did not collect enough sediment samples to be able to conduct a statistical analysis. While capping the CVF should reduce sediment concentrations over time, the main drivers for capping the CVF are to begin to address surface water and groundwater contamination, as well as plant uptake on the CVF. Lower sediment contamination levels would not change the need to cap the CVF or the type of cap that is appropriate.

B. Risk

Comment 20:

One commenter stated that "Radiogenic risk to the public has been raised by the federal and state agencies at other phosphate mine sites. Table 3.5 shows no uranium, radium, or radon sampling took place on the CVF yet this EE/CA proposes an interim action without any discussion or regard to these elements as COPC's. Is the view of the USFS that radiogenic risk at this or other phosphate properties isn't of concern or insufficient such that its' study and evaluation is unnecessary?"

Response:

The Idaho Department of Environmental Quality (IDEQ) and the Forest Service conducted sampling activities in 2002 to support a limited Radium 226 screening effort.[17] IDEQ reported that the radium screening data returned an average emission of 10.0 pCi/L Radium 226, which would be a concern for residential inhabitants living on waste dumps.[18] Therefore, radiogenic risk from uranium, radium or radon may be a concern at the historic phosphate mine sites if there is a potential for exposure to humans in a confined area (e.g., basement in a house). U.S. EPA's "Land Use in CERCLA Remedy Selection Process" states that reasonably anticipated current and future land uses should be incorporated into the baseline risk assessment and remedy selection process.[19] For the CVF, it is unlikely that a house will be constructed on the waste dump itself located on the national forest, and hence, radiogenic risk was not considered in this action. However, because there is land nearby that may be contaminated with hazardous substances and has the potential to be developed for residential use, radiogenic risk will be considered in the future RI/FS for the site.

Comments18, 39, 45, 46, 52:

There were five comments related to data quality.

> 18. The analysis and discussion of results in Section 3 is based on a variety of data collected over numerous years. The federal and state agencies have required extensive data validation studies of sampling results, particularly that taken prior to the current consent agreements. Was any of the data used by USFS in preparation of the EE/CA report and recommendations subject to independent data validation? To what standards?
>
> 39. Data
> In recent years, there have been very specific requirements given to the Idaho phosphate mining companies by the USFS and other agencies in regards to the review and documentation of data quality, including an analysis of data usability. No information is provided in the EECA as to data quality, data validation or the usability of the data. The USFS needs to address whether the data used and described in the EECA has undergone the review and documentation that has been required of the Idaho phosphate mining companies.
>
> 45. In recent years, the USFS has provided specific directions regarding review and documentation of data quality to various mining companies conducting site investigations and remedial investigations under USFS CERCLA authority. This direction from the USFS includes requirements to perform a data-quality review, conduct data validation in accordance with prescribed protocols, and conduct a comprehensive data usability analysis prior to use of data for risk assessment or decision making for response actions. Except for a brief mention in Section 3.1 of the South Maybe Canyon EECA Report, there is no discussion of data sources, quality, validation, or usability.
> Did the USFS perform data quality and usability reviews consistent with direction that has been provided to various companies?
> If the USFS has conducted a data usability analysis, then a summary of that process should be part of the administrative record for CERCLA activities at this site. If the USFS has not conducted such an analysis, then explain why the USFS requires a very high level of effort on the part of mining companies to document data usability but does not hold itself, or its contractors, to similar standards.
>
> 46. The USFS completed a streamlined risk analysis using data collected by Nu-West. What steps did the USFS take to confirm data quality and usability to support the risk analysis?
>
> 52. This section references the 1999-2009 Site Investigation Reports as well as data collected by MSE in 2009 as the sources of data used to complete a streamlined risk

evaluation. What steps were taken by the USFS to document the quality of these data and their usability to support risk-based decision making?

Response:

The 1998 Administrative Order on Consent (AOC) with Nu-West Mining, Inc. specified that "All samples analyzed as part of the site investigation shall be analyzed by a laboratory that participates in a Quality Assurance / Quality Control (QA/QC) program employing technical procedures equivalent to those specified in the documents entitled "USEPA Contract Laboratory Statement of Work for Organic Analysis: (July 1995); USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis (ILM04.0); or USEPA's "Test Methods for Evaluating Solid Waste (SW846), Update No.3." [20] There was no provision in the 1998 AOC to require third party data validation of the data such as those in current Administrative Settlement / Administrative Orders on Consent (ASAOC) with mining companies in southeast Idaho. However, in 2009 and 2010, the Forest Service conducted the surface water and ground water sampling at the South Maybe Canyon Mine site and that data was validated by a third party consultant. The 2009 data were included in the Engineering Evaluation / Cost Analysis for the Cross Valley Fill. The Forest Service data is consistent with Nu-West's earlier data. For example, both data sets found selenium concentrations 100 times or more higher than surface water standards.

The Forest Service and other agencies have requested that the mining companies perform data usability analyses on historical data when the mining companies propose to use the historical data for future investigations, per EPA guidance.[21] That is not the situation here –Nu-West collected data during their site investigations to support an EE/CA and removal action.

Comments 19, 40, 53, 54, 55, 100, 101:

Several commenters posed comments related to the use of the screening values in the streamlined risk assessment.

> 19. Section 3.2.2 calls for use of action levels determined by the IDEQ in its Final Area Wide Risk Management Plan. Use of this document at other phosphate properties has been rejected by the federal and state agencies. Further the list of probable COPC's at other sites is significantly longer.
>
> 40. The USFS uses two "risk criteria" for the evaluation of either ecological and/or human health: U.S. Bureau of Land Management Risk Management Criteria and the Idaho Department of Environmental Quality Area Wide Risk Management Plan. The

risk evaluation done in the EECA is inconsistent with other risk evaluations done for this area and with applicable CERCLA guidance documents. First, the USFS has provided no basis for use of the BLM Risk Management Criteria. There is no information on the derivation of these criteria, any peer-review or similar type review by qualified scientists or any discussion of how these criteria are relevant to the southeastern Idaho phosphate area. Use of these criteria is very inappropriate and they should be removed from the EECA. The Area Wide Risk Management Plan was developed for use in risk evaluations such as in the EECA. It is appropriate for the USFS to use this plan for risk evaluation, but it is ironic that the USFS and other state and federal agencies have not allowed the phosphate mining companies to use the Area Wide Risk Management Plan in the fashion that it is used by the USFS in this EECA."

53. The screening criteria used for the screening-level risk evaluation, and relied on to develop removal action objectives for the CVF, include the Area-Wide Removal Action levels (RALs) developed by IDEQ in 2004 and the BLM Risk Management Criteria (RMCs). The USFS has repeatedly rejected use of the RALs for risk evaluation and risk-based decision making at other phosphate mining sites subject to investigation under USFS CERCLA authority. This document explains that the IDEQ intended the RALs as "discretionary guidance" to assist with risk-management decisions. Without further explanation to justify USFS reliance on RALs for risk-based decisions making at the South Maybe Canyon Mine site, discretionary use of RALs at this site, but not at other historical phosphate mining sites, appears arbitrary.

Also, the use of the BLM RMCs is not appropriate. The EE/CA provides no information as to how these RMCs were developed, what review and comment has occurred by scientists and other agencies, and why such criteria are relevant to the southeastern Idaho phosphate area. The use of the RMCs should be removed.

100. Section 3.1.1. Although the screening level criteria appear to have been developed for evaluating risks at mining sites, the description of the criteria was inadequate to determine how well they apply to the assessment of the receptors of concern for this Site. For example, although the BLM RMCs are stated as being applicable to human health, no information is provided to determine how well they represent recreational hikers, hunters or campers. State and federal risk guidance generally emphasize that screening criteria are not considered appropriate until the exposure assumptions used to develop them are determined to be protective of the receptors anticipated for the Site.

101. Section 3. The two screening criteria were both developed in 2004. It would be helpful if some discussion were presented as to whether any changes in the toxicity assessment for any of the COPCs had occurred since then.

Response:

With respect to the use of the Final Area Wide Risk Management Plan, federal and state agencies have not rejected the use of the document or the RALs cited in the AWRMP. As noted in the EE/CA, the removal action levels in the Final Area Wide Risk Management Plan for surface water are the same as the chronic cold water criterion for biota, which are ARARs for this action. In fact, USEPA and IDEQ used the AWRMP levels for vegetation as screening benchmarks in the Simplot Conda Woodall Mountain EE/CA and Action Memo. Federal and state agencies have stated that the findings in the AWRMP cannot substitute for a site-specific investigation.

