Technical Outreach Services for Communities (TOSC)

Analysis of the *Remedial Action Plan* for Lakeshore Park Place, L.L.C. as prepared by TriMedia Consultants, Marquette, Michigan.

September 9, 1999

OVERVIEW

In response to a request from the Citizens for a Community Lakeshore, the TOSC Program has prepared a review of the *Remedial Action Plan* (RAP) of the Lakeshore Park Place, L.L.C., Marquette, Michigan. The RAP was prepared by TriMedia Consultants on behalf of the City of Marquette and Lakeshore Park Place, L.L.C.

The RAP review represents the professional opinions of Dr. Susan Masten, Associate Professor of Environmental Engineering at Michigan State University and Lisa Szymecko, Technical Outreach Specialist for the TOSC Program.

In summary, we believe that the RAP should include revisions and additional work to accurately reflect site conditions and to address community concerns about the site.

MAJOR FINDINGS

1. This RAP does not contain the necessary support documents to allow reviewers, including citizens, to effectively evaluate the proposed site plan. A more complete document would allow for a faster and more thorough review. The items that are lacking include the following:
    a. A sample map. Each sample location should be clearly marked and cross-referenced with the table that lists chemical concentrations and comparisons to industrial and residential closure criteria. The sample map should contain sample locations corresponding to the new data presented in the RAP. This data should be presented in the RAP in tabular form. The locations of the pressure vessel and drain pipe also need to be presented.
    b. A sample data table. A sample data table that includes all samples, their unique identification numbers, date of sampling event, etc. Sample data should also show detection limits as well as standard deviations at a 95% confidence interval.
    c. Baseline Environmental Assessment (BEA). Any and all references to the BEA should include (at a minimum) the page number, section number, and paragraph. Any data that is referenced to the BEA should be included in the RAP.

2. TOSC recommends that the waiver of the Permanent Marker not be granted. The purpose of the permanent marker is to ensure that health and well being of residents,

visitors, and workers through the general knowledge that the site contains contamination greater than the *Residential Closure Criteria* and has only met the limited residential closure requirements.

3. The statement made in the RAP that "natural attenuation" will reduce contamination is not supported by any field data. In the case of metals, natural attenuation does not occur. No methods are proposed to ensure that natural attenuation is occurring.

4. The RAP is based on data obtained from soil samples collected and analyzed in 1991-1992. As a result of 1998-1999 construction activities, large amounts of soil have been redistributed throughout the site. As such, the RAP should clearly state that because of the redistribution, the use of the sample results to distinguish contaminated from uncontaminated areas is scientifically unsound.

5. The limitations of each analytical method used should be specified. For example, the PID should be used for the detection of specific aromatic compounds. The RAP should clearly state that this method does not detect chlorinated solvents and metals. Detection limits should also be clearly documented as they may have a significant impact on the interpretation of the results. For example the Chlor-n-Soil PCB test kit has a detection limit of 50 ppm. However, MDEQ specified the PCB concentrations of 1.2 ppm for *Residential Direct Contact Criteria* and 9.9 ppm for *Industrial and Commercial Direct Contact Criteria,* both of which are much smaller than the detection limits of the test kit that was employed.

6. Since industrial buildings will remain on-site for reuse as both commercial properties and as a bed and breakfast, both future and current workers should be informed of potential hazards that would not be encountered at an uncontaminated site.

7. The RAP states that 6-12 inches of clean fill will be used as a protective layer against human contact with contaminated soil. The guidelines on which the use of 6-12 inches of fill is based should be noted. The community is concerned that this depth is not based on scientific evidence, and that 6 inches is not protective of the health of residents living on-site. The location of the soil cover should be shown on the site map (including planned depth).

8. The RAP gives the impression that the retention ponds are a part of the remediation effort. This is inconsistent with the methods by which the water on the site is presently handled. The RAP must clearly distinguish those actions that are important for the safety, health and welfare of the workers and residents located on the site, and those actions that are for aesthetic or tax purposes.

