

Atlantic Richfield Company

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August 10, 2010

Ms. Nadia Hollan Burke
Remedial Project Manager
U.S. Environmental Protection Agency - Region 9
75 Hawthorne Street, SFD-8-2
San Francisco, California 94105

Subject: Responses to EPA July 26, 2010 Comments on the Draft Process Areas Radiological Materials Removal Action Plan dated July 6, 2010; Yerington Mine Site; Administrative Order on Consent, EPA CERCLA Docket No. 09-2009-0010

Dear Ms. Hollan Burke:

Atlantic Richfield Company (ARC) has prepared the attached responses to comments on the Draft Process Areas Radiological Materials Removal Action Plan (RAP) dated July 6, 2010. Comments were provided by the U.S. Environmental Protection Agency - Region 9 (EPA) to ARC on July 26, 2010. ARC responses are provided in italic font on the attached table. Also attached is a schedule for the removal action.

Per our discussion on August 3, 2010, the revised RAP will be submitted to EPA after ARC's contractor has been selected and has finalized a number of standard operating procedures (SOPs) to be implemented during the removal action. These SOPs will primarily address dust control, air monitoring and vehicle decontamination elements of the removal action.

If you have any questions regarding ARC's attached Responses to EPA Comments, please contact me at (714) 228-6774 or via e-mail at jack.oman@bp.com.

Sincerely,



Jack Oman
Project Manager



Ms. Nadia Hollan Burke
U.S. EPA – Region 9
August 10, 2010
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cc: Dave Seter, EPA
Mike Montgomery, EPA
Roberta Blank, EPA
Jacquelyn Hayes, EPA
Andrew Helmlinger, EPA
Tom Dunkelman, EPA
Joe Sawyer, NDEP (Hard Copy)
Tom Olsen, BLM (Hard Copy)
Chairman Emm, YPT
Justin Whitesides, YPT
Tom Bowden, Ridolfi, Inc. (Hard Copy)
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John Hadder, GBRW
Susan Juetten, GBRW

ARC Responses to EPA Comments on Draft Process Areas Radiological Materials Removal Action Plan, dated July 6, 2010

EPA General Comments #1 (Various) :

Please make the following editorial changes (see a-g)

ARC Response:

The suggested changes will be made.

EPA General Comments #1a (Section 1.0, p. 1, 1st para, 9th line):

Insert open parenthesis for “OUs”

ARC Response:

The suggested editorial change will be made.

EPA General Comments #1b (Section 1.1, p. 2):

Change “Soils with elevated radiometric readings,” to “Soils with radiometric readings above this action level,”

ARC Response:

As stated in Section 4.2 of the START report, there is no quantitative correlation between the radiometric readings and the soils concentrations. The START evaluation was limited to a qualitative analysis of count rates approximately equivalent to the action level. Therefore it is not possible to identify radiometric readings which exceed an action level specified in pCi/g of Ra-226. The sentence will be revised to: “Soils with soil sample results above the action level or elevated radiometric readings...”

EPA General Comments #1c (Section 1.2, p. 2):

Please add reference to the Yerington Paiute Colony in the text.

ARC Response:

The suggested change will be made.

EPA General Comments #1d (Section 1.4, p. 3 and Table 1-1):

Add “Burke” after “Nadia Hollan”

ARC Response:

The suggested change will be made.

EPA General Comments #1e (Section 2.1.2, p. 12, 1st para):

Change “hauling ore form the pit” to “hauling ore from the pit”

ARC Response:

The suggested change will be made.

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EPA General Comments #1f (Section 3.0, p. 16, 1st para):

The language after “Figures 3-1 and 3-2” in the first sentence and the second sentence associated with the START report and action levels should be removed and integrated into the second paragraph describing how the figures were developed.

ARC Response:

This language discusses the process used to develop both figures. The second paragraph only discusses Figure 3-1. Figure 3-2 is discussed further in the third paragraph. Rather than duplicate the discussion of how the excavation boundaries were developed, ARC prefers to leave the subject text in its current location. The text will be revised to improve clarity.

EPA General Comments #1g (Section 4.2.3, p. 21, 1st para):

Complete the second sentence to reference the levels in Table 4-1.

ARC Response:

The sentence will be completed to note that the required level of decontamination will be met.

