GW PARTNERS, LLC

Please Reply to:
William A. Hartman
Little Lake Cleanup Team
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May 17, 2007

Mr. Greg Hill, Project Coordinator
Wisconsin Department of Natural Resources
101 South Webster Street
Madison, Wisconsin 53703

RE: GW Partners Response to Agency/Boldt Oversight Team Comments -- Draft 2006 Remedial Action Summary Report

Dear Mr. Hill:

On behalf of GW Partners, LLC, attached are the responses to the April 9, 2007, Agency/Boldt Oversight Team comments regarding the Draft 2006 Remedial Action (RA) Summary Report (Attachment 1). These changes have been incorporated into the report and the revised report is being submitted with this letter in its final format. The final report has also been updated to include data received after the Draft RA Summary Report submittal.

If you have any questions, please contact me.

Sincerely,

GW Partners, LLC

Bill

Bill Hartman
Project Manager

Distribution - See Attached

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Attachment 1
Response to the April 9, 2007, Agency/Boldt Oversight Team Comments Regarding the Draft 2006 RA Summary Report

Section 4 – Dredging

1. *Section 4.1, Dredge Areas, Table 4-1 page 4-1: The actual dredge volume is considerably less than the planned volume. Include a summary explanation detailing the reason(s) for this difference.*
   - The following paragraph was added after Table 4-1:

     The difference between the actual and the planned dredge volume was 55,491 cy. This can be attributed to two factors:

     - Native red clay or other dense native material (high subgrade) was encountered at depths shallower than the 1.0 ppm modeled dredge cut. High subgrade was not dredged after it was confirmed.
     - In some areas where high subgrade was not present, the dredge operators were able to make a cut to the 1.0 ppm PCB target elevation with less than the anticipated 4 inch overcut.

2. *Section 4.4.3, page 4-19: In more detail, discuss how secondary samples were handled when not all secondary samples were available. Further, discuss how secondary samples were analyzed when the surface sample(s) exceed the RAL (i.e., as a composite or discrete sample).*
   - The fifth paragraph in Section 4.4.3 was expanded as follows:

     For secondary composite samples, the top 4 inches of each sample were removed and homogenized as described above. Typically, four secondary core samples (sometimes less, depending on the sample grid area) were needed to prepare the secondary composite sample. The secondary composite sample was prepared for laboratory analysis by taking equal amounts of each of the four homogenized secondary samples and compositing the four samples into one sample. If no sediment could be collected from a location after two attempts, no sample was collected and the location was identified as having no soft sediment; in which case, the remainder of the secondary samples were composited as described above. If all secondary samples were not yet available to generate the composite sample, each discrete secondary sample was placed into double zip lock plastic bags, labeled, and frozen until the remaining secondary samples were available. The remainder of the soft sediment within each core was divided into 4-inch intervals (minimum 3 inches) until the end of the core was reached. These deeper intervals were then frozen for potential future analysis. Sample intervals below the top 4 inch interval that consisted completely of native clay material were not analyzed.

3. *Section 4.5.1, Summary of PCB Data page, 4-20: Include in this section a discussion detailing "undisturbed residuals" mass and volume.*
   - The following discussion was added to Section 4.5.1:

     Undisturbed residuals were interpreted as the sediment in dredged areas with PCB concentrations greater than 1.0 ppm that are beneath the top 6 inches of sediment. The sediment in the top 6 inches of dredged areas is referred to as "disturbed residuals." An accounting of the sediment volume and PCB mass in the top 6 inches, as analyzed from the current post-dredge model, is presented in Table 4-7 below. The accounting is based on Theissen polygon representations of the model and addresses only those regions dredged over the period from 2004 to 2006. The reported quantities are associated with the 1 ppm isopach, without any adjustment for overcut.

More than 95% of the PCB mass associated with the post-dredge residuals were in the top 6 inches of post-dredge sediment for Sub-areas A, E1, POG1, and POG4. A smaller proportion of post-dredge residual PCB mass (77 – 87%) was in the top 6 inches for Sub-areas C, D2S, and POG3. However, for POG2, most of the residual volume (72.9%) and PCB mass (69.8%) were undisturbed residuals. POG2 differed from the other sub-areas dredged to date in OU1, in that the material directly underlying the PCB impacted sediment was predominantly soft, gray, silty clay material in contrast to the hard-packed red/brown clay underlying the other sub-areas.

For all OU1 Sub-area regions dredged in 2004 – 2006, approximately 80% of the area has 6 inches or less of residual sediment (disturbed residuals only). However, undisturbed residuals account for roughly 37% of the post-dredge sediment volume and roughly 34% of the post-dredge PCB mass, primarily due to the undredged PCB impacted sediments that remain in POG2.

