JH Baxter
WAD 053823019
HZW 6.2
Corrective Action
Correspondence
2007

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, WA 98101

July 19, 2007

Reply To
Attn Of: AWT-121

Ms. RueAnn Thomas, Environmental Programs Director
J.H. Baxter & Co.
85 N. Baxter Road
P.O. Box 10797
Eugene, OR 97440-2797

Re: Disapproval and Comments on Corrective Measures Study ("CMS") Report
J.H. Baxter & Co. Arlington Facility
§ 7003 Administrative Order on Consent ("Order")
Docket No.: RCRA-10-2001-0086
EPA ID No.: WAD 05382 3019

Dear Ms. Thomas:

The U.S. Environmental Protection Agency, Region 10 ("EPA") has reviewed the CMS Report, dated January 12, 2007, submitted by J. H. Baxter ("Baxter" or "Respondent"), as required by Section VII of the Order. Pursuant to Section XII, paragraph 72(d) of the Order, EPA is hereby disapproving the CMS Report. In accordance with paragraph 74(a) of the Order, Baxter shall submit a revised CMS Report which corrects the deficiencies noted in the enclosed comments within sixty (60) days of receipt of this letter.

Please contact me at (206) 553-6702 or at palumbo.jan@epa.gov , or have your legal counsel contact Jennifer MacDonald at (206) 553-8311, if you have any questions regarding this letter and the enclosed comments.

Sincerely,

Jan Palumbo
Project Coordinator

Enclosure

cc: SaraBeth Watson, Steptoe & Johnson, Washington D.C.
Mary Larson, J.H. Baxter, Arlington
Les Brewer, Premier Environmental, Portland
Georgia Baxter, J.H. Baxter, San Mateo
Dean Yasuda, Washington State Department of Ecology

JH Baxter
CMS Comments Final
7/17/2007

EPA COMMENTS ON J.H. BAXTER CORRECTIVE MEASURES STUDY (CMS) REPORT DATED JANUARY 12, 2007

Overall the CMS was prepared following the general outline which Baxter and EPA had discussed, and included the remedial options we had agreed upon. However, revisions are required before the CMS can be approved by EPA, which are discussed below.

GENERAL COMMENTS

1. Generally the CMS lacks sufficient detail necessary for EPA to select a remedy. Many of the alternatives, including the presumptive remedy of ground water extraction and treatment, and the alternative recommended by the facility, ground water extraction and re-injection into an injection trench, lack the detailed analysis that would provide the basis for EPA to select a remedy, and for the public to understand whether the remedy, if implemented, would be effective.

2. The CMS lacks balance and objectivity. It appears biased, placing emphasis on concepts such as cost and "impracticability" and presenting some potentially effective remedial options as not viable though they may in fact be viable. The recommended remedial action is described very favorably, without sufficient details to document that it would in fact function as described.

3. The corrective action objectives (CAOs) must be more clearly developed and the CMS must discuss how each alternative addresses the objectives. They must be included in the front section of the document to help guide the development of the CMS. The CAOs must include, at a minimum, 1) ground water plume control in the near term to avoid any potential movement of the plume off-site, including pumping along the axis of the plume to collapse the plume, 2) ground water plume reduction in size based on parameters including concentration and length of plume, with annual reviews of monitoring data to determine progress, and 3) contaminant source minimization and stabilization.

4. The proposal in the draft CMS that objectives not be achieved for 30 years is unacceptable.

5. An objective, detailed and accurate description of the alternatives is essential to enable EPA to evaluate the alternatives and to have a basis for selecting a remedy. Beyond providing a basis for remedy selection, the concept and details of the Respondent's recommended and other potential alternatives are also critical to the ultimate design after remedy selection, and therefore must be more fully described with greater detail. This includes correction of many errors on Figure 9-7, illustrating the concept of the proposed alternative.

6. One alternative that has been included in the CMS but is not fully developed is the option to pump and treat the contaminated ground water and then to re-inject the treated water into the aquifer at the site. This alternative must be more fully developed in the revised CMS. This alternative has been too summarily discounted because of the assumption that re-injection would not be possible due to regulations and policy issues. As discussed at the meeting with Baxter on February 26, 2007, and also based on subsequently received information from the Washington State Department of Ecology, treated contaminated ground water may be re-injected into the aquifer in the course of performing an approved Resource Conservation and Recovery Act (RCRA) corrective action.