EPA General Comments #2 (Section 4.2.3, p. 19-21):

Regarding the post excavation procedures for dust suppression and ensuring worker safety, ARC should propose a plan for review to EPA after a post-excavation field evaluation. Dust suppressants will likely need to be used, which should be reapplied every two years until complete remediation has occurred.

ARC Response:

Once the Contractor is selected, ARC will submit the proposed dust suppressant work plan with the Contractor Amendments. This currently anticipated product being reviewed for this application is Envirotac II Soil Stabilizer / Rhino Snot Soil Stabilizer manufactured by Environmental Products & Applications, Inc., 73-710 Fred Waring Drive, Suite 220, Palm Desert, CA 92260. This product is successfully being used as dust suppressant on ARC CERCLA sites in Montana.

EPA General Comments #3 (Section 4.2.3, p. 19):

More detail is needed regarding what the proposed aggregate testing is, who will conduct the testing, and whether the source of the aggregate from Rocks Road Pit is of a concern in terms of potential contamination.

ARC Response:

The aggregate will be tested for the same suite of metals, chemicals, and radionuclides as was performed in the background soils investigation. The laboratory analysis will be performed by TestAmerica and includes the following analytes:

Metals by EPA Method 6020: Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Mn, Mo, Ni, Se, Ag, Tl, V, Zn, U, Th

Metals by EPA Method 6010B: Al, B, Ca, Fe, Mg, K, Na

Metals by EPA Method 1631: Hg

Radiochemicals by HASL 300: Ra-226/228

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EPA General Comments #4 (Section 4.2.3, p.20-21):

All of the survey procedures for equipment and vehicles, including the release criteria and decontamination procedures, and post decontamination survey procedures should be attached in an SOP with clear instructions that can be used in the field. There should also be written procedures for checking the waste haul vehicles as they leave the mine site, including a log form, etc., and that should describe the surfaces that must be surveyed before the haul vehicles depart from the site.

ARC Response:

The procedures used for survey and decontamination will be provided by the selected NORM contractor. Once a contractor has been selected, the procedures will be provided for EPA review in a revised RAP.

EPA General Comments #5 (Section 4.2.3, p.20-21):

This section states that the release limits in Table 4-1 were based on correspondence from Eric Matus, Nevada Department of Human Health Services, which are consistent with the U.S. Atomic Energy Commission Regulatory Guide (RG) 1.86. The correspondence from Mr. Matus is not included in Section 6.0 References or attached to this report and should be included. If this is verbal communication, it should be confirmed in writing and provided to EPA and the Nevada Division of Environmental Protection for consideration along with the requirements of RG 1.86.

It is also stated that “The average contamination release level is based on averaging the measured fixed contamination levels over one square meter.” This statement is mixing the requirements for RG 1.86 average and maximum measurements. The average and maximum values are for total contamination (fixed plus removable as detected by direct measurements). Footnote c of RG 1.86 states “Measurements of average contaminant should not be averaged over more than 1 square meter. For objects of less surface area, the average should be derived for each such objects.” Footnote d states “The maximum contamination level applies to an area of not more than 100 cm².” By substituting “Fixed” for the RG 1.86 Maximum, the RAP is incorrectly stating the requirement. Table 4-1 needs to include, as a minimum, the RG 1.86 Footnotes c and d and change the “Fixed” column heading to “Maximum”.

ARC Response:

Mr. Tom Dunkelman was cc'ed on this email correspondence from Eric Matus. A copy of the email will be included as an appendix to the RAP. The text description of the average contamination level will be deleted and replaced by footnotes c and d from RG 1.86 which will be added to Table 4-1. The “fixed” column will be relabeled “maximum.”

EPA General Comments #6 (Section 4.2.3, p. 21):

The management criteria for the decontamination fluids should be provided. Water ponding is inevitable when vehicles are washed (even if brushing reduces water needs) and potentially hazardous materials will be left in the decontamination area. The plan should specify barriers, testing and management of removed materials and wastewater.

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ARC Response:

Per a follow-up conference call on the August 4, 2010, dry decontamination will be performed on the ramp exiting the dump leach surge pond. Wet decontamination, if necessary, will be performed in a bermed and plastic-lined area further away from the dump leach surge pond where an appropriate lined area can be constructed. Any excess fluid generated during wet decontamination will be placed into the EPA 4-acre pond for disposal.