Table 4-7
Summary of Disturbed Residuals

	Post-dredge Area			**Post-dredge Volume**			**Post-dredge PCB Mass**		
OU1 Sub-area	Areas with PCBs > 1 ppm	Areas with 1 ppm isopach within top 6 inches		Volume of 1 ppm isopach	Volume for areas with 1 ppm isopach within top 6 inches		PCB Mass in 1 ppm isopach	PCB Mass for areas with 1 ppm isopach within top 6 inches	
	(Ac)	(Ac)	(%)	(cy)	(cy)	(%)	(kg)	(kg)	(%)
A	23.12	22.65	98.0	7,982	7,937	99.4	17.71	17.65	99.7
C	7.57	6.70	88.5	4,336	4,170	96.2	4.76	3.67	77.1
D2S	2.88	1.03	35.8	2,480	2,026	81.7	0.78	0.64	82.8
E1	0.45	0.45	100.0	203	203	100.0	0.06	0.06	100.0
POG1	3.42	3.42	100.0	714	714	100.0	1.20	1.20	100.0
POG2	6.80	1.03	15.1	18,710	5,067	27.1	24.96	7.53	30.2
POG3	9.59	7.39	77.1	5,832	5,128	87.9	7.51	6.50	86.5
POG4	0.77	0.74	96.1	407	406	99.9	0.21	0.21	100.0
Total	54.6	43.4	79.5	40,664	25,651	63.1	57.2	37.5	65.5

Prepared by: GRE
Checked by: SGL

4. *Section 4.5.1, page 4-21: In the paragraph immediately following Table 4-6, discuss the reason(s) why the average surface concentration in POG2 was only reduced by 10%.*

- The following paragraph was added to Section 4.5.1, page 4-21:

  Because a substantial volume of the PCB contaminated sediment was at depth in POG2, surface concentrations in most of the POG2 dredge areas did not decrease significantly as a result of dredging.

Section 5 – Dewatering

5. *Section 5.3 Sediment Screening and Thickening, page 5-2: Include a discussion explaining why the thickener 2006 actual capacity was less than the original design capacity.*
   - The following paragraph was added to Section 5.3 to discuss why the thickener 2006 actual capacity was less than the original design capacity:

     The maximum design capacity of each of the two thickeners is 2,400 gpm, which is sufficient to handle flow from two dredges. The normal operating design capacity for each of the two thickeners is between 1,100 and 1,900 gpm. During normal operating conditions in 2006, both thickeners units were employed, treating an average actual influent flow total of approximately 1,800 gpm. The units were designed so that in the event of mechanical problems with one of the units, the remaining unit could treat the material from both dredges for a period of up to 8 hours without negatively impacting operations. It was anticipated that two thickeners would only be absolutely required when dredging in Sub-area POG2, due to the poor-settling nature of the POG2 sediment. This was confirmed during the 2006 operation, when one unit was overloaded for a period of approximately 2 hours because both dredges were in POG2. During this period, the influent was sent directly to a geotextile tube. The operational procedures were subsequently modified to place only one dredge in POG2 at a time.

6. *Section 5.6.7 Dewatered Sediment Geotechnical Characteristics, Table 5-3, page 5-15: The sieve analyses results indicate no gravel present in the dewatered sediment. Include an explanation to the text detailing that this is likely the result of the 1/8-inch trammel screen removing the gravel and probably some coarse sand from the dredge slurry before it was consolidated in the thickeners and pumped to the geo-tubes.*
   - The following sentence was added to the paragraph immediately before Table 5-3:

     The absence of gravel-sized sediment is likely due to the result of the 1/8-inch trammel screen removing the gravel and probably some coarse sand from the dredge slurry before it was consolidated in the thickeners and pumped to the geotextile tubes.

7. *Section 5.6.7 Dewatered Sediment Geotechnical Characteristics, page 5-16, second paragraph: "While there were samples tested that achieved the required percent solids, none of the samples exceeded the UCS for normal strength dewatered sediment." In the first paragraph on this page, it states that the UCS must be greater than 400 psf (0.2*

TSF) to be normal strength dewatered sediment. Based on the specified limit of 400 psf, in Table 5-5 CD2S is normal strength dewatered sediment for the minimum, maximum and average values. POG3 and POG4 also have average values that are at the specified limit for classification as normal strength dewatered sediment. Correct this statement: "While there were samples tested that achieved the required percent solids, none of the samples exceeded the UCS for normal strength dewatered sediment."

- The paragraph immediately before Table 5-5 was modified as follows:

  While there were samples tested that achieved the required percent solids and met the estimated UCS for normal strength testing, none of the sediment passed the "Baseline Workability/Strength Requirements" of being capable of being worked and managed by the disposal site's low ground pressure bulldozer. As a result, almost all of the dewatered river sediment was required to be handled and disposed of as low strength material.