ADDITIONAL FINDINGS

1. Page 1, ¶ 3: The RAP states, "…subject property contains soil with varying concentrations of semivolatile organic compounds (SVOC) and metal contaminants."

This section of the RAP should be rewritten as "…subject property contains soil with varying concentrations of semivolatile organic compounds (SVOC), metal contaminants, volatile organic compounds (VOCs) and PCBs".

2. Page 1, ¶ 3: The RAP states, "Site-wide groundwater sampling events have failed to detect groundwater impact which would preclude a residential/commercial development."

   It is suggested that the RAP state that: Based on the data presently available, there appears to be no evidence that the groundwater under the Site has been impacted by the previously-operated industrial activity on-site.

3. Page 3, ¶ 1: While we assume that this statement is correct, the MDEQ should confirm that the site in not on any federal or state list.

4. Page 4, ¶ 3: The RAP reads, "subject property contains soil with varying exceedances of the Residential Direct Contact Cleanup Criteria…"

   The RAP should contain a table containing a description of the soil contaminants and show those that exceed Residential Direct Contact Cleanup Criteria. The text should refer to this table.

5. Page 4, ¶ 3: The RAP reads, "The most recent groundwater sampling event indicated no exceedences [sic] involving metals or organic compounds."

   The RAP should explain if the exceedances are based upon residential or industrial criteria. The RAP should also refer to a table containing a description of the groundwater contaminants and show those that exceed *Residential Direct Contact Cleanup Criteria* or *Industrial Contact Criteria*. It should be clear throughout the report what compounds are SVOCs, VOCs, metals, and other organics. A list should be provided with definitions consistent with those of the EPA.

6. Page 5, ¶ 2: The Suggested Format and Contents for a RAP, pursuant to Part 201 of Act 451, should include the following items
   Section 1.1: map of site
   Section 3.8: effectiveness of the monitoring plan
   Section 3.16: monitoring plans to demonstrate the effectiveness of the remedy.
   These items should be added to the RAP.

7. Page 7, ¶ 1: The RAP states, "In addition, monitoring and sampling activities conducted during the recent completed demolition and earth movement activities have provided additional assurance of the environmental quality of the site."

   This conclusion should be removed unless the results of recent monitoring and sampling activities are specifically documented and the data supports this conclusion. The RAP should contain all sampling and monitoring data. The "monitoring" efforts should be described in detail and results should be reported. To our knowledge no long-term monitoring has been accomplished, only isolated sampling events.

8. Page 8, ¶ 1: The RAP reports, "Oil contained in each of the three transformers was field tested for the presence of PCBs."

   The detection limits of the field test kit should be documented. The Chlor-n-Soil PCB test kit has a detection limit of 50 ppm. However, MDEQ specified the PCB concentrations of 1.2 ppm for Residential Direct Contact Criteria and 9.9 ppm for Industrial and Commercial Direct Contact Criteria, both of which are much smaller than the detection limits of the test kit that was employed.

9. Page 8, ¶ 2: The RAP states, "Oil-soaked soils recovered from the excavation were also tested and did not contain PCBs at concentrations exceeding 50 ppm."

   Were these oil soaked soils also tested for PAHs or BTEX? What are the detection limits of each of the analyses?

10. Page 8, ¶ 4: The RAP states, "The only PCBs detection [sic] on-site slightly exceeded the Residential Direct Contact Criterion."

"Slightly" should be removed. This report should be unambiguous. The use of adverbs such as slightly should be avoided.

11. Page 9, ¶ 3: The data pertaining to the soils surrounding the underground storage tanks should be provided. This data should be compared to the *Generic Residential Cleanup Criteria.*

12. Page 9, ¶ 4: The RAP reports, "Groundwater samples… failed to detect the presence of BTEX constituents."

    The concentrations of BTEX in soil samples collected during well construction should be reported. If the concentrations of BTEX in the groundwater were below detection limits, this should be reported as below detection limits (with the detection limits also reported).