EPA General Comments #7 (Section 4.3, p. 22):

ARC needs to confirm whether the type, quality and quantity of data proposed is acceptable to US Ecology for disposal at Grand View, and what conditions or constraints US Ecology has placed on receipt. ARC also needs to confirm whether the necessary permits and licenses, if any, to transport the contaminated material to the Grand View site have been obtained or in the process of being obtained. If another sampling design will be necessary to characterize the waste to meet requirements, ARC needs to specify the sampling approach and justify the sampling design in consultation with *RCRA Waste Sampling Draft Technical Guidance*, August 2002, EPA530-D-02-002.

ARC Response:

US Ecology has accepted the waste characterization data that has been provided based on the analytical data as described in Section 4.3 of the RAP. The only constraints on receipts are those specified in Table 4-1. See also the response to Comment # 8. The materials will be loaded into the transport trucks in a manner designed to ensure that each load remains below those limits. The transport trucks will be provided by a subcontractor of US Ecology who will handle any necessary permits, licenses, and placarding. No additional sampling is needed.

EPA General Comments #8 (Section 4.3, p. 24):

The Total, all progeny, in Table 4-3 for Radiological Control Area (RCA) is 2517 pCi/g which exceeds the waste stream acceptance criteria in Table 4-2 for all radionuclides present of <2000 pCi/g. Please confirm this is acceptable to the facility. See Comment #7.

ARC Response:

The materials from the RCA are being staged in the dump leach surge pond prior to loading onto the transport trucks as described in the first paragraph of Section 4.2.3. The materials from the RCA, other materials stockpiled in the dump leach surge pond, and the soils in the dump leach surge pond will be selectively loaded into the transport trucks in a manner designed to ensure that the radionuclide concentrations in each load remain below those limits.

EPA General Comments #9 (Section 4.4.1, p. 26):

The dust control plan should include dust mitigation measures on the truck routes, truck speed requirements to limit dust from vehicle movement, and detail on how the dust control plan will be implemented and communicated to on-site construction crews.

ARC Response:

The dust control plan already specifies the following dust mitigation measures: stopping removal action activities during periods of high winds (i.e., greater than 25 mph); applying water to excavation areas, earthwork equipment, haul truck beds, and haul roads to suppress dust; minimizing

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vehicle speed (i.e., less than 25 mph); tarping/dry-brushing/cleaning vehicles; and placing rumble plates or rock at exits (as necessary). As agreed on the August 3, 2010 conference call, a more detailed dust control plan will be provided as an appendix to the revised RAP that follows contractor selection.

EPA General Comments #10 (Section 4.4.2):

EPA requests that a weekly air monitoring summary be provided via e-mail to EPA and EPA's contractor. The summary should include maximum and average daily PM10, gross alpha, and gross beta concentrations and daily meteorological conditions as well as a summary of air monitoring activities.

ARC Response:

The requested data will be provided on the requested schedule.

EPA General Comments #11 (Section 4.4.2, p. 27):

ARC should analyze national weather service or other on-line resources for local weather forecast conditions as a primary source over using the current site monitor data to predict the conditions on the next construction day.

ARC Response:

ARC will include on-line resources such as the national weather service forecasts in its evaluation of predicted conditions for the next construction day.

EPA General Comments #12 (Section 4.4.2, p. 27-30):

On page 27 it states that the radionuclide sampler will be an F&J DF-40L-Li drawing 30 lpm. On page 30 it states that a high volume air sampler will be used to collect a filter sample to be analyzed for gross alpha, Ra-226, Ra-228, Th-228 and Th-230. Please explain the difference in these two sample methods and clarify how the samples will be analyzed and what corresponding field screening and laboratory methods will be used.

ARC Response:

These two sections of text are describing two different air monitoring programs. The "[site] perimeter air monitoring" program (page 30 text) is designed to replicate the sample collection and analysis procedures used for the multi-year air quality monitoring program. It is essential to use the same collection and analysis procedures and monitoring locations to permit the direct comparison of the two sets of data. This monitoring is intended to evaluate potential off-site migration of contaminants. No field screening will be performed of the perimeter air monitoring samples. These samples will be sent off for laboratory analysis.