It is appropriate for the Forest Service to utilize BLM's Risk Management Criteria for Metals at Mining Sites.[22] The Forest Service and BLM are both land management agencies that have similar land uses, similar recreational scenarios, and provide habitat to wildlife. The Forest Service has used the BLM criteria at other removal sites. Dr. Karl Ford, the author of the BLM Risk Management Criteria for Metals at BLM Mining Sites, describes in the document how he derived the criteria. The human health criteria for the various recreational scenarios are based on EPA's standard default human health exposure assumptions; thus, the use of the criteria is appropriate for use in the EE/CA for hikers, hunters, or campers.

In general, screening levels may be used as cleanup levels; a quantitative risk assessment is not required. EPA's guidance on non-time-critical removal actions states that "The scope of the non-time-critical removal action (e.g., an interim action conducted during an ongoing remedial effort) and the specific objectives determine the information to be collected during the EE/CA. Accordingly, qualitative risk information that identifies pathways of concern and concentrations of contaminants above standards could have been documented at the site during the RI, and may be referred to in the EE/CA; a separate risk assessment is not necessary to support the non-time-critical removal action." [23]

EPA did not revise selenium toxicity values. Selenium contamination is the driver establishing the need for the removal action. In 2005, EPA revised the toxicity values in the Integrated Risk Information System for zinc.[24] This is the only COPC with a revision. This would likely result in an increase in the Threshold Reference Value (TRV) for zinc. However, even with the increase, zinc is still a contaminant of concern for birds.

C. ARARS

Comment 5:

One commenter stated that "The Forest Service should remain open to the possibility that some of the wastes will, after further evaluation, violate RCRA or the State Hazardous Waste Laws upon further investigation and sampling."

Response:

The Forest Service acknowledges that there is a possibility that this interim removal action will not attain all Applicable or Relevant and Appropriate Requirements (ARARs). The Forest Service will monitor the effectiveness of the removal action after construction of the cap is completed. In addition, the Forest Service plans to initiate a remedial investigation and feasibility study for the South Maybe Canyon Mine site in the future with respect to any hazardous substances that may pose a risk to human health and the environment.

Comment 136:

Section 7.3.1.2. The discussion regarding federal AWQC standards do[es] not address if the values have been adjusted for hardness as presented in state regulations.

Response:

Water quality measurements, including selenium, presented in the EE/CA are not adjusted for hardness. Selenium solubility does not require that measured concentrations be adjusted for hardness. In the Ninth Supplement of the Maybe Canyon Site Investigation, Nu-West's contractor reported water hardness at SW-2 (downsteam of the CVF toe) as 633 mg/L $CaCO_3$. Using that value and the EPA's formula to adjust the water quality criteria for cadmium, an adjusted water quality concentration of 0.0034 mg/L for cadmium at SW-2 was calculated.[25] This value exceeds the Ambient Water Quality criteria of 0.0006 mg/L for dissolved cadmium, as does the hardness adjusted value for cadmium of 0.0018 mg/L at SW-13.

Zinc was measured at 0.208 mg/L in May 2009 at SW-2. When this value is adjusted per EPA's Water Quality Criteria guidance, the adjusted value is 0.205 mg/L dissolved zinc at SW-2. After the adjustment, the concentration of zinc exceeds the AWQC of 0.120 mg/L. Zinc does not exceed the AWQS at SW-13 as a raw measurement. Adjustment to the Zinc value is unnecessary.

Comment 68:

One commenter stated "To be consistent with EPA guidance and to provide essential information to the public, this section should state whether or not the preferred alternative is anticipated to achieve compliance with ARARs (e.g., applicable surface water quality standards for Maybe Creek) or provide overall protection of human health and the environment. If not, an explanation of the role of monitoring and the on-going CERCLA process should be described."

Response:

The EE/CA stated that Alternative Four (the preferred alternative) is not anticipated to achieve complete compliance with surface water quality standards, and therefore, not achieve complete protection of human health and the environment.[26] The EE/CA also discussed the fact that environmental monitoring would continue after construction of the cap to measure effectiveness of the removal action and feed into the data needed for the RI/FS.

VI. Removal Alternatives

A. Screening-Level Evaluation of Alternatives

Several commenters questioned the screening out of alternatives in the early stage of analysis.

Comments 14, 26, 31, 42:

> 14. "This reader questions the wisdom of a "limited scope, screening-level evaluation..." (Section 3.0, first sentence) to determine a response as extensive and costly as proposed. The report frequently notes that the proposed action is likely not to bring water quality into full compliance and that further treatment or response will be needed. An interim action costing millions of dollars and not expected to achieve compliance justifies more than a limited review/evaluation.
>
> 26. "The number of alternatives presented in the EE/CA are limited."
>
> 31. "Because of the flaws noted in the screening process, the range and scope of alternatives evaluated is insufficient."
>
> 42. "Because the above described modeling approach was not used in the document, several potentially viable approaches were eliminated from the development of alternatives without technical justification, resulting in a range of alternatives which is not appropriate for site conditions. For example, grading and soil cover was eliminated without any supporting analysis or justification. Soil covers are commonly used in

reclamation in area mining and may have a significant effect on reducing selenium concentrations in water flowing from the CVF and at much lower cost."

Response:

The EE/CA presents four alternatives that survived the screening process; three additional alternatives (removal of waste rock, chemical fixation, and institutional controls alone) were considered by the Forest Service and screened out due to implementability, cost and protectiveness concerns. The EPA guidance on EE/CAs does not specify that a minimum number of alternatives must be considered, only that an appropriate range be evaluated. The Forest Service believes that the range of alternatives considered for source control is appropriate for the site conditions at the CVF. As described in the "Guidance on Conducting Non-Time-Critical Removal Actions under CERCLA":

> Non-time-critical removal actions will be the appropriate response for a variety of sites and will range in scope from small-scale, low-cost actions to complicated, multi-media response actions requiring exemptions from the statutory time and/or dollar limits. Non-time critical removal actions may be interim or final actions; they may be the first and only action at the site, or one of a series of planned actions. The scope of the non-time-critical removal action will determine the detail of the EE/CA. The EE/CA is a flexible document tailored to the scope, goals and objectives of the non-time-critical removal action. It should contain those data necessary to support the selection of the response alternative, and rely upon existing documentation whenever possible.
>
> The range of site characteristics affecting the non-time-critical removal action forms a continuum. At one end are sites where the non-time-critical removal action is the first and only action expected at a site and where no other data are available. In this case, the EE/CA should provide definitive information on the source, nature, and extent of contamination, and risks presented by the site. At the other end of the continuum are sites where the non-time critical removal action is one of a series of response actions, where a completed RI is or will be available, and where the nature and extent of contamination and the risk presented by the site have been or will be determined. In this case, the EE/CA would be similar to a focused FS, concentrating on the analysis of perhaps two or three appropriate alternatives and providing a reference to existing information on the nature and extent of contamination and risks.[27]

Additionally, USEPA's memorandum "Use of Non-Time Critical Authority in Superfund Response Actions" states that it is appropriate to use removal authority to address "hot spots," control the source of contamination, or take other interim actions. [28]

A soil cover was not considered for this response action because Nu-West concluded in the eighth supplement of the Maybe Canyon SI that the thick soil cover material in the test cells on

the top of the CVF "does not appear to be effective in reducing the volume of water that infiltrates through the test cells."[29]

Although Alternative 4 may not meet water quality criteria, there are additional benefits with this removal action to reduce loading of selenium and other COCs. Alternative 4 reduces the quantity of water entering and exiting the CVF, which will facilitate managing contaminated water if the future RI/FS demonstrates that further response actions are needed.

Comment 3:

One commenter stated that "The Forest Service should re-evaluate a waste removal/treatment alternative(s), disregarding the costs associated with removal of the over-burden soil. The responsible parties knowingly dumped waste shale in the CVF pit above the French drain, and they should benefit from EE/CA cost analyses that fairly weigh the costs of removing the "cover up material" of the CVF."