13. Page 10, ¶ 1: "The underground vessel contained approximately 100-gallons of liquid which possessed olfactory evidence of contamination."

    The type of liquid should be documented in the RAP. What is meant by "olfactory evidence of contamination"? Of what did the tank smell? Soil samples surrounding the pressure vessel should have been required. Was the soil tested? If so, the results should be reported in the RAP.

14. Page 10, ¶ 3: "…the groundwater sample did not detect the presence of contaminants".

    The concentrations of lead and methylene chloride in soil samples collected around the pressure vessel should be reported. If the concentrations of lead and methylene chloride in the groundwater were below detection limits, these data should be reported as below detection limits (with detection limits also reported).

15. Page 11, ¶ 1: The drain pipe location, size (dimensions) should be provided and shown on the sample map.

16. Page 11, ¶ 2: The RAP states, "…[A] representative sample of the sediment inside the pipe was collected to determine the presence or absence of potential contaminants."

    This sentence is misleading, since only a limited set of analyses was accomplished. The absence of contamination can almost never be confirmed. One can only state that the concentrations of the analyses are below detection limits, which must be provided. The RAP states, "The sample was laboratory analyzed for the presence of VOC, SVOC, and PCBs." This sample of the sediment inside the pipe should also have been analyzed for metals, PAHs, and lead. If these analyses were not performed, an explanation should be provided. If they were performed, the results of these analyses should be reported. As stated previously, detection limits should also be provided.

17. Page 11, ¶ 3: Sample results for the four soil samples collected beneath the drainpipe should be provided as well as the location of these samples on the sample map. Identification numbers for these samples should also be provided. As previously stated, the RAP should not suggest the absence of any contaminants in the samples; rather it should simply state that the concentrations of these contaminants were below detection limits. These samples should also have been analyzed for PCBs and PAHs. If this was accomplished, the data should be presented.

18. Page 11, ¶ 3: "In evaluating this laboratory result, more than one-third of the site-wide lead samples were also found to exceed the Statewide Default Background Level. Furthermore, several of the site-wide lead detections were greater than the one from under the buried pipe. As a result, the soils underlying the pipe do not represent anomalous conditions compared to the rest of the site."

    These sentences should be completely removed from the RAP. The lead results should be documented with location of all the sample results.

19. Page 12, ¶ 1: "The excavated soil is currently being evaluated."

    The outstanding sample results should not be omitted from the RAP. All sample results should be presented in the RAP.

20. Page 12, ¶ 1: The volume or mass of excavated soil should be documented. Has a decision pertaining to disposal of this material been made? If so, this information should be presented in the final version of the RAP.

21. Page 12: The groundwater should be sampled around the recently discovered drain pipe, especially since phthalates have been detected and these compounds may be mobile.

22. Page 13: It is not clear how the authors of the RAP concluded that the presence of methylene chloride in the groundwater samples collected in 1992 was due to an analytical error. The laboratory must have had to analyze field blanks, and if so those samples should have also been positive for methylene chloride in the concentrations detected in the actual samples. If the blanks were not contaminated then there is no justification for this assumption. If field blanks were not analyzed, then the RAP should state this and explain why.

23. Page 14, ¶ 1: "The highest concentration observed was in LSMW92-115, which is an up-gradient monitoring well, implying the possible existence of an off-site source."

    The conclusion regarding an off-site source can not be made without further evidence. The site is surrounded by residential properties, and 1,1,1-trichloroethane is a common industrial degreaser, not a chemical likely to be released by homeowners.

24. Page 14, ¶ 2: The actual concentrations of SVOCs detected in groundwater samples should be provided. If the concentrations were all below detection limits then the detection limits should also be provided.

25. Page 14, ¶ 3: The RAP states only that the PCBs were detected. This statement should be clarified to indicate that PCBs have been detected in the soil at levels close to that of the Residential Direct Contact standards.

26. Page 14, ¶ 3: "PCBs are not likely to leach from the soils in appreciable concentrations, and they are strongly retarded in groundwater transport."