The "area air monitoring" program (page 27 text) is designed to monitor ambient dust conditions in the work area(s). It is based on the use of equipment and analytical techniques which permit more rapid feedback regarding worker exposure than is possible with methods which require off-site laboratory analysis, such as are required to obtain the Ra-226, Ra-228, Th-228 and Th-230 data collected by the perimeter air monitoring program. The sample collection technique is based on available battery-operated equipment that can run without recharge for an entire work day.

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The co-located PM10 meters are also battery-operated and can run without recharge for an entire work day. The samples collected by this equipment will be field-screened for gross alpha and gross beta. No additional analysis of these samples is anticipated unless elevated levels are observed. See also the response to Comments 15 through 19.

For clarity, reference to these different air monitoring types will be changed to “site perimeter air monitoring” and “work area air monitoring.”

EPA General Comments #13 (Section 4.4.2, p. 29):

AM-4 perimeter air monitoring station is not close enough to evaluate the nearest perimeter boundary to the work area. An additional portable air monitoring station should be added north of AM-3 (near Sub-Area A) to evaluate the perimeter boundary conditions closer to the work site. EP-5 from the Evaporation Ponds Implementation Work Plan Revision 1, dated June 18, 2010 would be a suitable location.

ARC Response:

As agreed to on the August 3, 2010 conference call, another site perimeter air monitoring location will be added. The monitor will be portable and the location for this monitor will be selected each day based on expected wind direction(s) and the proximity of the site boundary in the downwind direction(s). This monitor will sample only for radionuclide effluents. EP-5 is a likely location for the monitor.

EPA General Comments #14 (Section 4.4.2, p. 29-31):

Site perimeter air sampling is routinely conducted for the duration of intrusive field activities. Since this represents potential off-site exposures, they need to be run daily for the duration of the shift.

ARC Response:

As agreed to on the August 3, 2010 conference call, the additional site perimeter radionuclide effluent monitor will be run daily during site activities for at least the duration of the work shift. The other site perimeter monitors will be run on the previously-specified schedule. It is anticipated that the site perimeter radionuclide effluent monitor will be run continuously (24-hour cycles) with only necessary stops to re-locate the monitor based on anticipated wind conditions for the next 24-hour cycle and replace the filter media.

EPA General Comments #15 (Section 4.4.2, p. 29):

The objective to air monitoring is to maintain worker exposures as low as reasonably achievable (ALARA), not less than 500 mrem. Although Airborne Radioactivity Areas (ARAs) are typically posted at 0.1 DAC, entry into ARAs are routinely performed using respiratory protection.

ARC Response:

The objective of the air monitoring program will be revised to state that it is designed to maintain worker exposures ALARA. If air concentrations in excess of 0.1 DAC are encountered, dust control measures and/or work control practices will be modified as discussed in this Section and Table 4-3, which may include the use of respiratory protection, although the use of other controls to prevent air concentrations in excess of 0.1 DAC will be the preferred control approach.

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EPA General Comments #16 (Section 4.4.2, p. 29):

For non-isotope specific gross counting the standard approach is to control for the most restrictive DAC, in this case Th-232 (alpha) and Ra-228 (beta). In order to apply the sum of the fractions approach, relative distributions of the isotopes is needed and all alpha and beta emitters need to be addressed, and this data is likely unavailable. The most restrictive occupational DAC for Th-232 is 5E-13 uCi/ml; for Ra-228 it is 5E-10 uCi/ml. The most restrictive site boundary (effluent) DAC for Th-232 is 4E-15 uCi/ml; for Ra-228 it is 2E-12 uCi/ml. The notification levels from Table 4-4 are 0.003 pCi/l (3E-12 uCi/ml) for alpha and 0.55 pCi/l (5.5E-10 uCi/ml) for beta. Please provide an explanation of the method used to derive the notification levels or adopt a non-isotope specific approach.

ARC Response:

As pointed out in Comment 19, the Th-232 DAC is challenging. Therefore, a less restrictive approach that is still protective of worker health and safety is being utilized. Relative distributions of the isotopes are available and are based on the average radionuclide concentrations in Table 4-2 and an assumption of equilibrium with decay products. This provides information for all the alpha and beta emitters. The derivation of the provided non-isotope-specific action levels will be included as an appendix to the RAP. The action levels for worker exposures will be based on the "occupational DACs" and not on the effluent release limits. Laboratory analytical data from the site perimeter air monitors will not be available in a timely enough manner to use it to evaluate the effectiveness of dust control measures during the implementation of the removal action.