Response:

The Forest Service did evaluate a waste removal alternative (i.e., removing the waste from the CVF and placing it into the mine pit or some other repository) and a treatment alternative in the EE/CA.[30] These two alternatives were considered against the criteria of cost, effectiveness, and implementability as outlined in the "Guidance on Conducting Non-Time-Critical Removal Actions under CERCLA." The Forest Service must consider cost as one of the screening criteria in the EE/CA.[31]

B. Engineering and Design

Two commenters had comments on the Alternatives presented in the EE/CA which focused on the diversion of water off of the CVF, the drainage layer proposed in the EE/CA, and the grading of the surface of the CVF.

Comments 33, 34, 126, 129, 130, 131, 145:

> 33. Section 7.2.4 includes no discussion of the volume of water to be carried by the diversion structure, its grade, or the potential for its erosion/failure. Spring runoff flows may be large and the reader has no information on which to base an educated comment as to the consequences of this alternative.
>
> 34. Figure 7.5 and the verbiage lacks sufficient detail on the energy dissipation structure at the bottom of the CVF near SW-2 including materials of construction. The runoff diversion in alternative 4 is extremely steep and detail is needed to help the reader

understand how the energy of the water coming off the slope will be dissipated at the bottom before it enters Maybe Creek. Without this detail the reader/reviewer cannot comment objectively if Alternative 4 is a good option or not.

126. Section 7.2.3. Minimal details were provided on the terraces including:

- In-slope angle.
- Direction they are sloped.
- What grade they are to be constructed.
- Details on how the groins are armored.
- The flow path for the water as it that comes off the terraces.

129. Section 7.2.4, page 70. Alterative 4 references armored channels. No details were provided for these channels.

130. Figure 7.5 shows an energy dissipation structure. There are no details or design criteria provided for this structure.

131. Section 7.2.4. No design criteria were presented for sizing the diversion channel. i.e., regarding the volume of water coming off the cap- is the channel big enough to handle it, what is the design capacity for storms?

145. Section 7.3.2.1, page 84. In Alternative 4, the EECA documents the problems with constructing the diversion channel and confirms Nu-West's concerns. Snow and ice will build up in the diversion channel during early snow melt. Water will flow out of the diversion channel and erode the cap causing high O&M costs for the cap. The installation of the diversion ditch provides minimal improvement in water quality as opposed to using the chert blanket and does not justify the additional costs.

Response:

One purpose of the EE/CA is to present various alternatives in enough detail to fairly compare the alternatives and support an informed decision. The detailed design of the selected removal action will occur after the Regional Forester signs the Action Memorandum.

The EE/CA, in Section 4.4 Water Balance, estimates the volume of water that falls on the 115-acre CVF top deck. Table 4.1 displays precipitation data from October 1998 to September 2006. During that time an average of approximately 10,890,000 ft^3 of water per year fell on the CVF.[32]

Evaluation and selection of materials to be used in the removal action will occur during the design phase. Material specifications provided by the high density polyethylene (HDPE) and geosynthetic clay layer (GCL) manufacturers will be utilized to estimate runoff to size the final diversion structure. Materials available on Site will provide water storage sufficient to support

annual and perennial vegetation, yet be resistant to erosion and failure. The cover proposed for the top of the CVF will be designed to store precipitation considering evaporation and transpiration loss by vegetation. This information will be considered during design to develop a diversion structure with energy dissipation to safely handle a 100-year storm event. Final design features will address the volume of water that might run-off of the structure from a "Probable Maximum Precipitation" calculation, as well as the possibility of the presence of snow and ice in the diversion channel. MSE's subcontractor, Engineering Science Construction (ESC), evaluated three possible methods to deliver water down a 3h:1v slope[33]

EE/CA Figures 7.5, 7.6, and 7.7 provide graphic representations of surface grading details, capping materials, and details for the diversion channels.

Comment 121:

Section 7.2.3, page 68. Water from the capped terrace is proposed to be routed to edge of the toe and natural ground. This would put a lot more water running down the edge of the toe and cause erosion. Significant operation and maintenance costs would be required.

Response:

This is an issue for removal action design of the diversion structure. The design will include energy dissipation features, which are readily available technology, to prevent erosion. Two objectives of the final design will be prevention of erosion and minimizing operation and maintenance associated with the diversion structure.

Comments 119, 122, 123:

119. Section 7.2.2. Geocomposite drainage net (GDN) selected because of lower costs; no cost comparison was provided to verify this statement.

122. Section 7.2.3, page 68. Uses a coarse rock drainage layer, not GDN. The EE/CA should explain why the change was made. The source of coarse rock should be included and discussed.

123. Section 7.2.3, page 68. Next sentence, GDN proposed. This conflicts with the use of coarse rock. The reader cannot determine what material is going to be used.

Response:

Both coarse rock and the Geocomposite Drainage Net (GDN) provide the same function, as both provide drainage from overlying materials, to intercept water and divert it along an unsaturated

flow path away from contaminated waste rock. Design specifications with respect to this drainage function will be determined in the final removal design. Abundant chert and limestone are available on Site for use in construction and remediation. Chert and limestone meet design characteristics for a coarse rock drain and both are found near the CVF. Geocomposite Drain Net may be used to replace sand, crushed rock, or gravel subsurface drainage systems. Mining, crushing, borrow source reclamation, transportation, and placement of geologic materials may exceed the cost of purchasing, transporting, and installing geocomposite materials.

The final design must meet Caribou National Forest Land and Resource Management Plan guidelines.

Comments 118, 125, 132:

118. Section 7.2.1, page 64. 273,000 yds^3 of material would be graded. No details are provided to determine if the material balances.

125. Section 7.2.3, page 69. This alternative proposes to grade 180,000 yds^3. There are no details provided if this is a balanced cut and fill.

132. Section 7.3.1.1, page 74. Alternative 1 claims grading will increase infiltration. This conflicts with section 7.2.1, which says grading will decrease infiltration.

Response:

Material balance calculations will be presented in the removal design document.

Alternative 1 presented in Section 7.3.1.1 states that "Grading the CVF top deck may temporarily increase infiltration until vegetation re-establishes... As vegetation returns, infiltration would decrease but remain similar to the existing condition." Language in Section 7.2.1 states that grading would promote runoff. [34] Today, the surface of the CVF is nearly flat in places. Depressions left in the dump surface after construction capture precipitation, interrupting any minor surface flow today. Hummocky conditions exist on the top deck where Nu-West end dumped geologic materials, and did not grade the piles. This created a situation where surface water flow is interrupted and captured in piles of fine textured materials on the dump surface. As stated in 7.2.1, grading this surface to a uniform slope would slightly reduce infiltration.

Comment 141:

Section 7.3.1.3, page 81. Claims "Revegetation success is critical to cap performance". The alternative calls for a GCL/HDP membrane liner to be installed which will limit infiltration. The drainage layer will quickly remove water off the liner. As such, it may be difficult to keep a vegetative cover growing during the summer. Other cover materials like rock armor may be more appropriate with less operations and maintenance needs.

Response:

As stated in Section 7.3.1.3, revegetation success is critical to cap performance. 7.2.2 Alternative 2, Grading and Capping the Top Deck, page 66, provides the description of the major components of the cap. A two-foot, or thicker, layer of growth media to store water is one of those components. The growth media would also be selectively planted with species known to have evolved locally and those that transpire moisture. During the design phase, cover materials and thickness will be tailored to capture and release water to sustain cover plants throughout the growing season and provide long-term stability of the cover. A drainage layer installation will remove excess water that exceeds the storage capacity of the growth media and/or water storage layers. Optimally, water storage in the growth media/water storage layer would sustain cover plantings throughout an entire average growing season for this elevation, aspect, and climate.

Other cover materials like rock armor do not meet the requirements in the Caribou-Targhee Forest Plan to return formerly mined areas to the beneficial use of wildlife and livestock grazing.

Comment 32:

One commenter stated "Section 7.2.2 proposes use of a costly, combination HDPE and GCL without any modeling or other justification other than the USFS's assertion that it would be "... most leak proof. As noted above, the characteristics of the cover system needed to achieve compliance with water quality standards needs to be set and the type of cover system selected based upon those parameters not just which is most leak proof."