    This statement is misleading and should be removed or reworded. PCB transport of less chlorinated PCBs can occur as these chemicals are not as strongly sorbed to soil particles as the more highly chlorinated biphenyl compounds.

27. Page 15: The control measures presented in the RAP should also take into account future construction activities (Phase II) which may impact residents as well as workers. No engineering controls are documented in the RAP to protect the health and well being of residents that will be living on the site during the later phases of redevelopment of the property.

28. Page 16, ¶ 2: "In addition, the age of the facility and the permeable nature of both the foundry sands and the underlying native soils implies that any compound which would volatilize has done so and, as a result, this exposure pathway does not pose a continued risk."

    This statement is inconsistent with the fact that several of the new samples indicate the presence of volatile organic compounds, namely BTEX. If the above statement (from the RAP) were true then the presence of these volatile compounds would not have been detected during the recent sampling activities.

29. Page 17: The geomembrane properties should be listed and methods for future protection/maintenance of the membrane should be documented in the RAP.

30. Page 17, ¶ 2: The entire paragraph starting with "Site groundwater discharge to Lake Superior…" should be removed as this discussion is irrelevant to the site and possibly misleading.

31. Page 17, ¶ 4: Site-specific criteria should be listed and compared to the actual "maximum metal detections".

32. Page 17, ¶ 4: The concentrations of selenium exceeded the GSI criteria. Nevertheless, the RAP shows that no further action will be taken. What risk assessment model was used to show that no action could be deemed appropriate? Also see comment #10.

33. Page 18, ¶ 1: "No selenium was detected in the well when it was sampled a year later."

    The RAP should state that the concentration of selenium was below detection limits. The detection limits should be provided either in the main text or in the appendix.

34. Page 18, ¶ 2 The entire paragraph starting, "The metals with site-specific criterion are pH and…" should be removed because it is irrelevant to this specific site and possibly misleading.

35. Page 19, ¶ 1,2,3: The soil samples for which the concentrations of PAHs, arsenic, and PCBs exceeded applicable standards are presently located where on the site? From our understanding there has been a considerable amount of movement of geological material at the site. Were proper engineering controls taken to ensure that the contaminants have not been redistributed over the entire site?

36. Page 21, ¶ 1: "Please note that the referenced criteria assumes that the size of the property is 0.5 acres."

    Since this site is 14 acres, the *Particulate Soil Inhalation C*riteria are not applicable to this site and no comparisons using these criteria should be made. The RAP states that the risks due to the inhalation of contaminated soil particulate matter are best addressed using engineering controls; however, these engineering controls are not well-documented in the RAP.

37. Page 21, ¶ 2,3: To our knowledge, those buildings remaining on-site such as the building that will serve as a Bed and Breakfast Hotel (Building number unknown) and the building that will be converted into commercial properties (Building number unknown), have not been properly sampled to ensure that residents, employees and visitors will not be exposed to contaminants at levels that could cause excessive risk to human health and well being. These buildings, along with the soils underlying the properties, should be sampled. If necessary, a plan should be developed to minimize risks associated with any contamination that may be present.

38. Page 22, ¶ 1, line 7: "Most" should be removed. The statement that "chemicals are 'not likely to volatilize' under most soil conditions" is irrelevant. To our knowledge the site has not been sufficiently well-characterized so that one can ensure that the conditions for which this statement is true are applicable to this site.

39. Page 22, ¶ 3, line 1. "Most" should be removed from the text and replaced by a table listing all of the organic chemical analytes, the locations and dates of sampling events, the locations, dates and unique sample numbers for each exceedance, if there were any. The RAP should be specific with references to concentrations of organic chemicals detected.

40. Page 22, ¶ 2: What precautions are taken to ensure that those persons using nearby wells are protected? Should additional efforts be made to ensure that residents near the site discontinue use of well systems as a source of drinking water?

41. Page 22, ¶ 3: The word "substantially" should be removed since it is relative and ambiguous; is substantially one, two or ten orders of magnitude?