In addition, the PM10 monitors can be used to provide an indication of airborne radioactivity levels. At the average radionuclide soil concentration levels, the PM10 Level 1 alarm is equivalent to 7.8% of ARC's action level, 0.1 DAC, using a sum of fractions approach to sum the radionuclide DAC levels. Level 2 is equivalent to 16% of the action level. The level 3 alarm, which triggers a stop-work, is equivalent to 39% of the action level. This use of the PM10 monitor will be added to the RAP and the basis for these calculations will be provided in an appendix.

EPA General Comments #17 (Section 4.4.2, p. 30):

The operational procedures for the hi-volume air sampling equipment should be provided, and personnel with significant experience in air sampling proposed to operate the equipment should be identified.

ARC Response:

The SOPs for both High Volume Air Sampling and Continuous PM10 Sampling (i.e., TEOMs) will be added as an appendix to the revised SAP. Proposed personnel will be added to the text.

EPA General Comments #18 (Section 4.4.2, p. 30):

Flow rates and laboratory instrument efficiencies need to be provided to demonstrate that the air sampling and analysis is capable of seeing the required concentrations (show calculated expected Minimum Detectable Concentrations [MDC]), especially if they need to be lowered to address Comment #16.

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ARC Response:

As discussed in the response to comment 16, the derivation of the provided non-isotope-specific action levels, including flow rates and instrument efficiencies, will be included as an appendix to the RAP.

EPA General Comments #19 (Section 4.4.2, p. 31):

Typical low volume air sampler flow rates are between 60 – 80 lpm. The Th-232 DAC is challenging and a 4-hour 30 lpm sample may not be able to see the boundary limit.

ARC Response:

The low volume air sampler was chosen based on the availability of portable battery-powered samplers capable of running for an entire work day without being recharged. The F&J DF-40L-Li selected can run for a full day with a nominal maximum flowrate of 35 lpm. This is the highest flowrate available in a portable package without the use of units powered by large lead-acid batteries (car battery). As discussed in the response to comment 16, the Th-232 is challenging which is why the non-isotope-specific approach proposed has been used. The 4-hour run time is sufficient to detect concentrations less than the action level. However, as discussed in the response to Comment # 16, the PM10 monitor can provide notification prior to exceeding ARC's action level, 0.1 DAC. Therefore, operation of the low volume air sampler will be revised to use an 8-hour (full work day) run time to reduce the minimum detectable concentration.

EPA General Comments #20 (Section 4.4.2, p. 28, Section 5.2, 5.3.2, and Section 5.4):

More information regarding the operational procedures that will be used for worker health and safety during excavation and removal is necessary. EPA assumes that the project work area air monitoring downwind locations will also represent worker exposure to radionuclide concentrations to the extent possible. What will be the action levels for worker health and safety? How with this be communicated to the on-site workers and be implemented into the health and safety plan to provide real-time information to on-site workers? If respiratory protection is required, will personal air samplers be used? If not, how will worker exposures be determined? To further ensure worker safety, the Ludlum Model 3030E Alpha/Beta sample counter (or equivalent) should be used to routinely screen surface soils of the work area at the beginning of the workday and as additional material is excavated throughout the workday.

ARC Response:

All the project work area air monitoring locations will be used to represent worker exposure. Data from the air quality monitoring program indicate that it is quite rare for the wind direction to remain constant for an entire day. Given the variable wind directions during the course of a day or part of a day, it may not be possible to identify "upwind" and "downwind" air monitoring locations. The action levels are contained in Table 4-3. The PM10 monitors include a visible and audible alarm system that indicate if dust concentration action levels are exceeded that serve as the communication to on-site workers. The required responses to these alarms are also contained in Table 4-3. It is ARC's intention to control dust concentrations such that respiratory protection is not required and there is no intention to utilize personal air samplers.

Without a usable correlation of gross alpha/beta measurements of bulk soil samples to actual soil concentrations, the usefulness of using the Ludlum 3030E to screen surface soils is limited. It is ARC's opinion that the proposed dust control measures, airborne dust monitoring, and contamination control procedures provide sufficient controls to ensure worker safety.