Response:

The removal action objective is to "minimize infiltration on the surface of the CVF [in order] to reduce the load (concentration times volume) of selenium and other hazardous substances into Maybe Creek", designing a cover that is "... most leak proof" is an objective measure of cover effectiveness. Since this action does not address other sources of contaminants, this action represents the first step toward achievement of water quality standards. A future RI/FS will address the need for the additional actions necessary to meet water quality standards.

C. Soil and Geologic Materials

Several commenters had questions regarding borrow source materials.

Comments: 8, 9, 10, 27, 28, 144, 152

8. The cap design for alternative 2 requires more than 100,000 cubic yards of borrow/growth media. Alternatives 3 and 4 require around 150,000 cubic yards of borrow/growth media. We could find nothing in the EE/CA indicating where that material would come from. Will it come from adjacent phosphate lease areas (Husky 1 and North Dry Ridge leases specifically).

9. Some three years ago, Agrium personnel indicated that cover material for the South Maybe Canyon Mine would come from the Husky 1 lease area, and that it would be obtained in anticipation of mining that lease. Clearly, if that were still the case, appropriate NEPA analysis would be required for that type of disturbance.

10. In either case we believe the source of the borrow material, and effects on the environment from obtaining such a significant quantity of borrow, should be clarified in an amended EE/CA prior to the issuance of an Action Memo.

27. Borrow sources for the topsoil used in the alternatives need to be identified with costs for leachate tests included in the estimates.

28. The 1' cushion layer material source needs to be identified as well as costs for leachate tests included in the estimates for the alternatives.

144. Section 7.3.2.1, page 83-84. Claims "Geologic materials needed to construct a cap can be acquired locally ... " The February 2011 USFS EE/CA does not clarify where these materials will come from. The surrounding property is either federal land or private. There are limited materials for growth media on Site. There may be significant environmental impacts associated with disturbing more federal land. The document does not provide sufficient detail to support this source of material, and the EE/CA needs to analyze these potential environmental impacts and adequately address the costs.

152. More detail should be provided on the source of soil for covers and the negative impacts on obtaining that soil.

Response:

Borrow materials with suitable performance characteristics, or materials that can be amended to achieve suitable performance characteristics, are available on-Site. The cover proposed in Alternative 4 must meet specific criteria for the proposed design to function properly.

There is abundant chert and limestone on Federal Phosphate Lease I-04 to provide coarse and durable rock for construction of the one-foot cushion layer.

The cap will include fine textured soil or soil surrogate materials to store water in the cap and serve as growth media. Dinwoody Formation materials meet these design requirements and are available at this Site. Designers will evaluate potential material sources and provide specifications with guidance, as needed, to amend available materials to meet design performance criteria.

Borrow source evaluations, including evaluation of potential environmental impacts will be conducted during design. Disturbed areas will be analyzed for borrow sources so as to limit the impact on undisturbed areas. Reclamation plans for borrow source sites will be implemented at the conclusion of construction.

Candidate borrow materials for use in the cap will be analyzed for contaminants with the potential to contribute to pollution at the Site. Generally, chert, limestone, and Dinwoody Formation materials in the area are not contaminant sources. Specific monitoring protocols will be developed as part of the borrow source investigation prior to development of the source; these will be used throughout mining of the borrow source.

Nu-West Industries, Inc. and Nu-West Mining, Inc. submitted plans in 2011 to the Bureau of Land Management to mine phosphate from both the Husky and North Dry Ridge leases. Mine plans to develop these leases and their environmental effects must be analyzed in accordance with the National Environmental Policy Act and agency policy. BLM, in conjunction with the Forest Service, initiated an Environmental Impact Statement in 2011. If a decision is made to mine, it may be possible to obtain useful mineral materials suitable for cap construction from the Husky or North Dry Ridge leases if the timelines for each project are complimentary. However, the Forest Service plans to implement a response action at South Maybe Canyon independent of those mining proposals.

D. Cost

Comments 146, 150, 151:

One commenter had two comments on costs.

> 146. Section 7.3.3. Costs: The source of the information included in the estimates (i.e., contractor quotes, RS Means, RACER, etc.) should be provided. Name and year of software was not provided. This, along with the accuracy of the cost estimates, should be discussed in the main text of the document.
>
> The main text is confusing with regard to the discussion of costs. Section 6.0 states

"Estimated costs include relative estimates of capital equipment and installation, as well as operation, maintenance and monitoring (OM&M) expenses." There do not appear, however, to be any O&M and monitoring costs included in the cost estimates included in Appendix B-2.

Section 7.1.3 indicates "The evaluation compared each alternative's capital and operating costs, PRSC, and monitoring costs ... " and then indicates " ... The following items are considered capital costs: Direct Capital Costs, Indirect Capital Costs, and Annual Operation and Maintenance Costs." The costs estimates included in Appendix B-2, however, do not appear to include any permit or annual O&M costs in the estimates. Mobilization is included in the estimates but shakedown costs which are included under indirect costs in Section 7.1.3 do not appear to be included. Additionally, the acronym PRCS [sic] is not defined in the document.

Section 7.2.3 discusses Alternative 3 which includes terracing and capping of the downstream slope of the CVF. Details depicting the terraced slopes and associated surface water runoff control system should be included, as well as showing which direction water will flow along the terraces.

150. Section 7.3.3 indicates "The estimated cost for each alternative included direct capital costs, indirect capital costs, and annual operating and maintenance costs. The total capital cost for each alternative is:

- Alternative I: $1,900,000
- Alternative 2; $11,600,000
- Alternative 3: $15,800,000
- Alternative 4: $17,200,000 (channel costs)"

The paragraph states that the estimated cost for each alternative includes direct capital costs, indirect capital costs, and annual operating and maintenance costs and then only lists the capital costs which do not include most of the indirect capital costs (License or permit costs and shakedown costs) or annual O&M costs (operation costs, maintenance, auxiliary materials and energy, transportation and disposal of residuals, and monitoring and analytical costs). All the listed costs should be included.

151. Appendix B-2 MSE Detailed Cost Estimates

Alternative 1 - Alternative I does not appear to include any permit costs, USFS oversight costs, or any type of Site reclamation such as seeding the graded surface or any type of material (i.e., wood straw, wattles, erosion mat on steep surfaces) to prevent erosion from occurring while the vegetation is re-establishing itself, or inspections and maintenance to ensure the Site does not deteriorate until vegetation is re-established. Additionally, Alternative 1 does not appear to include any as-built/certification reporting, or long term

inspection, O&M, and associated reporting costs.
Alternative 2 - Alternative 2 does not appear to include any permit costs, USFS oversight costs, as-built/certification reporting, or long term inspection, O&M, and associated reporting costs.
Alternative 3 - Alternative 3 does not appear to include any permit costs, USFS oversight costs, as-built/certification reporting, or long term inspection. O&M, and associated reporting costs.
Alternative 4 is identified as Alternative 4a on page B-5. This should be identified as Alternative 4.
Alternative 4 - Alternative 4 does not appear to include any permit costs, USFS oversight costs, as-built/certification reporting, or long term inspection, O&M,
and associated reporting costs.

Response:

There are no requirements to disclose software, costing method, or a disclosure of estimated cost accuracy in EPA's guidance on conducting non-time critical removal actions.

Operations and Maintenance and Monitoring (OM&M) costs are part of the Post Removal Site Control Costs estimate. Monitoring costs would be similar for each alternative, and as such, do not affect the decision to select a particular response action. Based on past experience, the Forest Service estimates that annual costs will be approximately $200,000 to inspect and conduct spring and fall surface water and ground water monitoring at the South Maybe Canyon Mine site. OM&M costs will be further refined when the effectiveness monitoring plan is developed after design is completed.

Since the removal action is expected to be conducted on-Site, permits are not required for this action (42 USC 9621(e)(1)) .

Figure 7.4 and Figure 7.6 provide plan and profile views of the CVF that show the terrace/benched surface. Flow in Alternative 3 is to the east into the drain blanket installed in the initial construction of the CVF.

Section 7.2.3, page 70 states in the 1st paragraph, "Grading on the terraced slope will direct surface flow to the margins of the CVF and the chert blanket along the eastern side of the CVF." Figure 7.4 clearly identifies the chert blanket along the eastern side of the CVF.