42. Page 23, ¶ 3: The RAP states, "A composite of the site foundry sand was analyzed by the Toxicity Characteristic Leaching Procedure (TCLP) method" and that "only pyrene was observed in the TCLP leachate in a concentration of 60 µg/L." TOSC questions whether the TCLP data should be compared to Residential and Industrial Drinking Water Criteria, which are determined as concentrations of total contaminant in the soil.

43. Page 24, ¶ 2: The concentration of chromium (three samples over criteria) in the soil was found to be ten times greater than the Soil *Criteria Protective of Residential and Commercial I Drinking Water*. This is of concern, especially if the chromium is present predominantly as the hexavalent form. Additionally, no mention is made of the number of samples analyzed. The RAP simply states that the concentrations observed in three samples exceeded the stated criteria. It is our understanding that the MDEQ *Residential Drinking Water Criteria* for copper and zinc are developed as total metal concentrations, not as TCLP concentrations. As such, the TCLP data should not be compared to the stated criteria.

44. Page 24, ¶ 2: Lead has been found in an unreported number of soil samples at a concentration 10 times greater than the *Soil Criteria Protective of Residential and Commercial 1 Drinking Water*. If lead is found to be ubiquitous across the site (as is indicated by the statement that "lead, detected in most soil samples..."), this is of concern. The RAP also states that lead was detected in one groundwater sample at a concentration of 0.001 mg/L. While the RAP concludes that this indicates that lead is not mobile in the on-site soils, no evidence has been presented to suggest this is true. How many samples were analyzed? What type of lead is present in the soils? Are the soil conditions such that leaching of lead would not occur? Finally, although residences surrounding the site utilize municipal water, it is our understanding that several property owners continue to use groundwater wells as their source of drinking water.

45. Page 24, ¶ 2: Mercury has been found in one sample at a concentration almost 10 times greater than the *Soil Criteria Protective of Residential and Commercial 1 Drinking Water*. This could be of concern if a significant fraction of the total number of samples (which is unknown) were found to have concentrations of mercury that exceed the stated criteria. With respect to all metal analyses, were the exceedances all obtained in soils from one (or more) specific location(s)? If this is the case, what is the present location of the soils? Has any attempt been made to contain this soil?

46. Page 24, ¶ 3: The RAP states that PCBs are "not likely to leach" under most soil conditions. PCBs are a class of chemicals that have very different properties depending upon the degree of chlorination and location of the chlorine atoms. Contrary to what is implied in the text, the lower molecular weight PCBs may leach through the soils.

47. Page 25, ¶ 1, line 7: The term "significant" should be removed unless the proper statistical analyses have been conducted allowing one to show a statistical difference at a previously stated confidence interval.

48. Prior to the installation of a proper soil cover, efforts should be taken to reduce the amount of soil tracked off of the site (via people and trucks). Details of how this is to be accomplished should be required in the Health and Safety Plan.

49. Page 26, ¶ 4: The RAP states, "[S]pecifically, two selenium samples from one well (analytical values of 7 and 6 ug/l) exceeded the GSI Criteria of 5 ug/l."

    The confidence levels of the samples should be given, for example: 5 μg/l $\pm$ x. Without that information, one cannot state if the differences are statistically valid. Is the information that selenium was not detected in this well when it was sampled a year later sufficient to imply that selenium is no longer present? With one sample, TOSC suggests not.

50. Page 27, ¶ 2: The RAP states, "[T]he contamination source materials detected on-site are not in close proximity to surface water."

    In this sentence, the terminology "close proximity" should be removed and the actual distance should be stated.

51. Page 27, ¶ 3, line 1: The word "course" should be replaced with "coarse."

52. Page 27, ¶ 3: TOSC suggests that due to the level to which some of the soils are contaminated and the lack of knowledge relating to the exact present location of these soils, a silt fence should be used to help prevent erosion and the transport of contaminated soils off-site by the surface water runoff.