7. The concepts of technical impracticability and natural attenuation are used too loosely throughout the document, especially in Section 6.4. EPA has specific guidance which defines these terms and how they are to be implemented. J.H. Baxter's use of these terms in the CMS does not reflect this guidance. Baxter must use the EPA guidance documents, *Guidance for Evaluating Technical Impracticability of Ground-Water Restoration*, Directive 9234.2-25 and *Performance Monitoring of Monitored Natural Attenuation(MNA) Remedies for VOCs in Ground Water (EPA/600/R-04/027, April 2004)*. The CMS must be revised in accordance with these guidances, rather than discarding an alternative based on the unfounded conclusion that it is "impracticable," or worse, discarding any alternative that might address ground water because as a class they are deemed to be impracticable. Such a conclusion is not supportable.

8. The CMS must consistently use µg/L for reporting monitoring results, which are the units of the cleanup standard for the key contaminant (pentachlorophenol (PCP) at 1 µg/L). Using mg/L presents a problem for many readers. Consistent use of µg/L enables readers to avoid having to convert from one unit to another, and mg/L requires many zeros at the relevant level (0.001 mg/L), and could lead to confusion.

Please note: Many of the specific comments below also require that Section 10.0 of the Report, Detailed Evaluation of Alternatives, be revised, even if the comment is not repeated but the issue is repeated in the comments on that Section.

Also note: Throughout the CMS there are conclusive statements which are not well-supported and appear to be biased. Many instances of such conclusive statements are discussed in the specific comments below, but EPA may not have included each instance. When the revised CMS is submitted, the general tone and all specific instances of bias must be removed, or must be supported with factual information. EPA has made substantial comments regarding the lack of support for the premises on which the conclusions of the document rely. Thus, the evaluation and conclusions of the evaluation will require substantial revision before this document can be approved by EPA.

SPECIFIC COMMENTS

1. Page 5, Section 2.2.2. The discussion of Regional Hydrogeology states that the closest surface water is Portage Creek, yet there is a ditch along the east side of the J.H. Baxter facility. It is unclear why this ditch is not mentioned. Baxter has mentioned in the past that efforts have been made to gain access to this ditch to facilitate wastewater discharge, but was denied access by the property owner. This ditch may be an option for discharge and should be discussed in this Section and in Section 6.2.2. Also see comment 44, Section 8.2.4.10, pp. 53-54, below.

2. Page 12, first paragraph. The text states that Parcel B has not been affected by historic releases. However, data in the Site Investigation (SI) and the CMS show that there is contamination in Parcel B, though not above proposed cleanup levels. Revise accordingly.

3. Page 13, Section 3.0, and throughout the document. The document defines and uses the term "interim cleanup levels." Please substitute the term "proposed cleanup levels," which is the correct terminology for cleanup levels that are used to develop corrective measures.

4. Page 13, second paragraph. It is not accurate to say that chemicals used at the facility have low volatility. Rather, the monitoring that was performed at the facility showed that air emissions from the facility did not cause a risk to human health or the environment. Revise the first phrase of the fourth sentence in this paragraph, so that the revised sentence reads: "Historic releases to the ground are not causing a risk to human health or the environment and no proposed cleanup levels are needed for air." Make a similar change to p.15, Section 3.2, second paragraph and fourth paragraph.

   Similarly, it is not accurate to say that all runoff is contained on site. Although a portion of the storm water is directed into the storm water treatment system, the rest infiltrates into the groundwater which is not contained on site. Revise last sentence in this paragraph accordingly.

5. Page 13, third paragraph. The text proposes that proposed cleanup levels used for the CMS will be based on industrial land use rather than unrestricted land use. Industrial cleanup levels may be used for soil and subsoil for the areas on-site where institutional controls will be maintained and where off-site contamination is not an issue. However, ground water, which may potentially migrate offsite, shall be protected to drinking water standards. The discussion in section 3.1 which follows correctly states that drinking water standards will be used as cleanup levels for ground water. Please revise to indicate that industrial cleanup levels will apply only to soils in areas where land use is restricted by institutional controls.

