UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX

75 Hawthorne Street

San Francisco, CA 94105

November 22, 2016

Mr. Anthony R. Brown
Environmental Manager
Atlantic Richfield Company
4 Centerpointe Drive, LPR 4-435
La Palma, CA 90623-1066

Re: Atlantic Richfield's Outline for a Focused Feasibility Study Work Plan, Evaluation of Management Alternatives for Potentially Impacted Water and Sediments, dated October 7, 2016; and the revised Gantt chart dated November 7, 2016; Leviathan Mine Site, Alpine County, California.

Dear Mr. Brown,

EPA has completed its review of Atlantic Richfield's Outline for Focused Feasibility Study Work Plan, Evaluation of Management Alternatives for Potentially Impacted Water and Sediments, dated October 7, 2016; and the revised Gantt chart dated November 7, 2016 Leviathan Mine Site, Alpine County, California. This work was submitted as part of the Scope of Work for completing the remedial investigation and feasibility study to identify a long term remedy pursuant to Administrative Order for Remedial Investigation and Feasibility Study (RI/FS), Leviathan Mine, Alpine County, California (CERCLA Docket No. 2008-18, June 23, 2008).

Background: Since 2010 beavers have constructed dams along Leviathan Creek at the Leviathan Mine Superfund Site. Beaver activity increased over time, and as many as 50 beavers had constructed approximately 28 dams by 2015. These dams impound water, creating a seasonal quiescent environment that allows acidic conditions to occur with the potential to interfere with the effectiveness of ongoing early response actions at the site.

Stakeholders including the US Forest Service and Washoe Tribe of Nevada and California have repeatedly inquired as to the status of the beaver ponds and expressed concern regarding the potential impacts of a beaver dam failure on downstream aquatic resources including drinking water.

During 2014 and 2015 EPA coordinated discussions regarding the ultimate fate of the beaver dams.

Butler D. R. and Malanson G.P., 2005, in Dams in Geomorphology: Proceedings of the 33rd Binghamton Symposium in Geomorphology held October 12-13 October 2002, P. J. Beyer, Editor, Geomorphology Volume 71, Nos 1-2. Pages 48-6

Given that failure of the dams is to be expected (Butler and Malanson 2005), EPA requested that the landowners and responsible parties control the beavers and determine how to most effectivel y return year-round flow through the affected reach of Leviathan Creek.

The landowners (US Forest Service and Regional Board) obtained and implemented depredation permits to remove the beavers during 2016. Monitoring is underwa y to ensure there is no presence or activity of beavers.

On August 29, 2016, EPA had a face to face meeting with the PRP, Atlantic Richfield Company (ARC) to discuss information available about the beavers, beaver dams and ponds. The goal of the meeting was to discuss opportunities and next steps. Discussions included review of data, including: surface water, sediment, beaver dam mud, and floodplain soil. EPA requested ARC identify opportunities to minimize the risk of a hazardous fluid release from the beaver pond area. EPA requested that ARC prepare an Engineering Evaluation and Cost Analysis (EE/CA) to identify a removal action for implementation during 2017. EPA clarified that the goal is to reduce the risk of beaver dam failure and coincidental release of acid drainage and metals accumulated in the beaver ponds.

Also on August 29, 2016, EPA and ARC discussed opportunities for reducing downed timber and debris, to minimize the risk of a hazardous fluid release from the beaver pond area. ARC declined to do any work other than removing small debris by hand.

On September 15, 2016 a field site visit was conducted with the USFS Ken Maas and fuel reduction project manager. On September 16, 2015 the Forest Service agreed to do the work necessary to reduce the risk (high debris load and "battering ram" effect to the dams) that could result in a breach and outburst flood during a future storm or abnormal runoff event. USFS crews (7 person team) completed the work during the week of September 26th. The 2016 communication, contingency planning and monitoring remain in effect for the 2016 - 2017 winter season.

On September 22, 2016; ARC sent an email discussing debris removal and responding to EPA's comment that the beaver dams are undermining the removal action.

Phone calls from ARC to the Office of Regional Counsel requested that EPA consider focused feasibility studies and focused investigations in lieu of preparation of an EE/CA and a removal action. EPA agreed to consider ARC's approach. An outline for a proposed "Focused Feasibility Study Work Plan, Evaluation of Management Alternatives for Potentially Impacted Water and Sediments, Leviathan Creek Beaver Dam/Pond Complex" was submitted on October 7, 2016.

EPA held a conference call with ARC on October 25, 2016. EPA clarified that sufficient data under the RI/FS is being collected under approved work plans and the proposed additional investigation of the Beaver Dam area under the RI/FS was not considered necessary at this time. EPA was not opposed to work for refining the proposed or selected long term remedy. However, EPA was clear that the beavers are gone and the focus is to ensure there is a reduction in the risk of beaver dam failure and coincidental release of acid drainage and metals accumulated in the beaver ponds. EPA requested ARC provide a Gantt chart to clearly show steps that would reduce risk during 2017, and separately identify those

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elements that would proceed as post RI/FS and Pre Remedial design.

ARC provided an updated Gantt chart with some additional detail on November 7, 2016.

EPA has completed its review and provides the following comments.