E. <u>Excavation and Removal of Waste Shale in the CVF and Placement into the South Maybe Mine Pit</u>

Comment numbers 21, 22, 23, 24:

Several commenters suggested that the waste shale in the CVF could be excavated and placed into adjacent or nearby mine pits. Two issues are raised in the comments. The Forest Service's elimination of a response alternative to backfill existing or future mine pits is the principle issue in this set of comments. Borrow material availability is another issue raised.

21. Section 6.1.2 has several generalizations based on textbook type factors used by the USFS that aren't realized in actual practice. The increase in volume due to excavation seen in the field is only about 10% to 20% and the removal of the ore material represents a net reduction in volume of approximately 20%. Therefore, it is easily possible to place the excavated material from the CVF back into the pits where it originated or to the extent that those pits have been filled with other material, into other mined out pits where that extra material originated.

22. In Section 6.1.2 the cost estimate to remove the CVF, approximately 29 million yards, is stated as $1.8 billion dollars. This is a cost of over $62/cubic yard! The material could easily be moved into the adjacent pits, capped with a synthetic cover and the area revegetated for a tenth or less this amount. The area already has most, if not all, of the necessary road and other infrastructure necessary such that other environmental impacts would be minimal. It appears that the report has overestimated the cost and impacts of this alternative to make the proposed action more acceptable.

23. (1) An estimate to excavate and haul the CVF material up to SMCM, leaving 9 million yards of room should the adjacent Husky lease be mined, and (1A) the rest to Dry Valley Mine South D-Pit and the Champ mine needs to be done in a realistic manner. (2) This estimate needs to include a cap and identify borrow sources for the cap and topsoil materials. (3) Equipment and labor estimates need to be realistic and should include estimates from local mine contractors. When the new estimate is received then and only then can the public be able to comment and compare it against the USFS preferred alternative and other alternatives included in this EE/CA.

24. Table 6.1 indicates for the "Removal" option there are a "limited number of acceptable disposal places to take the waste" when there are adjacent or nearby mined out pits available. Also for "Chemical and/or Biological Fixation" no mention is made, as was done for "Capping," that these materials are readily available for purchase and can easily be brought on site.

Response:

Cost estimates to move waste from the Cross Valley Fill (CVF) to backfill in the pit are provided in Appendix B-1 of the 2011 EE/CA. TRC developed this cost estimate for their client, Nu-West Mining, Inc. and Nu-West Industries, Inc. to include in the draft EE/CA submitted to the Forest Service in 2008. While some of the data provided in Appendix B-1 may overestimate the cost to relocate waste, Appendix B-1 provides some valuable information that demonstrates why pit backfill is screened out as a response action alternative.

The $1.8 billion cost estimate presented in Appendix B-1 of the EE/CA included the cost to haul 26.1 million yd^3 of waste 50 miles to an undetermined repository. However, the costs associated with a shorter haul distance, such as to the South Maybe pit, are still disproportionately high and warrant screening out this alternative from further consideration. Appendix B-1 also includes a cost estimate to place 14.5 million yd^3 of waste (approximately half of the volume of waste in the CVF) in the South Maybe pit at a cost of $7.21/$yd^3$ or approximately $105 million. Additionally, this option to backfill the pit includes approximately $12 million in "Construction and Startup" costs necessary to cap the pit backfill, for a total estimated cost of $117 million. This estimate does not include any costs to cap or move the remaining 14,500,000 yd^3 of waste rock. Total costs for a backfill alternative would likely exceed $200 million.

Alternative 4, the preferred alternative in the EE/CA, is estimated to cost approximately $17 million. In comparison, a $200 million alternative is not cost-effective. Capping the CVF in place and relocating waste from the CVF to pit backfill in the South Maybe pit may achieve similar results. Both alternatives are implementable and effective. However, the cost to implement an alternative to backfill the adjacent mine pit is disproportionately high compared to the cost of capping the CVF in place.

Borrow for the cap construction is available on Site. Chert and limestone are available directly adjacent to the CVF. Several potential sources of suitable materials located nearby could be developed to provide the growth media needed to construct Alternative 4. Materials specifications developed during the design phase will determine which sources to use.

F. Other

Comment 6:

One commenter stated that "The Forest Service should require re-testing of soils, vegetation, sediments, as well as surface water, during and after this EE/CA Interim Removal Action. The follow-up RI/FS should continue with sampling and analysis requirements and carefully review future, long-term, cleanup of this mine site."

Response: The Forest Service will monitor soils, vegetation, sediments and surface water at the Site during the construction of the cap. The Forest Service will also monitor the effectiveness of the removal action after construction of the cap is completed. In addition, the Forest Service plans to initiate a Remedial Investigation / Feasibility Study for the South Maybe Canyon Mine site in the future with respect to any hazardous substances that may pose a risk to human health and the environment.

Comment 16:

One commenter stated that "The EE/CA fails to provide any timeline when performing the preferred alternative."

Response:

The Forest Service did not specify a calendar date as to when the response action would be initiated, but did estimate the construction season may be limited to 5 to 6 months due to winter weather conditions at the site.[35] As a result, it may take two construction seasons to complete construction of the preferred alternative. The Action Memorandum discusses the estimated construction time line.

Comment 30:

One commenter stated that "Section 6.1.5 makes some sweeping statements about different cover systems. Predictive modeling should be done of the various systems before they are summarily rejected. Further, no indication is given of what level of transmission through the cover is acceptable. Without these types of information any estimates of cost or efficient [sic] are meaningless."

Response:

The Forest Service disagrees that predictive modeling of the various systems should be conducted at the identification and screening of alternatives stage. General information can be used at this point in the alternatives development process to narrow down the options for further development. As stated in the response to Comment 42, a soil cover was screened out for this response action because Nu-West concluded in the eighth supplement of the Maybe Canyon SI that the thick soil cover material in the test cells on the top of the CVF "does not appear to be effective in reducing the volume of water that infiltrates through the test cells."[36]

One of the RAOs is to minimize infiltration on the surface of the CVF to reduce the load of selenium and other hazardous substances into Maybe Creek. It is likely that there would be little reduction in loading with Alternative 1 since it similar to existing conditions. Alternative 2 would likely result in some reduction in loading because infiltration is limited with the addition of a cap on the top deck of the CVF. Alternative 3 would likely result in greater reductions in loading than Alternative 2, but not as much as Alternative 4 because Alternative 3 still introduces water into the chert blanket.

Comment 61:

The RAOs in the document do not appear to be appropriate based on the site conditions and considering that a remedial investigation/feasibility study will be completed in the near future.

a. The second RAO should be deleted from the document. The conclusion for risks due to exposure to vegetation should be evaluated in the ecological risk assessment and statements that the CVF poses a risk via the vegetation pathway are unsupported. The RALs description in Section 3.2.2.4 is less than two lines long and provides no detail on the assumptions made to generate the values or the limitations of the values used. They are screening levels at best and are expected to be replaced by values calculated in the risk assessment, which will consider site specific information.

b. The third RAO is not appropriate within the framework of the site and this EECA. This variation on the first RAO and can be eliminated. Because there are no analyses of the effectiveness of any of the technologies or alternatives, it cannot be determined whether it is necessary to focus on reducing emergent flows. Including this RAO results in a range of removal action alternatives that do not adequately consider the site conditions and the potential future remedial actions.

c. The first RAO focuses on reduction of water infiltration through the surface, while not accounting for other transport pathways. This seems to unnecessarily limit scope and focus of the evaluation. The following revision is suggested "Minimize water input into the CVF to reduce the load (concentration times volume) of selenium and other hazardous substances into Maybe Creek."

Response:

The Forest Service adopted the EE/CA RAOs in the Removal Action Memo, for the reasons discussed below. The RAOs in the EE/CA are appropriate for a source control action as a first step in addressing contamination from the Site. The first RAO is to "minimize infiltration on the surface of the CVF to reduce the load (concentration times volume) of selenium and other hazardous substances into Maybe Creek." A related RAO is to "capture and isolate precipitation runoff from the CVF surface and to consequently reduce flow from within the fill. Smaller emergent flows will be easier to manage if further treatment is determined to be necessary." The water balance indicates that approximately 70 to 80% of the water that enters the CVF and contacts the seleniferous waste shale is from precipitation. The first and third RAOs address the most significant source of water entering the CVF. The remaining water that enters the CVF is from Maybe Creek upstream of the CVF and upwelling in springs that are beneath the CVF. Inclusion of the third RAO is appropriate since it is anticipated that further action may be needed to meet surface water quality criteria in Maybe Creek. Addressing that remaining smaller

quantity of water if, as is likely, water in Maybe Creek continues to fail to meet water quality standards, will be the subject of a future response action objective. Alternatives to meet that objective should benefit from a substantially reduced quantity of water.