6. Page 14, first full paragraph. The text states that ground water contaminants are presently under steady-state conditions. However, ground water monitoring data of the past few years have shown ground water contaminants in some wells have not always been stable or decreasing. It is unclear that they are at a steady state. Revise to provide data to justify the steady-state condition, or delete this statement, or revise the statement to accurately reflect the observed data.

7. Page 14, first full paragraph. The text states that constituents have not had an adverse effect on off-site ground water or surface water. While the off-site monitoring wells installed and monitored to date have not had detections of contaminants, there is insufficient information to support the conclusion that off-site ground water has not been impacted. Revise to state that contaminated ground water has not been detected off-site, and remove the broader generalization that off-site ground water has not been impacted.

8. Page 14, last sentence in the first full paragraph and bullets 2 and 3, and throughout the document where the word "potable" is used. Please substitute the term "drinking water" for "potable."

9. Page 14, bullets 4 and 5. The text states that EPA Region 9 Preliminary Remediation Goals (PRGs) will be used if no Model Toxics Control Act (MTCA) levels are available. EPA is now using EPA Region 6 PRGs, as Region 9 is no longer updating its PRGs. Revise the text and tables, as necessary, to reflect the use of Region 6 PRGs.

10. Page 21, Section 4.1.3. The text states that "[n]o constituents of concern (COCs) have been detected above interim cleanup levels in MW-18, indicating that COCs have not migrated off site." While it is true that there have been no COC detections in MW-18, there is insufficient information to conclude that contaminants have not migrated off site. Revise, as discussed in specific comment number 7 above.

11. Page 25, fourth paragraph. The text states that the plume is presently under steady state conditions and that natural processes are effective at limiting plume migration. Consistent with specific comment number 6 above, revise the text in this paragraph.

12. Page 26, second paragraph. The text states, as it does on page 16, that ground water beneath Parcel B has not been affected by facility COCs and that the soil contamination meets the MTCA empirical demonstration requirements for ground water protection. Please reference the work that was done to justify this conclusion.

13. Page 29, Section 5.4.2, last paragraph, last sentence. This section states that there are no receptors downgradient of the facility. This is not accurate. There are receptors (i.e. via drinking water wells and surface water bodies) at locations downgradient of the facility. This sentence must be revised.

14. Page 30, Section 5.5.1, second paragraph. The text states that COCs are present at the depth of 10 – 15 feet below ground surface (bgs) which is in the depth range for exposure to workers doing subsurface utility or construction work. Yet worker exposure is not considered in developing corrective measures. Please clarify.

15. Page 30, Section 5.5.2, first sentence. The text states that residential exposures would occur only if the plant was closed and redeveloped for residential use, or if drinking water wells were installed near the facility. This is inaccurate. There are drinking water wells installed near the facility. Revise this sentence accordingly. Also, see specific comment 5 above regarding the appropriate use of industrial or residential standards.

16. Page 31, sole paragraph. The conclusions set forth in this paragraph regarding potential off-site ground water impacts are not supported. Revise in accordance with specific comments 5 and 13 above.

17. Page 32, Section 6.1, second paragraph. The discussion here, and any others throughout the document, relating to the "adverse effects" of a corrective measure on the business operations or the need to "shut down" must be revised. Such discussion should be presented only in relation to the specific corrective measure and must provide more information regarding what the adverse effects are expected to be and what the magnitude of those effects are expected to be. For example, what is the expected length of time of any disruption in operations? There must be sufficient detail in this document to provide the ability to fully evaluate each alternative and the degree of adverse effects, which likely varies among the alternatives.

18. Page 34, the reference to the Puget Sound Resources National Priorities List (NPL) Site must be deleted. That site is in a much different environmental setting and the discussion as presented is not relevant and is misleading.

19. Page 34, Section 6.2.2. This section discusses the potential for regulatory concerns regarding disposal of contaminated ground water. First, Baxter has not provided documentation for these concerns. Absent such documentation, alternatives which generate contaminated ground water must be given full evaluation and consideration. Second, any representations regarding communications with other parties about the possibility of discharging water must be supported by documentation. Finally, the statements in the last paragraph of this section at the top of page 35 regarding technical impracticability are not supported and must be deleted. Please see general comment number 7 above and specific comments numbers 20 and 21 below. This section, and all other discussions of these matters in this document, must be revised in accordance with this comment.