- **G1: Goals and Objective:** EPA's primary goal for the BDPC is to reduce the threat of a sudden release of the seasonally occurring low pH water or sediment containing elevated metals (i.e. arsenic, nickel, and thallium). EPA has clearly requested that activity to reduce that risk must occur during the 2017 field season. Consistent with this goal, ARC's proposed outline includes treatability testing of methods for reducing the volume of ponded water (Section 4.1) including breaching or removal of dams, pumping and diversion, lowering dam height, and stream diversion to be completed during the 2017 field season (field conditions being amenable).

- **G2: RI/FS:** EPA believes that data which is being collected under the already- approved RI/FS work plans will be sufficient to complete the remedial investigation, risk assessment, and feasibility study. Additional investigation beyond that being completed under the approved RI/FS work plans is not necessary and risks delaying completion of the RI/FS. EPA is not opposed to work for refining the proposed or selected long term remedy.

- **G3: RI/FS Data for Remedial Design:** As explained above, EPA does not believe additional data is necessary for completion of the RI/FS. However, if ARC believes its proposed sampling could support Remedial Design, EPA will approve that sampling, on the condition that the RI/FS is not delayed for completion of such sampling. As previously requested, please provide a clear differentiation of sampling that is to proceed as post-RI/FS / Pre-remedial design. For example, ARC's proposal includes broadening the BDPC investigation to include the floodplain soil deposits (bed sediments). These bed sediments or floodplain soils are addressed in the ongoing RI/FS workplans that are approved as part of the Remedial Investigation, which included: sampling of floodplain soil and stream sediment (mobile sediment) completed during 2015; groundwater-surface water interaction studies started during 2016; and ongoing surface water and groundwater monitoring. EPA has requested a technical summary data report of sediment and flood plain soils by December 13, 2016. If ARC wishes to provide additional investigation of the floodplain, please provide an updated schedule and clarify those items as post-RI/FS and/or pre-Remedial Design.

- **G4: Data Collection and Risk Assessments**: In no circumstance should the RI/FS, which includes the Ecological and Human Health Risk Assessment, be delayed. Data collected without approved risk assessment data quality objects (DQOs) will not be used for the RI risk assessment.

Specific comments:

- **S1: Schedule Details:** Please provide additional detail on the schedule and text to explain the work to substantiate that there will be a material reduction of risk and that the pilot studies will remain in place and continue in place to mitigate and reduce that risk during and through the 2017-18 storm season and beyond. Please include additional details on which dams, number of dams, and which pilot methods will be utilized. Please focus on those dams that pose the highest risk; and select the methods that will likely have the best opportunity to reduce that risk.

- **S2: Undermining the Effectiveness of the Early Response Action.** On September 22, 2016 ARC provided an email challenging EPA's statement that the beaver pond area is undermining the effectiveness of the early response Actions. Based on current and historic site date, EPA continues to believe the beaver ponds are undermining the effectiveness of the Early Response Action. While treated effluent from the treatment systems continues to meet discharge criteria, data clearly show that water impounded behind some 28 beaver dams can – at times – create a threat of a release of hazardous liquids if the dams fail. ARC's proposal includes an erroneous statement in the second paragraph of the introduction. ARC states that water quality in Leviathan Creek immediately downstream from the BD/PC is improved compared to upstream conditions. This statement is not supported and EPA disagrees that data show a positive impact from the beaver pond complex. Rather, the data show that each year as flow declines, acid conditions are established at several of the ponds with associated increases in metal concentrations.

- **S3: Pilot methods**: Please ensure that the pilot methods being tested will provide sufficient risk reduction from the summer of 2017 through implementation of a final remedy.

- **S4: Objective:** Please add text to indicate that the long term goal or data quality objective is to return flow to Leviathan creek. The text and schedule seem to presume that the beaver dams will remain stable until a long term remedy is implemented. EPA disagrees with this assumption. As noted the beavers are no longer present, and there are already signs that the dams are beginning to erode. EPA disagrees with the ARC statement that Beaver dams may be improving the water quality. See comment S2 above.

- **S5: Control Measures:** Please provide text describing the mitigation measures to ensure there is no increased risk of a sudden release of low-pH water or mobilization of sediment during field work. ARC notes an item 6.2: Install Sediment Control Measures; but this item is not listed in the Gantt chart. There is no similar control measure listed for Surface Water Control Measures. Please provide details. For example, will there be a coffer dam installed during the work? As noted, high flow events are common in the Leviathan Creek watershed; we are concerned that as the beaver dams erode or otherwise fall into disrepair, the risk of a release of impounded water increases.

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Within 30 days, or by December 22, 2016 please provide the Focused Feasibility Work Plan and revised schedule incorporating these comments. Per recent discussions we look forward to a plan that will be implemented during the 2017 season to reduce the threat of a sudden release of the seasonall y occurring low pH water or sediment containing elevated metals (i.e. arsenic, nickel, and thallium). If the work plan can achieve the goals outlined above, EPA will approve the proposed FFS approach. If the work plan cannot achieve these goals, EPA will consider initiating an EE/CA and a new removal action focused on addressing the dam situation.

If you have any questions, please feel free to contact me at (415) 947-4183 or Deschambault.lynda@epa.gov.

Sincerely,

Lynda Deschambault

Lynda Deschambault
Remedial Project Manager

Cc by electronic Email:
Douglas Carey, California Regional Water Quality Control Board, Lahontan Region
Diane Vitols, Washoe Tribe of Nevada and California
David Friedman, Nevada Department of Environmental Protection
Kenneth Maas, United States Forest Service
McBride, United States Fish and Wildlife Service
Steve Hampton, California Department of Fish and Wildlife Marc
Lombardi, AMEC

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