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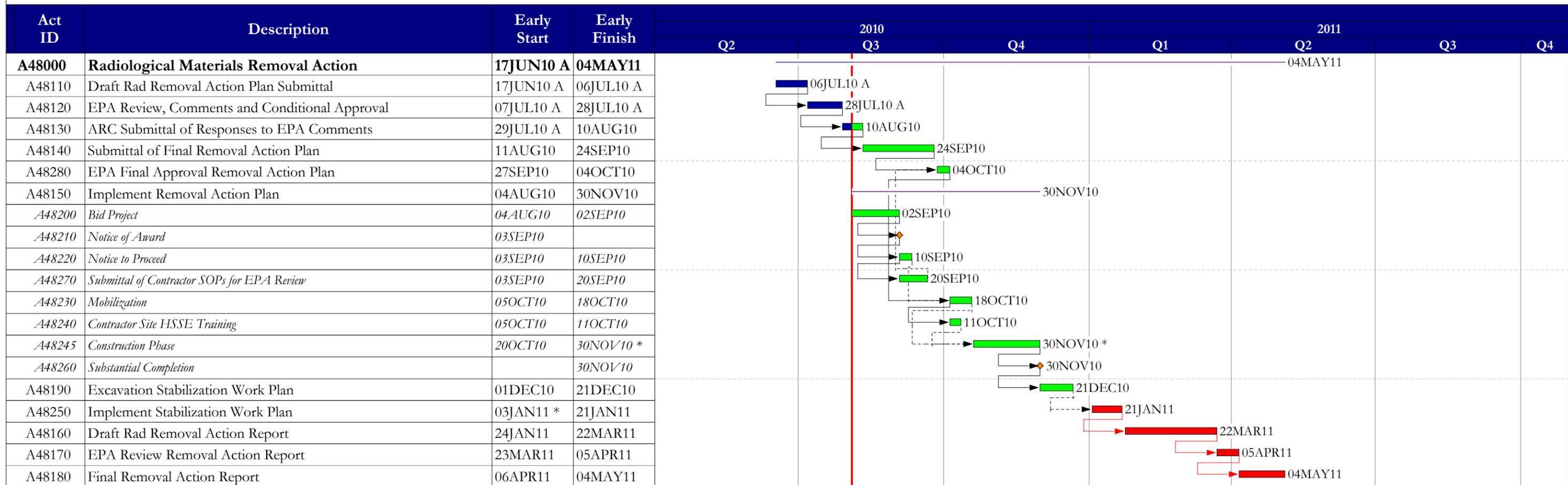
EPA General Comments #21 (Section 5.3.2, p. 34):

This section states that dust control measures will be implemented if action levels from Section 4.4.2 are exceeded. Section 4.2.2 Construction Water and 4.4.1 Dust Control Plan indicate the assumption that dust control measures will be taken throughout the field program to prevent/minimize dust during excavating, loading/unloading, and grading activities, and that action levels will be used to determine if fugitive dust control measures need to be increased, as opposed to when they should be initiated. Additionally, ARC should consider other preventative measures such as using an earlier work day (6 am to 3 pm) due to the higher windspeeds typical for late summer afternoons in the region.

ARC Response:

As indicated in Section 4.4.1, dust control procedures will be implemented immediately upon start of construction (e.g., the wind speed restriction on work, vehicle speed limit, and use of a full-time water truck). Section 4.4.2 states that if Notification Limits are exceeded, then additional dust control measures will be implemented. Regarding the comment on starting earlier, ARC must also consider noise ordinances and disruption to neighbors. The work plan proposes to stop work if wind speed exceeds 25 mph. Note that during the 3-year AQM program, 85% of all wind speed measurements were below 10 mph. In addition, wind speed was not always a good predictor of dust levels (precipitation and soil moisture are important as well). Therefore, ARC has proposed real-time, continuous area air monitoring of PM10 to determine if dust control measures are effective.

Atlantic Richfield Company



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Revised Radiological Materials Removal Action Plan Schedule

- █ Early bar
- █ Progress bar
- █ Critical bar
- Summary bar
- ◆ Start milestone point
- ◆ Finish milestone point