20. Pages 35-36, Section 6.4. This section discusses technical impracticability of a permanent remedy at the site, but the discussion does not accurately present the concept of technical impracticability as presented in EPA's guidance. The concept of technical impracticability differs from the MTCA concept of "disproportionate cost analysis". The concept of technical impracticability applies to a particular alternative, and should not be presented in this section of the document. If Baxter believes it can support an argument of technical impracticability with regard to a particular alternative, it should present that argument in the section discussing that particular alternative. The discussion presented here is not persuasive. The broad conclusory statement that it is technically impracticable to remediate residual non-aqueous phase liquid (NAPL), soil, and light non-aqueous phase liquid (LNAPL) within Parcel A is not supported and is unlikely to be supportable. This section must be deleted.

21. Page 36, last paragraph. This paragraph states: "While it is technically impracticable to remediate and clean up subsurface soils and residual NAPL in the Main Treatment Area to cleanup levels, it is possible to remediate contaminated ground water that flows from that area by active ground water remediation technologies." This is one example where two concepts are mixed and need to be separated and resolved independently. The issue of technical impracticability needs to be supported in accordance with EPA guidance and in relation to a particular alternative being considered. Ground water can be remediated and the CMS must be revised to incorporate an alternative that includes pumping and treating the ground water.

22. Page 38, Section 7.2.1. This section discusses subsurface soil corrective measures objectives, but does not include meeting cleanup levels as an objective. A corrective measures objective (CMO) requiring that the corrective measure selected result in subsurface soil meeting cleanup levels must be added.

23. Page 38, Section 7.2.2, page 39, last bullet, and throughout the document. The phrase "to the extent feasible" is used in discussing this CMO for LNAPL. Delete this phrase, and the phrase "to the extent practicable" wherever used in the document. See discussion of "technical impracticability" in general comment number 7 above and specific comments numbers 19, 20 and 21 above.

24. Page 38, Section 7.2.2. This section must also consider leachable NAPL which can continue to develop a dissolved plume from the NAPL source area.

25. Page 38, Section 7.2.3. The following statement "Ground water modeling results indicate that the dissolved-phase ground water plume is limited to the facility boundaries and does not extend off site...." is misleading. Such statements like this must be based on the data and not on modeling. Revise accordingly.

26. Page 38, Section 7.2.3. Under EPA policy, ground water should be restored for use as drinking water, unless it is, for reasons other than site contamination, not potable. Therefore, the assumption must be made that there is potential for future use of ground water. Revise accordingly.

27. Page 39, bullet at the top of the page and last bullet. Change the term from "reduce" which does not give a relative quantity or range to "minimize."

28. Page 39, add an additional CMO which states: "Minimize concentrations of COCs in soil and ground water to achieve cleanup levels and to protect human health and the environment."

29. Page 40, last paragraph. Physical restrictions (like fences) are not considered to be institutional controls by EPA. Please see EPA's Institutional Controls Guidance Document, "Institutional Controls: A Site Manager's Guide to Identifying, Evaluating, and Selecting Institutional Controls at Superfund and RCRA Corrective Action Cleanups, OSWER 9355.0-74FS-P, USEPA 540-F-00-005, September, 2000 ("2000 IC Guidance"). Revise accordingly throughout the document.

30. Page 42, Section 8.2. In this section and throughout the document the acronym NAPL is used. It is not clear what it refers to. Is it a reference to residual LNAPL, dense non-aqueous phase liquid (DNAPL), or something else? Please clarify.

31. Page 43, second bullet. The description of "cost" needs be more detailed. The discussion of costs should include enough information so that the EPA Regional Economist can make an independent assessment of those costs.

32. Page 43, Section 8.2, last paragraph. The last sentence in this section states: "Promising technologies for which design-level details need to be developed in order to fully evaluate their applicability are retained here, but subject to contingencies such as bench-scale testing." The technologies included here do not require bench scale testing. Instead, they could be evaluated using interim remedial pilot scale testing which can be further expanded if the technologies work acceptably. Revise accordingly.

33. Page 43, Section 8.2.1, first bullet. Fences are not considered by EPA to be institutional controls. See specific comment number 29 above.

34. Page 45, first full paragraph. This paragraph discusses shutting down the facility. See specific comment 17 above and revise accordingly.