53. Page 27, ¶ 4: The RAP states, "[T]here is no evidence that surface water sediment is causing a hazard to aquatic flora, fauna, the food chain or aesthetics."

This statement should be removed unless actual sampling has been done to support this conclusion and the data is clearly documented in the RAP.

54. Page 28, ¶2: For clarity, it is recommended that the proper use of scientific notation be used through the document, including in tables. For example, on this page 1.3 x 10^{-6} should be used instead of 1.3E-6.
55.
55. Page 28, ¶ 3: The RAP states that "Given the nature of the soil contaminants on-site (SVOC and metals)…"

    The parenthetic phrase should include VOCs since their presence has also been detected in on-site soils.

56. Page 28, ¶ 4: Under Ecological and Aesthetic Impacts, the document should note that even soils that are in compliance with appropriate health-based, chemical-specific criteria may have adverse aesthetic impacts. Given the levels of contamination in the soils, the RAP should present control measures that will be taken during construction to prevent any negative ecological and aesthetic impact due to the movement of soils or water off-site.

57. Page 28, ¶ 4: The sentence starting, "[H]owever, because of the sensitivity" should be reworded for improved clarity.

58. Page 30, ¶ 3: The RAP states, "Given the magnitude and physiochemical properties of the on-site contaminants, the selected criteria which has been used to evaluate the appropriateness and applicability of engineering controls is the most conservative established by MDEQ and is consistent with the intended residential re-use of the subject property."

    This statement is actually an opinion and should, therefore, be removed or qualified as such. It should refer to a table of sample results as well as a table that highlights the pertinent physiochemical properties such as the density, solubility, and half-life in soil and in water that allow the authors of the RAP to make this conclusion.

59. Page 30, ¶ 5: Given the amount of earth moved around at the site during construction activities, it is no longer possible to identify the location of the contaminated soil at the site. The methods by which the developer proposes to identify the contaminant source, type or location during the course of property redevelopment, as is described in the RAP, should be stated.

60. Page 30, ¶ 5: A proper contingency plan should be developed to protect the workers and on-site residents from chemical-hazard exposure if contaminants are encountered during the phased development.

61. Page 31, ¶ 1: The RAP states, "[A]s a result, the detected chemical constituents in the site soil, including various metal and SVOC constituents are relatively immobile."

The phase "relatively immobile" is unclear and unsupported. As such, it should be deleted from the report or substantiated with the proper scientific analysis and peer-reviewed literature.

62. Page 31: There is some confusion as to the purpose of the geomembrane liner. Is the geomembrane liner used to provide a physical barrier, thereby preventing the migration of contaminants to the groundwater? Or is the geomembrane simply a liner to prevent the transport of water from the ponds? If the former is true, then the RAP should address the basis of the decision to use the geomembrane liner and continued monitoring in perpetuity versus soil removal or other choices of remediation. The costs of excavation, treatment and/or disposal of contaminated soils should be compared to the costs of the geomembrane, replacement of the geomembrane after 30 years (which is the typical life of a geomembrane) and all sampling and analysis in perpetuity. If the latter is the case, the purpose of the ponds should be very clearly stated.

63. Page 31, ¶ 3 The RAP documents that "the engineering controls and land-use restrictions will be implemented ...to prevent exacerbation of existing contamination". However, this assurance was not adhered to during recent construction since the contaminated on-site soil has been redistributed across the site (preventing anyone from knowing the exact location(s) of the contaminated soils. If the ponds are necessary to prevent the migration of contaminants into groundwater and off-site, as is implied in the RAP, then why were engineering controls not taken during construction to also prevent the migration of contaminants from the site?

64. Page 32, ¶ 1: The RAP should state that those buildings remaining on-site were (or will be) properly inspected and found suitable for intended use (Bed and Breakfast). The exact procedures to be used during inspection should be described in detail.

65. Page 32, ¶ 3: The paragraph that begins, "[B]ased on the proposed residential" should be removed since the consultant has no authority to ensure the truth of this statement, especially in perpetuity. Additional hazardous substances such as fertilizers, weed-control chemicals, and pesticides and petroleum products used for the maintenance of snow-removal and lawn-mowing equipment will be, most likely, kept on-site.