Section 6 – Dewatered Sediment Load-out, Transportation and Disposal

8. *Section 6.1.2, page 6-4: Insert missing totals.*
   - The following totals and date were inserted into Section 6.1.2 and Section 6.1.4:
     a. At the completion of LTD activities associated with the 2006 remedial work, 52,696 tons of unworkable sediments had been placed in monofill 3.
     b. A total of 100,412 tons of non-TSCA material was disposed at Hickory Meadows Landfill.
     c. This material was made up of 95,679 tons of unworkable sediment, 409 tons of workable sediment, 3,289 tons of screening (all workable), 201 tons of water treatment plant media (all workable), and 834 tons of gravel from the dewatering pad work in March, 2006 (all workable).
     d. Hauling of dewatered sediment to Hickory Meadows Landfill was completed on March 20, 2007.

Section 7 – Water Treatment Plant

9. *Section 7.5, page 7-7: Good suggestions were made to improve operations in 2007. However, most of the suggestions discussed at the February 12, 2007, meeting with GW Partners, Brennan, and EarthTech were left out of this report. These improvements should be added to this report as options for implemented in 2007 in order to better control pad soils accumulation.*
   - The last paragraph of Section 7.2 was modified as follows:

     Following the completion of the 2006 project work, in March 2007, an investigation was conducted and it was determined that the backwashing of the unit, which followed the chemical treatments, did not remove the accumulated fines. It then was discovered that the cause of this situation was that the gravity line, which allows the overflow of the waste material to the sump, had become plugged. Arrangements were made to remove the material from this line and the performance of the unit returned to normal. In addition, the backwash flow from the GAC and Krofta now go to a separate area on the de-watering pad, which is lined with filter fabric. This enhances the removal of the fines from the system during the treatment process. Finally, during the 2007 operations the chemical treatment of the media will occur during weekend, non-production periods, to minimize or eliminate the potential to negatively impact dredging.

- The last paragraph of Section 7.3 was modified as follows:

  While it was unclear whether the Septa had blinded over during 2006 operations, it is clear that the removal of the media had a significantly positive impact on the capacity of this unit, as flows through the unit increased nearly 4-fold. As a result of the successful treatment of the media from this unit, the media from the remaining 5 units was removed and treated in a similar manner in early March 2007. Following the removal of the media from each unit, it was inspected and then placed back into the unit. At this time, the unit was backwashed and then placed into operation to determine if it could treat design flows. Upon verifying that all units could now perform as designed, they were filled with water containing a slight residual chlorine concentration.

Section 8 – Productivity

10. *Section 8, Table 8-4, page 8-4: Include the units of time for the values expressed in Table 8-4.*
    - The units of time are hours, these were added to the table.

Section 10 – Environmental Monitoring

11. *Section 10.2, page 10-3: Include a daily data summary, in tabular form, of the water treatment plant performance by month. Explain more fully why 'three monthly TSS violations' is being characterized as 'minimal exceedance'.*
    - The 4 monthly TSS exceedances were characterized as "minimal" because 3 of those 4 exceedances were below 18.4 mg/l, the average surface water TSS monitored during the 2006 RA work and baseline monitoring. We understand now that this characterization is inappropriate and have revised Section 10.2 as follows.

    - The last sentence before Table 10-2 was updated to read:

      Table 10-2 summarizes the QA analytical results by day for WTP effluent.

    - The two paragraphs immediately before Table 10-2 were modified to read:

      PCB and ammonia effluent concentrations consistently met the WDNR's performance expectations of less than 0.1-0.5 ug/L and 67 mg/L, respectively. The WDNR's daily TSS expectation (less than 10 mg/L) was exceeded 15 out of 151 operation days and the monthly TSS expectation (less than 5 mg/L) was exceeded 4 times during the 9 months of WTP operation. The WDNR's BOD expectation (less than 10 mg/L) was exceeded 8 out of 151 operation days.

Table 10-2 summarizes the QA analytical results by day for WTP effluent. Table 10-3 summarizes the monthly averages of laboratory analytical results for water treatment plant effluent.

- Table 10-3 below was added immediately after Table 10-2 summarizing the monthly averages of laboratory analytical results for water treatment plant effluent:

Table 10-3
Monthly Averages of Laboratory Analytical Results for Water Treatment Plant Effluent

Month	TSS (mg/L)	BOD (mg/L) [1, 3]	Ammonia Nitrogen (mg/L)	Total PCBs (ug/L) [1,3]
May	1.7	1.3	0.93	0.13
June	1.4	1.2	0.49	0.12
July	1.6	1.4	1.4	0.12
August	2.5	2.2	4.4	0.12
September	2.4	8.8	13	0.12
October	5.5	3.5	6.1	0.13
November	7.2	4.3	3.4	0.12
December[2]	--	--	--	--
January	15	7.6	3.1	0.12
February[2]	--	--	--	--
March	22	4.9	2.4	0.12

Prepared by: SVF
Checked by: DMR

Notes:
1 – Limits of detection (LOD) vary for BOD and total PCBs. The highest LOD reported in Table Q-3 for each was as follows:
BOD – 2 mg/l
Total PCBs – 0.34 ug/l.
2 – The WTP did not run in December or February, and therefore no effluent samples were taken.
3 – Half of the LOD was used to calculate the average when the compound was not detected above the LOD.