35. Page 47, Section 8.2.2.6. This section discusses a low permeability soil layer as a remedial technology. It is unclear what this alternative is. It appears to be a no action alternative. Please clarify.

36. Page 47, Section 8.2.3.1. The section states: "Phase separation and ground water treatment of recovery fluids is required. A potential issue with this technology is the disposal of treated water." This section must be revised to include discussion of the option of injecting the treated extracted water.

37. Page 48, Section 8.2.3.2. This section states: "Unless ground water recovery at a downgradient location is completely effective, the technology can significantly mobilize and further spread contamination." The section seems to highlight problems with the steam enhanced extraction. However, this potential problem was not covered in the Section 9.3.7 regarding alternative 7. Include a discussion of this issue in Section 9.3.7 regarding alternative 7 and discuss how this problem is managed.

38. Page 48, Section 8.2.3.4. This section must include a comparison of the efficiency of socks relative to pumping to clearly set forth the comparison of technologies.

39. Page 49, Section 8.2.3.6, Disposal of NAPL. This section must be revised to explain why incineration is the only likely disposal of NAPL and document the basis for that statement.

40. Page 50, Section 8.2.4.2. Please reference the *Performance Monitoring of Monitored Natural Attenuation Remedies for VOCs in Ground Water (EPA/600/R-04/027, April 2004).* The discussion of MNA must be consistent with this guidance.

41. Page 50, Section 8.2.4.3, Containment Wall. EPA expects that a hanging barrier with hydraulic controls would be very efficient to contain LNAPL and the dissolved plume. The inclusion of pumping with a wall would make an alternative with a hanging wall reliable. This alternative must be included in the revised CMS.

42. Pages 50 & 51, Section 8.2.4.4. This section assumes extracted and treated water cannot be disposed of. See specific comment number 19, regarding page 34, section 6.2.2 above. It also contains the assertion that ground water extraction and treatment has relatively high costs and provides relatively low mass removal. When extraction and treatment systems are well designed and optimized they can be very effective and efficient. This section must be revised to evaluate this option objectively.

43. Page 51, Section 8.2.4.5, Funnel & Gate. It is not clear why the funnel and gate technology has not been retained, nor why a "hanging wall" will not work at this facility. See specific comment number 41 above. Revise this section accordingly.

44. Pages 53 - 54, Section 8.2.4.10. The statement "... surface water would have to meet strict water quality requirements and would likely require treatment before discharge. This technology has not been retained because Baxter previously was not able to reach agreement with Burlington Northern Santa Fe (BNSF) (the conveyance channel's owner)..." is not sufficient by itself to reject this option. Documentation which supports the statements that surface water discharge is unavailable to Baxter must be provided. In addition, Baxter must consider injection as part of the alternative.

45. Page 56, Section 9.1.1, Institutional Controls. The section should reference state and federal guidance on Institutional Controls. For federal guidance please see, "Institutional Controls: A Site Manager's Guide to Identifying, Evaluating, and Selecting Institutional Controls at Superfund and RCRA Corrective Action Cleanups, OSWER 9355.0-74FS-P, USEPA 540-F-00-005, September, 2000 ("2000 IC Guidance").

46. Page 57, Section 9.1.2, LNAPL Recovery by Mechanical Extraction. This section must be incorporated into sections which discuss "pump & treat" at the source zone, and it must compare pumping to other options proposed such as "bailing or the use of sorbent materials."

47. Page 57, Section 9.1.2, LNAPL Recovery by Mechanical Extraction. This paragraph contains the following statement: "The new extraction wells would be designed to handle more aggressive remediation techniques should more robust removal efforts be required by a future change in remedial strategy." Include more detail and explain this statement.

48. Page 57, Section 9.1.2, LNAPL Recovery by Mechanical Extraction. This section must include the options of pumping and treating from the source area rather than just including passive options.

49. Page 57, Section 9.1.2, LNAPL Recovery by Mechanical Extraction. This section includes the following statement in relation to extraction wells: "If mobile NAPL were to flow readily into the extraction wells, then the frequency of mechanical extraction would increase." This statement is misleading since the proposed wells are passive extraction wells. NAPL or high concentrations of dissolved contaminants would flow into the extraction wells if these were designed as pumping wells.