The second RAO is to "prevent exposure of human and ecological receptors to hazardous substances in vegetation on the surface of the CVF." As discussed elsewhere in this responsiveness summary, the screening levels for vegetation are documented in the AWRMP. Vegetation on the CVF poses a risk to 1) grazing wildlife because the levels measured in vegetation exceed the RAL of 8.3 mg/kg selenium, and to 2) livestock because the levels in vegetation exceed the RAL of 5.0 mg/kg selenium. Since livestock grazing is a desired post-response action use, the RAL in the EE/CA should be 5.0 mg/kg.

Comment 62:

One commenter stated that "Institutional controls will not be effective in limiting surface infiltration but they may be effective for protecting an engineered cover system, as proposed for Alternative 4, from damage to wildlife or livestock. The use of ICs should be considered, especially for Alternative 4."

Response:

The Forest Service agrees that institutional controls alone will not be effective in limiting surface infiltration but may be used in conjunction with Alternative 4 to protect an engineered cover system. This option was discussed on page 70 of the EE/CA.[37]

Comment 70:

One commenter stated that "Although the USFS concludes that Alternative 4 has the "best chance" of meeting water quality standards, without water treatment, it is still a very low chance. It is common sense that a reduction in the amount of water entering the CVF, from any source, will reduce the amount of water exiting and therefore have the potential to reduce mass transport to Maybe Creek. For this reason, Simplot agrees that some action to limit infiltration at the surface of the CVF is warranted at this time. However, given the uncertain effectiveness of Alternative 4 in achieving the ultimate remedial goals for this site, the USFS has not demonstrated that a $17MM expenditure is an appropriate first step. The USFS proposal is a $17MM experiment that involves installation of a permanent feature with unknown effectiveness. A more prudent approach is to address surface infiltration through less-expensive and readily implementable run-on controls, regrading, and/or alternative cover materials -- at a fraction of the cost of Alternative 4 --while developing a better understanding of the CVF water

balance and completing the risk analysis needed to identify other risk-reduction objectives for this Site. Such an approach is just as likely, or even more likely, to ultimately achieve ARARs at the South Maybe Canyon Mine site."

Response:

This action is a source control action and may be followed by subsequent actions to meet water quality ARARs. The water balance indicates that approximately 70 to 80% of the water that enters the CVF and contacts the seleniferous waste shale before exiting the CVF is from precipitation. The phased approach to addressing Site contamination is consistent with the RI/FS process and contemplated in the NCP. The Forest Service disagrees that the effectiveness of Alternative 4 is unknown. Cover systems with HDPE / GCL layers installed at sites across the country effectively limit infiltration. P4 Productions, LLC plans to implement a similar cover as part of its reclamation activities at the recently permitted Blackfoot Bridge Mine north of Soda Springs, Idaho. Simplot conducted a successful removal action for the Pole Canyon Overburden Disposal Area (ODA) at the Smoky Canyon Mine near Afton, Wyoming that diverted water around the ODA, but did not include a cover for the ODA. Simplot and the Forest Service are now evaluating other actions for the Pole Canyon ODA, as part of the ongoing RI/FS, because the concentrations of selenium continue to exceed the AWQC and Idaho's chronic cold water criterion for selenium.

G. Dump Hydrology, Surface and Groundwater Hydrology Response

Comment Numbers 41, 57, 58, 60:

Several commenters had comments on the water balance information presented in the EE/CA.

41. Hydrology: A water balance is a very critical component for evaluating potential actions at the CVF. The information in the EECA is inadequate to develop a robust water balance for the CVF. Excessive uncertainty or inaccuracy in the water balance will hinder accurate determinations of the effectiveness for the alternatives analyzed. Also, the EECA needs to use water infiltration models. The evaluation of technologies and process options should be based on widely available water infiltration models (i.e. HELP or HYDRUS). This approach is being used to evaluate early actions for sites elsewhere in the southeast Idaho phosphate patch. Without such modeling, there is no way to assess the effect of the various technologies in modifying the flow emanating from the CVF and on the associated selenium concentrations in the creek. This is the primary goal of this removal action."

57. A water balance is the critical information needed to develop appropriate actions to address the conditions at the CVF that led to contamination of Maybe Creek surface water and to

evaluate the anticipated effectiveness of such actions. 1) The water balance presented here is so poorly developed and so inconsistent with site-specific data that it does not provide reliable information to serve as the basis for the CVF EECA. 2) Based on work performed at other mining sites in SE Idaho, and the previous work performed by Nu-West's consultant TRC (TRC, 2007 Draft EECA Report), the assumption that the amount of incident precipitation available for infiltration to the CVF is the same as the total incident precipitation (see Table 4.1) is clearly incorrect. 3) Estimates of groundwater base flow into the CVF are also flawed because they do not account for potential seasonal variations in groundwater discharge to the CVF. The level of analysis used to generate water balance estimates is cursory and gives the appearance that the water balance was generated specifically to justify a removal action to address infiltration at the CVF surface. In other words, it appears that the USFS selected a removal action and approach before completing any detailed technical analyses to support that selection.

60. The analysis presented clearly overstates the relative contribution of water to the CVF from infiltrating precipitation and may also understate the relative contribution of water to the CVF from groundwater sources (i.e., baseflow). The combined effect of the inaccuracy in the precipitation inflow estimate and the potential error in the groundwater inflow estimate results in a water balance that considerably overstates the importance of incident precipitation as a source of water to the CVF and as a contributing factor to selenium release and transport from the CVF to Maybe Creek. If the water balance is inaccurate then the evaluations of removal action effectiveness that rely on that water balance will also be inaccurate. In this case, an overstatement of the relative contribution from incident precipitation will result in an overstatement of effectiveness resulting from reductions in infiltration. Table 4.1 is misleading. "Potential precipitation contribution to CVF area" inappropriately leads the reader to assume all of this water infiltrates the CVF. This column should be replaced with an estimated infiltration volume derived using appropriate models (i.e. ., HELP or HYDRUS). The table should not only include infiltration, but also runoff from adjacent contributing areas and baseflow. A note is needed to indicate when the piped contaminated spring emanating from beneath the CVF (see Section 2.4.3) was returned to the creek above SW-2.

58. Except for brief mention of surface runoff in Section 3.0, there is no discussion of the transport pathways from the CVF. An understanding of transport pathways is critical to the development of the water balance as well as development and evaluation of removal action alternatives. If transport pathways have not been characterized, this should be stated in the EE/CA report. If transport pathways are understood, then a description of transport pathways needs to be included.

Response:

The water balance presented in the EE/CA was developed from Nu-West's draft water balance and flow models for the South Maybe Canyon CVF. Chapter 4.0 of the EE/CA presents the

Forest Service's water balance for the site developed from data provided by Nu-West in the SI. From the model and empirical data in the SI, Nu-West and the Forest Service similarly conclude that infiltration is a significant (55%) component of the total water model for the site. Evaporation, transpiration, baseflow (as described in the water balance presented in the EE/CA on page 47), and streamflow entering the CVF comprise approximately 45% of the water balance as developed by Nu-West's consultants in the site investigation. In the 2008 Draft EE/CA, Nu-West calculated that over 80% of the selenium load transported from the CVF is initially mobilized by precipitation infiltrating the CVF. [38] While the Forest Service does not agree with all of Nu-West's conclusions regarding the outputs of the models, the Forest Service's and Nu-West's water balances demonstrate that infiltration through the CVF delivers a substantial percentage of leachate and selenium loading to Maybe Creek.

Because vegetation on the surface of the CVF is sparse, evaporation and transpiration play a minor role in the water balance at the site. Research available on-line indicates that while several variables, and most importantly solar radiation, contribute to sublimation at high altitude, it was not a major component of the water balance at the South Maybe site.