66. Page 33, ¶ 2: Photoionization detectors (PID) can only detect chemicals that are capable of being ionized by the ultraviolet radiation source. These detectors are commonly used to analyze for aromatic chemicals such as benzene, toluene and xylenes. The PID is not capable of detecting the presence of chlorinated solvents such as trichloroethylene or metals. More comprehensive monitoring is necessary due to the nature of the contaminants previously found at the site.

67. Page 32, ¶ 2: The statement that the area will be "monitored" is vague. The Health and Safety Plan should include fugitive dust monitoring, especially for respirable particulates, i.e., those having a diameter of 2.5 μm or less.

68. Page 33, ¶ 2: Any soil that is stockpiled at the site should be placed on plastic sheeting and covered.

69. Page 34, ¶ 1: To determine the proper handling methods for excavated soil, a complete analysis (based upon previous observations) should be performed.

70. Page 35, ¶ 1: The engineering controls listed in the RAP include a fan, proper personal protection, and dewatering activities. These are minimal. More extensive engineering controls should be implemented and clearly documented.

71. Page 35, ¶ 3: The RAP should cite the appropriate building codes for the wall and foundation construction.

72. Page 35, ¶ 4: The RAP states, "[A]ll workers involved with subsurface or foundation construction or renovation activities at the subject property will be educated as to the location and type of hazardous substances present on-site."

    This is not possible due to the extent to which on-site soils have been moved around the site. For worker protection, the entire site should be assumed to be contaminated at the highest levels detected during prior sampling events.

73. Page 36, ¶ 1: "The retention basins will have the capacity to retain 100% of a 25-year storm event."

    A summary of the hydrological calculations used to determine the volume of the ponds should be provided in an Appendix. Do the calculations take into account snow melt? Are there contingency plans if the 25-year storm event occurs in the spring as the large accumulation (maybe greater than 6 feet) of snow accumulation melts.

74. Page 36, ¶ 1: The RAP should clearly document who has responsibility for maintaining and monitoring the storm water retention ponds.

75. Page 36, ¶ 4: The location of the barriers should be shown with the site map.

76. Page 37, ¶ 2: The RAP states, "[T]he vegetative cover will utilize 6-12 inches of topsoil material."

    On what guidelines is the 6-12 inches based? There is a serious concern among the citizens that the choice of these depths is not based on any site-specific, scientific analysis, and therefore may not be protective of the health of residents living on-site. The location of the soil cover should be shown on the site map (including planned depth).

77. Page 37, ¶ 1: The installation of the roadways and foundations will require that soil will be removed."

    What is the plan for this disposal of this soil? Will the soil be tested prior to disposal? If so, for what contaminants?

78. Page 37: Drawings should be provided in the RAP to show the location and concentrations of on-site contaminants, and proposed redevelopment on the site.

79. Page 37: The RAP should clearly state who has responsibility for monitoring the integrity of the ground cover, in perpetuity? It should also outline how the responsible party or parties will distinguish between the protective cover and native or contaminated soil as to determine when additional fill may need to be added to replace that lost to erosion, mechanical forces or other phenomena. The RAP should also state the methods that will be used to monitor the integrity of the site.

80. Page 37: Will the condo association be equipped to develop the appropriate monitoring plan or to continue this plan forever?

81. Page 38, ¶ 4: The RAP states, "[P]rior to construction, maintenance and/or renovation activities, an evaluation of potential exposure and/or exacerbation of soil impact will be conducted."

    This statement is misleading. Due to the large amount of earth moved around the site, there is currently insufficient analytical information to evaluate the potential exposures or exacerbation of soil impact.

82. Page 38, ¶ 3: "Lakeshore Park Place, L.L.C., will provide detailed information regarding possible contaminant exposure; the selection and use of personal protective equipment; material handling practices; site control; work zone and atmospheric monitoring; and contingency plans and emergency procedures which may be required during the course of the project."