50. Page 58, Section 9.1.3, Monitored Natural Attenuation. A key guidance document on this topic must be referred to here, *Performance Monitoring of MNA Remedies for VOCs in Ground Water (EPA/600/R-04/027, April 2004).* The section must be rewritten with this guidance in mind.

51. Page 60, Section 9.1.4, Ground water Monitoring. The proposed monitoring is not acceptable. There will need to be more monitoring for both water levels and water quality during the initial period of the remedial action, and the schedule may be altered as the system becomes more stable and is active for a longer period of time. The exact details of the monitoring program will be developed in the plans for the selected corrective measure and not in this document. It is important, however, to consider the monitoring required for so that the relative costs of the alternatives can be compared.

52. Page 60, Section 9.1.4, Ground water Monitoring. The exact compounds or field parameters to be measured will be determined as part of the design of the selected corrective measure. While pentachlorophenol (PCP) and polyaromatic hydrocarbons (PAHs) are part of that suite of analytes, it is possible that other constituents will be also included.

53. Page 61, Section 9.3.1, Alternative 1: Monitored Natural Attenuation. This section is misleading since there is no monitored natural attenuation (MNA) occurring now at the site. The statement "The Monitored Natural Attenuation alternative represents the baseline conditions at the Arlington facility and is included primarily for comparative purposes" must be reworded to reflect that an uncontrolled plume is the present baseline condition for the facility and delete the reference to MNA.

54. Page 63, Section 9.3.3. Under this section there are many statements regarding the half-life of PCP. Note that mixing the issue of aerobic soils with anaerobic source areas or contaminated water plumes does not help the understanding of the issue. While the values of 23 to 178 days half-life are interesting, their presentation in this evaluation of alternatives is misleading. What must be included in this section is a discussion of how long the contamination by PCP has been in the source area at this site, and that rather than attenuating, the plume has continued to develop to its present geometry.

55. Page 66, Section 9.3.5, Alternative 5: Physical/Hydraulic Containment. This section concentrates on slurry walls which are constructed by excavating a trench and then backfilling the trench with an engineered backfill, typically a low permeability soil or soil and bentonite mixture. This section must also include other types of barrier walls, such as a sheet pile wall or slurry wall installed by a vibrated beam.

56. Page 67, Section 9.3.6, Alternative 6: Excavation and Off-Site Disposal. Explain the assumptions of locations, depth, etc. for the following statement: "It is estimated that approximately 43,000 cubic yards (approximately 84,000 tons) of soil would be excavated and disposed off site."

57. Page 68, Section 9.3.7, Enhanced Biodegradation Recirculation System. This section states: "Under Alternative 7, ground water recovery wells would be used to provide a hydraulic flow barrier and would effectively capture the plume; however, the water being pumped would not be brought to the surface and treated. Instead, the recovered water would be treated in situ by recirculating it through the vadose zone via an aeration trench to, in effect, form a large biological treatment cell." While this is acceptable as a concept, the figure that is used to convey the concept is incorrect as drawn. We discussed this issue at the meeting on February 26, 2007. This revision must be made in several places in the text of this document and on Figure 9-7.

58. Page 68, Section 9.3.7, Enhanced Biodegradation Recirculation System, last paragraph. The issue of a recirculating system, similar to a recirculating well, has its own set of potential problems created by the recirculation pattern which makes monitoring difficult and which could potentially created a downward gradient for the contamination. This issue must be addressed in this section.

59. Page 68, Section 9.3.7, Enhanced Biodegradation Recirculation System. The statement: "However, based on empirical data from a similar system at another wood treatment site, it is anticipated that the recirculated ground water would have a much lower concentration." must be supported by detailed references and information.

60. Page 72, Section 10.1.1.1 and page 74, Section 10.2.1.1, second and third paragraphs. Statements here, and throughout the document, which say that the plume is "likely at steady state conditions. . ." must be revised in accordance with specific comment number 6 above.

61. Page 72, Section 10.1.1.3, Implementability. The last sentence states: "For these reasons, Alternative 1 has been ranked high for constructability and implementation time and low for beneficial results time frame." It must also state that it is ranked low for plume containment.

62. Page 73, Section 10.1.4. This section states that "most programs needed for MNA are already in place." This statement is not true and must be revised in accordance with general comment number 7 and specific comments numbers 40, 50, 53 and 63 above.