Nu-West used in-situ soil moisture probes and constructed test cells to characterize and model infiltration into waste rock at the South Maybe Canyon site; these data were presented in Nu-West's Site Investigation Reports. Nu-West used the Hydrologic Evaluation of Landfill Performance (HELP) model to evaluate alternative performance in their 2009 Draft EE/CA. Results of Nu-West's modeling were utilized to compare the effectiveness of different caps to meet the Removal Action Objectives (RAO) to "Minimize infiltration on the surface of the CVF to reduce the load (concentration X volume) of selenium and other hazardous substances into Maybe Creek."[39,40]

Contrary to Comment 60, Table 4-1 does not indicate that all precipitation infiltrates the CVF. For example, Table 4.1 shows that from October 1998 to September 1999, approximately 18.8 million ft^3 of water discharged from the CVF. Of that volume, 4.2 million ft^3 entered the CVF from the upstream watershed (runoff and stream flow). The increase in downstream flow of over 14.5 million ft^3 entered the CVF as precipitation (rain and snowmelt) and baseflow. A percentage of precipitation is estimated to sublimate from snow, run off, evaporate, transpire or stay within the fill as storage.

In 2005, Nu-West asked and received permission to turn flow from the piped spring (now contaminated) into Maybe Creek up gradient of SW-2. Data from 2005 and 2006 reflect flow gained as a result between SW-1 and SW-2 in Table 4.1. Precipitation was higher in 2005 and 2006; flow at SW-2 increased by approximately 10 million ft^3 when this water was returned to the stream channel upgradient of SW-2. Using 55% as the infiltration value from Nu-West/TRC's model efforts, 7.7 million ft^3/yr of water would be diverted from discharge at SW-2 by implementing Alternative 4.

Transport pathways were discussed on page 34 of the EE.CA: "The primary release mechanisms of COPCs from waste rock are erosion, dissolution of oxidation salts, leaching by infiltration and percolation, and surface water runoff. Each of these primary release mechanisms transports hazardous substances along multiple exposure pathways..."

There were several comments on the baseflow from the CVF.

Comments 59, 107, 149:

107. Section 4.1, page 46. Baseflow is not solely from springs, some of the flow is from delayed drainage. If base flow was entirely from springs the selenium concentrations would be much lower.

59. Some of the assumptions for baseflow appear to be incorrect. Figure 4.2 indicates baseflow at approximately 30,000 cubic feet per day (roughly 3 times higher than calculated in Section 4.3). The lower baseflow calculated in this section correlates with dryer months before an additional contaminated spring was returned to the creek upstream of SW-2 (2005-- See Section 2.4.3). The higher baseflow should be used in the water balance. Additionally, the baseflow annual volume is not a small component of flows beneath the CVF. At the lower baseflow reported in this document (10,700 cubic feet per day), up to 50% of the flow gained between SW-1 and SW-2 (Table 4.1) is from baseflow. Using the more appropriate baseflow of 2005 (figure 4.2), it would be estimated that approximately 55% of the flow gained was from baseflow. This indicates that action to reduce infiltration through the CVF surface will have much lower effect than implied by the EE/CA.

149. Section 8.1, page 86. Claims "SW-2 would stabilize at 0.5 cfs." This baseflow is inconsistent with the estimated baseflow listed previously in the EE/CA. These flows are actually higher than current base flow. After the cap is installed it is anticipated that the flows would decrease, not increase. The documentation to support this estimated flow rate is missing.

Response:

The Forest Service agrees that baseflow includes a both a groundwater and a drainage component.

Figure 4.2 correlates surface water discharge and precipitation for water year 2006. This table is representative of the relationship and does not show the flow values for the range of years data was collected. While baseflow is a component of the discharge from the CVF, the discharge is also composed of precipitation infiltrating and passing through the CVF and the upstream Maybe Creek surface water entering the CVF. Baseflow in 2006 is greater than baseflow for other years.

A calculated average baseflow of 10,700 ft^3/day is a reasonable estimate. SW-3 (the piped spring returned to Maybe Creek in 2005), as measured and reported in the Site Investigations from 1998-2004, generally produced a flow less than 4,000,000 ft^3/yr measured at the discharge point. If one subtracts 4,000,000 ft^3/yr from the 19,766,423 ft^3/yr reported in Table 4.1 for water year 2004-2005, 15,766,423 ft^3/yr remains as the net flow gained between SW-1 and SW-2 during the period. Approximately 80% of the precipitation that fell during that period (presume that 20% evaporates, transpires, sublimates or runs off the site) is estimated to be 10,000,000 ft^3/year. Subtracting the precipitation component from the net flow between SW-1 and SW-2 leaves a flow of approximately 5,700,000 ft^3/yr exiting the CVF that is not attributable to precipitation. Subtracting the inflow at SW-1 (1,394,778 yd^3) results in a calculated baseflow of approximately 4,300,000 ft^3/yr or 11,780 ft^3/day. About 20% of the total discharge from SW-2 is estimated to be baseflow during the period 2004-2005. Implementing Alternative 4 will have a significant effect on the total volume of water and contaminant load discharging at SW-2. The result will be a substantial lower load of contaminants leaching from the fill.

The commenter's quote omits the leading phrase that states "peak hydraulic loads at SW-2 would stabilize..." Peak load is much different than baseflow and represents the high flow, not low flow or baseflow. Implementation of Alternative 4 would reduce the water entering the CVF as precipitation, which contributes to the peak hydraulic loads.

A reasonable estimated peak flow rate at SW-2 after implementation of Alternative 4 is approximately 0.5 cfs since it is expected that springtime peak flows would be reduced to baseflow levels. This can be calculated from the information presented in Table 4.1. The lowest flow gained between SW-1 and SW-2 during the 1998 – 2006 water years from was from October 2001 to September 2002, a dry year. That lowest flow rate averaged 0.249 ft^3/sec. at SW-2. The highest flow gained between SW-1 and SW-2 was from October 2005 to September 2006. That highest flow rate averaged at 0.629 ft^3/sec at SW-2. Considering that infiltration of precipitation will be reduced, average peak flow of 0.5 ft^3/sec at SW-2 is within the current range of flow rates and is a realistic baseflow outside of spring runoff periods.

Several commenters had comments on the infiltration of water into the CVF.

Comments 63, 65, 66:

63. "Water infiltrating the chert blanket and French drain may interact with seleniferous shale rock inappropriately placed in the blanket". Analysis of the data provided in the EECA demonstrates that this could not be a significant source, as noted above. The statements throughout the EECA relating to this should be corrected.

65. Alternative 1 should be screened out in Section 6. It is not an appropriate alternative for detailed analysis. Why grade (i.e., disturb) 273,000 yd^3 of waste shale, not cover it up, and call it

an improvement over current conditions? This description indicates that Alternative 1 will limit infiltration at the surface, but later discussions of Alternative 1 states the opposite (see pgs. 74, 77, 80, 85, 86).

It seems that the bulk of the infiltration occurs along the chert blanket which receives runoff from the Dinwoody hill sides to the east and the top deck which slopes to the east and the top deck which slopes to the east (i.e., largest source of water to toe area). The steep slope area (24 acres of shale material) likely have significantly less amount of infiltration compared to the top deck (75 acres), due to its steepness and smaller area. Each alternative should at least have run-on/runoff control into the chert blanket as a central component, and incrementally add additional components that would reduce infiltration such as:

- Run-on/runoff control on the east side chert blanket
- Add soil cover on top deck
- Add soil cover on top deck and soil cover on slope
- Run-on/runoff control on the east side chert blanket + low permeability geomembrane

66. "This section has the statement, "Regrading the top deck of the CVF alone would not substantially change current conditions and would not provide greater protection to public health and the environment." There is no analysis of the effect of grading on water infiltration to support this. Other grading configurations/water management options may be appropriate. Without appropriate technical analysis, it is not possible for the public to understand what viable options are available and could be considered."

Response:

The waste shale placed in the French drain and chert blanket during construction may be a significant source of selenium. Beyond the contemporaneous (1978) estimate of 30,000 cubic yards, the extent of the shale placed within the drain and chert blanket cannot be quantified without excavating a sizeable portion of the CVF and removing the shale, which is not cost-effective. Therefore, it is appropriate to consider alternatives to isolate the waste shale from precipitation infiltrating the CVF to reduce or prevent the release of contaminants.