    It is unclear how, without knowledge of the location and concentrations of contaminated soils, a proper health and safety plan could be developed and implemented.

83. Page 39, ¶ 2: "Given the types of contaminants historically detected at the subject property, it is likely that excavation activities will be monitored using appropriate qualitative and quantitative field measurements."

    Remove "it is likely that." The impact of excavation activities needs to be monitored.

84. Page 39: While this section outlines the protection given to the site workers, there appears to be no efforts proposed to ensure the protection of the residents who will live at the site during the additional phases of construction. Clearly the health and well being of these people should also be protected. Specific precautions necessary to protect the health and safety of the general public should be included in the RAP.

85. Page 39, ¶ 1: "Personnel who may encounter impacted soil will wear appropriate personal protective equipment."

The term "impacted soil" should be defined. The measures that will be taken to minimize the exposure of workers and residents to "impacted soil" should be clearly documented.

86. Page 39 ¶ 3: The RAP states, "[W]ater will be used as the primary fugitive dust control mechanism."

    The measures that will be taken to ensure that this water is collected and properly disposed need to be documented in the RAP.

87. Page 41, ¶ 1: Measures that will be taken to protect the health and well being of residents of the site during additional phases of construction and landscaping should be documented in the RAP.

88. Page 41, ¶ 1: The due care obligations outlined in the BEA should be included in the RAP.

89. Page 42, ¶ 2: The RAP states, "[N]atural attenuation will occur over time, effectively minimizing, mitigating or removing the detected environmental contamination. Therefore, the selected remedy is protective of the public health, safety, welfare and the environment and the natural resources."

    Metals do not naturally attenuate. Depending on the conditions, PCBs and PAHs may or may not attenuate. This statement needs to be removed or clarified and substantiated with actual scientific (peer-reviewed) literature. The use of monitored natural attenuation as a specific treatment method is not a "do-nothing" approach. It involves modeling, sampling, analysis, active monitoring and evaluation of contaminant reduction rates to determine whether it is a feasible method. Such activities should be described in the RAP.

90. Page 43, ¶ 2: The RAP states, "[M]onitoring will assure that there are no unauthorized disturbances to the site surface."

    Monitoring needs to be clearly defined as to the methods of monitoring, the schedule for routine monitoring and who has oversight of monitoring activities.

91. Page 43, ¶5: The RAP states, "[O]peration and maintenance at this site will consist of enforcing the provisions of the BEA and the Condominium bylaws of Lakeshore Park Place."

    The provisions of the BEA should be included. The specific section(s) of the Condominium bylaws should be cited.

92. Page 44: The RAP states, "[T]he hazardous substances are not mobile in the soil and groundwater is not impacted, the implementation of an active remedial treatment system/process is not necessary." However, some VOCs found in the soil samples are highly volatile and are mobile.

93. Page 44: A contingency plan should include replacement of the geomembrane, handling of soil disturbances, and a plan of action if additional contamination is found at the site.

94. Page 47: A Permanent Marker should be posted on site and visible to residents (preferably placed in a public location). The purpose of the permanent marker is to ensure that health and well being of residents, visitors, and workers through the general knowledge that the site contains contamination greater than the *Residential Closure Criteria* and has only met the limited residential closure requirements.

95. Page 47: Since industrial buildings will remain on-site for reuse as both commercial operations and a bed and breakfast, a plan to inform workers of potential chemical hazards should be documented in the RAP. The plan should be consistent with Federal and State Right-to-Know legislation.

The TOSC program promotes effective citizen involvement in site cleanup projects by providing independent technical expertise to communities. Funded under a U.S. EPA grant, TOSC is housed in the Great Lakes and Mid-Atlantic Center (GLMAC) for Hazardous Substance Research. The GLMAC comprises three leading research universities: The University of Michigan, Michigan State University and Howard University. For more information, contact Kirk Riley at (800) 490-3890 or send e-mail to tosc@egr.msu.edu