63. Page 73. Section 10.1.5, Cost. This section must be revised to take into account the requirements in *Performance Monitoring of Remedies for VOCs in Ground Water (EPA/600/R-04/027, April 2004).*

64. Page 74, Section 10.2, Alternative 2: Mechanical LNAPL Recovery and MNA. This section states: "Mobile LNAPL recovery would be accomplished using mechanical means, such as bailers, sorbent socks, and skimmers." It must also include and discuss pumping, which is a more effective mechanical method.

65. Page 76, Section 10.2.1.4, Safety. The section states: "There would be minimal potential for causing catastrophic events such as explosions. This alternative is ranked high for safety." It is unclear why the facility considers the potential for explosion to be a significant factor because the substance that is being pumped out is the same material which is used in the wood treating process in the existing surface treatment units and in the existing storm water treatment system. Unless a good reason can be provided, this statement must be removed.

66. Page 77, Section 10.3.1.1, Performance. The logic in this section seems inconsistent. Note the two statements quoted here: "Ground water would be aggressively bioremediated using air sparging in source areas and in the downgradient plume to accelerate biodegradation reactions. . ." and " . . .would result in a reduction of 27% in plume area and 3.7% in plume mass after 30 years." These statements appear contradictory and do not support the concept of good performance. Clarify.

67. Page 84, Section 10.4.5, Cost. This section states: "The estimated total net present value for this alternative (based on the assumptions used for estimation) . . ." but does not reference what the assumptions are or where they can be found. Include all assumptions used for estimation.

68. Page 84, Section 10.5, Alternative 5: Physical/Hydraulic Containment. This section seems to have limited the options of containment to slurry walls, which is biasing the decision due to the space requirements to install a slurry wall, and the limited space in which to do the installation at the source area in this facility. Other types of containment barriers besides slurry walls, such as a wall installed with a vibrating beam, must be considered.

69. Page 84, Section 10.5.1.1, Performance. This alternative states: "If pumping were to fail or stop, the system would become ineffective and affected ground water inside the barrier wall would likely migrate beyond the wall." Any system will have warnings when something in the system malfunctions, and then the pumps can be re-started. Revise this statement and other similar statements so that this issue is addressed consistently for all of the alternatives.

70. Page 85, Section 10.5.1.1, Performance. This section overstresses the failure potential of the system. Revise the sentence to state: "The alternative may fail to contain the source area if the ground water recovery and treatment system fails; such a failure would likely result in the loss of affected ground water from the source area, potentially affecting downgradient ground water. Given these considerations, Alternative 5 is ranked moderately low for demonstrated and expected reliability." Ground water recovery and treatment systems have been shown to be a long term effective solution at many sites. This section must be revised to state that the potential for failure is low.

71. Page 86, Section 10.5.1.1, Performance. Another misleading statement which must be qualified or removed is: ". . a hanging wall may not significantly reduce ground water pumping rates compared to hydraulic containment using extraction wells alone." This statement ignores the fact that a barrier wall may be able to significantly reduce the pumping rates necessary to keep the same level of plume containment. Revise accordingly.

72. Page 87, Section 10.5.1.3. There are a number of assertions in this section about significant permitting issues relating to treatment of contaminated ground water which have not been documented. Absent sufficient justification and documentation of such regulatory issues, this alternative must be given full consideration.

73. Page 88, Section 10.5.3, Environmental Criteria. This section states: "In the long term, not all COCs would be removed by the pump and treat system, and as a result the beneficial effects are roughly equivalent to the other containment strategies." This issue must be discussed in all the options, not just the pump and treat option. Explain in all the alternatives, for purposes of comparison, how effective they are at removing COCs.

74. Page 89, Alternative 6: Excavation and Off-Site Disposal. It is unclear why this option, which involves the temporary closure of the facility and demolition of existing buildings, structures, and utilities in the Main Treatment Area, which appears totally unacceptable, is retained as an alternative when similar issues presented in relation to other alternatives led to discarding of the alternative. Also, if an excavation option is retained in the CMS, there should be an excavation and removal option which does not require total demolition of the operating facility.

75. Pages 92 to 97, Alternative 7: Enhanced Biodegradation Recirculation System. The comments and suggested changes to previous sections also must be incorporated here. In addition, this section needs to be expanded to better describe how the plume will be controlled, and how the capture zone will be monitored.