12. *Section 10.3, Air Quality, pages 10-4 to 10-6: An error in the last sentence of the first paragraph should be changed from 2005 to 2006.*
    - The error in the last sentence of the first page was changed to 2006 from 2005.

Section 11 – Summary

13. *Section 11, Objective 8, page 11-3: The statement "Effluent water quality for PCBs, TSS, BOD, and ammonia was well within DNR performance expectations" is contrary to the statement six lines down, which says "Effluent water quality for PCB's, TSS, and BOD met performance expectations for the majority of the project." Clarify and qualify both of these statements.*

- The 4th bullet, "Effluent water quality for PCBs, TSS, BOD, and ammonia was well within WDNR performance expectations," and the tenth bullet, "Effluent water quality for PCBs, TSS, and BOD met WDNR performance expectations for the majority of the project," have been deleted.

14. *Section 11.1, Project Performance versus Objectives, pages 11-1 to 11-3:*
    a. *Objective 1: The two bullets under Objective 1 do not address whether the objective was achieved. Discuss the results of the thickeners increasing or not increasing the percent solids in dredge slurry that was fed to the geotextile tubes.*
    - The following bullet was added to Objective 1:

      The average percent solids of the inflow into the thickeners was 4% (similar to the percent solids to the geotextile tubes in 2005) and the average percent solids of the discharge from the thickeners into the geotextile tubes was 17%.

    b. *Objective 4: Add the qualifier "post-dredge" PCB concentrations to the third bullet that describes the average PCB surface concentrations.*
    - The qualifier "post-dredge" PCB concentrations was added to the third bullet that describes the average PCB surface concentrations.

    c. *Objective 6: Clarify how the value of up to 80% reduction in water flow was calculated/measured.*
    - The following paragraph was added to the second bullet of Objective 6 in Section 11.1:

      The reduction of water pumped through the geotextile tubes was calculated using the average inflow to the thickeners of 1,800 gpm, or 2.6 mgd. The average flow pumped to the geotextile tubes was 853 gpm, but this only occurred for approximately 25 minutes out of every hour, for a daily total of 511,800 gallons.

    d. Objective 8: The 4th and 10th bullets discuss effluent water quality; however their respective conclusions are different. Clarify this apparent discrepancy. Present the ammonia results separately. The 7th bullet, describing the compounds monitored, should be moved ahead of bullets describing the results.
    - The 4th bullet, "Effluent water quality for PCBs, TSS, BOD, and ammonia was well within WDNR performance expectations," and the tenth bullet, "Effluent water quality for PCBs, TSS, and BOD met WDNR performance expectations for the majority of the project," have been deleted.
    - The bullets were reorganized to present the compounds monitored first and then the results.
    - The following bullets were added to Objective 8:

- Surface water quality real-time turbidity testing was performed upstream and downstream of dredges.
- PCB and ammonia effluent concentrations consistently met the WDNR's performance expectations.
- Daily TSS expectation was exceeded 15 out of 151 operation days.
- Monthly TSS expectation was exceeded 4 times during the 9 months of WTP operation.
- Monthly BOD expectation was exceeded 8 out of 151 operation days.
- Effluent water quality for mercury did not meet WDNR performance expectations; however, 2006 RA effluent low-level mercury concentrations were on average an order of magnitude less than background river water concentrations.

Appendix M – Water Treatment Plant Correspondence

15. *In Appendix M, the Krofta Boil Out Report, August 5, 2006, several good recommendations were made to improve the boil out procedure, but there is no evidence in the Remedial Summary to suggest these changes were made. Include in the summary whether or not these changes were made and, if not, then discuss when they will be made.*

- The last paragraph of Section 7.5 was modified as follows:

  In an effort to remove the accumulated solids from the pad, during the last week of March 2007, the water from the de-watering pad was treated with polymer and/or ferric sulfate or aluminum chlorohydrate, and passed through the thickening process, allowing the solids to settle out. The effluent from the thickeners was returned to the "hot-tub" and treated again, while the solids that settled to the bottom of the thickeners were sent to a geotextile tube. This operation continued for approximately three days, at which time it was determined that the amount of solids being removed was negligible. Please note that the effluent from the "hot-tub" did not enter the WTP, but was, instead, pumped back to the de-watering pad to begin this treatment process again. This was done to eliminate any potential contamination to the media of the Krofta and GAC units prior to the start up of the 2007 remedial work.