Grading is a component of each surface treatment alternative evaluated for the CVF. Alternatives 2, 3, and 4 build on Alternative 1 in much the same way as the suggestion in Comment 65. Surfaces of the South Maybe CVF are irregular. Irregularities on the top create depressions, temporary ponds, and flat areas where no runoff occurs and infiltration is maximized. Re-grading the top deck of the CVF would eliminate these areas and would, to a limited degree, improve existing conditions. Section 6.1.4 in the EE/CA states that "Grading the CVF top deck would minimize water collection in ponds during snowmelt and after storms, and reduce infiltration through the waste material. Grading alone would have limited effect on controlling infiltration and runoff from the CVF.... Grading, in combination with other technologies, may contribute to effective water control and the achievement of RAOs." These

statements are consistent with those on EE/CA pages 74, 77, 80, 85, and 86 referenced in comment 65.

Snowmelt runoff into the chert blanket from the southwest aspect of Maybe Canyon is small because of the effects of sublimation, wind scour and abundant vegetation. Snowmelt on these sites generally moves as subsoil flow in these soils, and surface runoff (overland flow) only occurs in response to intense rains (Caribou National Forest, 1990). Run-on control and infiltration along the eastern edge is addressed in Alternative 4. Any run on would be captured by capping the existing overflow feature on top of the chert blanket and diversion downstream for re-introduction into Maybe Creek, away from the contaminated water exiting the foot of the CVF. Thus, there will be less water to treat if the RI/FS indicates the need for such action.

Comment 25:

One commenter stated that "The report should include a discussion of the best estimate on how long it will take any residual water and COPC's to flush out from the original ground underneath the CVF for each option and alternative proposed along with the rationale on how that number was estimated."

Response:

Estimating the time for contaminated water to drain from "original ground" beneath the CVF is difficult and inexact. There are no "original ground" samples to test for flush rates or estimate the volume of ground water. Historic records for the Site indicate the original vegetation on site was cut and left where it fell prior to dump construction. Several landslides occurred during construction changing the hydrologic character of the underlying materials and an unknown number of springs are buried under the fill. Once a cap is installed and discharge flows are monitored, drainage from the fill and other spring water emerging beneath the fill can be better quantified in a Remedial Investigation.

Drain down of the fill would differ among alternatives. Alternative 1 does not substantially alter infiltration and flow path to emergence from the fill. There would be no drain down with Alternative 1. While a reduction in flow may be realized with Alternative 2, as the cap captures a portion of precipitation, infiltration will continue to occur and emerge at SW-2. Alternative 3 would reduce water infiltrating the top of the CVF through capture in the cover materials, followed by evaporation or transpiration. However, infiltration, beyond the capacity of the cap to capture and store water, would still occur. Infiltration would continue to occur on the downstream dump face. Water infiltrating the downstream face (where shale remains exposed) and the contaminated drain blanket, would eventually emerge from the CVF.

Alternative 4 provides an opportunity to estimate drain down because precipitation would be isolated from the fill. However, unknown quantities of spring water emerge beneath the fill and mix in the drain with flow from upstream sources. Since the CVF is generally porous, drain down of the CVF will begin quickly upon completion of construction of the cap. The rate of draw down will slowly decrease over time. As the hydraulic head diminishes within the fill material, drain down will slow until capillary forces overcome gravity and drain down equilibrium is reached within the fill. Monitoring changes in the contaminant load conducted after construction may provide a means to estimate the rate of Alternative 4 drain down as the dilution rate changes.

Comment 64:

One commenter stated that "This section should provide a schedule for each of the alternatives and a description of how implementation/monitoring would fit into the overall remedial investigation/feasibility study process.

Each of the alternatives involves grading of the CVF. The detail for this (i.e. cut/fill balance) is lacking and should be added."

Response:

A detailed schedule for the selected removal action will be developed as part of the removal design process. Generally, the RI/FS will likely use the effectiveness monitoring data to evaluate performance of the removal action. Data from that monitoring effort will be used to not only determine the effectiveness of the response action, but also to determine whether further remediation is needed at the site.

Further development of the cut/fill balance will be addressed in the removal design. Figure 7.6 in the EE/CA shows a generalized plan for grading the CVF.

Comment 77:

One commenter stated that "Section 2.4.2, page 10. The description of the Dry Valley alluvium is not complete. It contains no relevant details of the Site or how it relates to the hydrology of the Site."

Response:

The brief description of the alluvial sediments in Dry Valley was provided to illustrate one of the factors supporting a removal action for the CVF. Water passing through the alluvium is part of the transport pathway for water containing dissolved contaminants infiltrating ground water. The description describes the possible fate of water flowing from Maybe Canyon into Dry Valley. During a portion of each, but the driest, years Maybe Creek connects with Dry Valley Creek and eventually the Blackfoot River. As stated in section 2.4.2 of the EE/CA, a more complete description the Dry Valley alluvial sediments is provided in the EIS for the Dry Valley Mine published in 2002.

Comments 89, 90:

One commenter stated that "Section 2.6.1, page 21. Maybe Creek does not "often" reach Dry Valley Creek. Maybe Creek usually goes dry before it reaches Dry Valley Creek and only reaches Dry Valley Creek when there is above average precipitation. When Maybe Creek does reach Dry Valley Creek, Maybe Creek only flows into Dry Valley Creek for a few weeks a year."

One commenter stated that "Section 2.6.1, page 21. It is conjecture that "It is during this period that most of the annual contaminant load ... and the Blackfoot River." No data are provided to support this statement. In fact, selenium concentrations in the Blackfoot River are below the aquatic cold water standard a vast majority of the time. See IDEQ database."

Response:

Maybe Creek reaches Dry Valley Creek for at least a few weeks each year when there is normal and above average precipitation. The Natural Resource Conservation Service data posted on its SNOTEL website show that from 1971-2000 the average snow water equivalent (SWE) for the Slug Creek Divide station was 18.0 inches on May 1 and 17.0 inches on May 15. (The Slug Creek Divide SNOTEL station is the closest station to the South Maybe Canyon Mine.) For five of the years from 1997-2009, the average SWE was near, at, or exceeded the 29 year average (there was a drought from 2001 to 2006). It is likely that the average SWE for 2010 and 2011 will also exceed the average as there was higher than average snowfall for these years.

In 1999, discharge from Maybe Creek into Dry Valley Creek persisted long enough for Nu-West/TRC to document an average flow at SW-7 of 0.43 cfs in their Site Investigation Report. (SW-7 is located on Maybe Creek just upstream of its confluence with Dry Valley Creek.) While flow may only enter Dry Valley Creek "for a few weeks a year," flow from Maybe Creek does, nonetheless, discharge contaminants into Dry Valley Creek and subsequently downstream into the Blackfoot River during that time. Nu-West/TRC states in their 1st Supplement to the Maybe

Canyon Site Investigation, "in general, the highest filtered selenium concentrations at all stations were observed near the peak run-off during both years [1999-2000]." Data collected since 2000 show that in the spring of years of normal or above normal precipitation, the highest concentrations of selenium combine with the greatest water flow to transport the greatest selenium load of the year from Maybe Canyon to the Blackfoot River.[41]

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[4]Beker, Interoffice Memorandum. Bowles, Arel. Soft Chert in French Drain. December 12, 1978.

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[10] U.S. Forest Service, Intermountain Region, Caribou-Targhee National Forest and Millennium Science and Engineering, Inc. South Maybe Canyon Mine Site, Engineering Evaluation/Cost Analysis for an Interim Removal Action for the Cross Valley Fill. February 2011.

[11] TRC Environmental Corporation. *Maybe Canyon Site Investigation*, Caribou National Forest, Caribou County, Idaho. Nu-West Mining, Inc. and Nu-West Industries Inc., Soda Springs, Idaho. TRC Environmental Corporation, Englewood, Colorado and Laramie, Wyoming. March 1998.

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[27] U.S. Environmental Protection Agency. Guidance on Conducting Non-Time-Critical Removal Actions under CERCLA. EPA540-R-93-057. Washington, D.C. August 1993

[28] USEPA. 2000. Use of Non-Time Critical Authority in Superfund Response Actions, p. 5

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