76. Pages 97, Alternative 7: Enhanced Biodegradation Recirculation System. The cost of this system must be revised based on the need for monitoring the capture zone and the monitored natural attenuation according to the applicable guidance documents. When additional wells are installed and monitored, as would be required with this alterative, the total estimates for this and other options with similar aspects will be much higher due to the increased need for monitoring beyond what is estimated in this CMS.

77. Page 99, fourth paragraph. This section refers to the difficulty of disposal of contaminated ground water, and ranks the alternatives which include total fluids recovery low, based on disposal issues. However, Baxter has provided insufficient justification and no documentation for the disposal issues raised. Absent such justification and documentation, total fluids recovery alternatives must be fully evaluated.

78. Page 107, Section 12.0, Recommended Corrective Measure. There is an error in the second bullet. The CMS has not discussed any recirculation "wells" up to this point. Revise. Note that recirculation wells have a definite meaning in ground water remediation literature and the use of this term in this CMS must comport with that meaning.

79. Page 107, Section 12.0, Recommended Corrective Measure. Revisions to the MNA and monitoring requirements must be made throughout the CMS, including this section, to comport with EPA guidance discussed above. What is presented here is not acceptable and must be revised.

80. Page 108, Section 12.0, Recommended Corrective Measure. The conceptual design must provide much more detail about the design and operation of the corrective measure. For example, this section states: "The recovered ground water would be pumped through underground lines to the aeration trench for in situ treatment and infiltration. The estimated ground water recovery rate to ensure adequate treatment and to intercept the plume is 80 gpm." Provide a mass balance to account for the volume being pumped, and the volume being recirculated that would have moved into that area from upgradient. There seems to be something missing in the accounting of the pumped and recycled water. The issues need to be discussed in more detail. Specifically, will it create a mounding problem and push contamination deeper or spread the plume laterally? Will additional water moving into the pumped area require additional pumping? How will flow rates be monitored or adapted when implemented? Provide additional detail even if the exact values are not known at this stage of plan.

81. Page 108, Section 12.0, Recommended Corrective Measure. The CMS states: "Ground water modeling based on this conceptual design projects that over a 30-year period of operation this system would reduce the plume area by about 40% and the contaminant mass in the plume by about 21%. This would achieve ground water cleanup levels upgradient of the property line." This rate of clean-up and time frame is not consistent with the corrective action objectives and guidance. This corrective measure must be revised to be consistent with cleanup objectives.

82. Page 109, Section 12.0, Recommended Corrective Measure. As discussed at the meeting on February 26, 2007 and follow-up discussions with the Washington Department of Ecology (WDOE), the following are not acceptable statements: "While mechanical LNAPL recovery is not the most effective method available, it is the only practicable approach that can be implemented within the physical and regulatory constraints for the Arlington facility. More aggressive methods such as total fluids recovery or excavation are not practicable for this site. Total fluids recovery is not practicable since a POTW capable of accepting treated ground water is not available and regulatory requirements make on-site treatment and infiltration impracticable." Revise the CMS according to discussions with EPA and WDOE regarding the possibility of reinjection.

83. Appendix D. The values presented will need to be recalculated based on the changes requested for the rest of the draft CMS.

84. Table 10-2. The scorings included in this table are highly subjective and speculative and do not provide a good basis for ranking of alternatives. At a minimum, a caveat must be included with this table, and with the discussion of alternative rankings in Section 11, noting the inherent subjectivity and unreliability of providing simple numerical scores for complex technical issues.

85. Figure 4-1. The figure shows areas of soil contamination above interim cleanup levels. It is not clear whether these are surface or subsurface soils. Revise the figure to specify the depth of the samples.

86. Figure 9-7. The figure is incorrect as drawn, as discussed at our meeting with the facility on February 26, 2007, and must be redrawn. The locations of the extraction wells in the map and the cross-sections do not match, and it confuses the stated concept of pumping and recirculating water from the plume and not the source areas. Note that as presented, the pumping is being done from the source area wells in the map figure, but appears that it should be from the area downgradient from the recirculation vault in the cross-section. As suggested in these comments and at our February 26 meeting the option of pumping at the source area and along the plume axis, treating the water, and re-injecting the treated water, must be fully developed and included in this CMS.