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NSTC GREAT LAKES, IL
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LETTER AND COMMENTS FROM ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
REGARDING ENGINEERING EVALUATION/COST ANALYSIS FORRESTAL LANDFILL NS
GREAT LAKES IL
8/22/2003
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY



ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

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August 22, 2003

Department of the Navy
EFA Midwest
c/o J. Blayne Kirsch
Environmental Department
201 Decatur Avenue
Great Lakes, Illinois 60088-5600

Re: Engineering Evaluation / Cost Analysis
(EE/CA) Forrestal Landfill
Great Lakes, Illinois

0971255048 – Lake County
Naval Training Center Great Lakes
Superfund/Technical Reports

Dear Mr. Kirsch:

The Illinois Environmental Protection Agency ("Illinois EPA" or "Agency") is in receipt of the Engineering Evaluation / Cost Analysis (EE/CA), Forrestal Landfill, Great Lakes, Illinois, which was dated July 23, 2003 and received on July 28, 2003. Illinois EPA has reviewed this submittal and has the following comments:

- 1) **Executive Summary** – The capping alternative should be stated as being a presumptive remedy of containment as listed in the USEPA Presumptive Remedy for CERCLA Municipal Landfill Sites Directive.
- 2) **Executive Summary, Number 1** – According to 35 Illinois Administrative Code (IAC) Part 218.310, No person shall cause or allow the discharge of more than 3.6 kg/hr (8 lbs/hr) of organic material into the atmosphere from any emission unit, except as provided in Sections 218.302, 218.303, 218.304 of this Part and the following exception: If no odor nuisance exists the limitation of this Subpart shall apply only to photochemically reactive material. The gas vent for this landfill will need to meet this standard or else some type of treatment of the gas may be necessary, such as destruction using a flare.
- 3) **Executive Summary, Number 2** – The hydraulic conductivity value for the Low Permeability Layer should be stated here. That value should be 1×10^{-7} cm/s or lower to comply with the Illinois Landfill Closure Regulations that are ARAR at this site. A list of those parts of the Illinois Administrative Code (IAC) that Illinois EPA considers ARAR

for this site follows:

- 35 IAC 811.110(g) Deed Notification
- 35 IAC 811.111(c) Post-Closure Maintenance and Frequency of Inspection
- 35 IAC 811.111(d) Planned Uses of Property
- 35 IAC 811.311(a) and (b) Landfill Gas Management System
- 35 IAC 811.314(a) and (b) Final Cover System
- 35 IAC 811.314(c)(1) and (3) Final Protective Layer
- 35 IAC 811.318 Groundwater Monitoring Systems
- 35 IAC 811.319 Groundwater Monitoring Programs
- 35 IAC 811.320 Groundwater Quality Standards
- 35 IAC 811.324 Corrective Action Measures

- 4) **Section 2.1, Background** – This section does not give any description of the extent of the landfill, such as the depth of the waste material or the depth to native material beneath the landfill. Please add this information.
- 5) **Section 2.3, Nature and Extent of Landfill Waste** – As above, this section does not give details on the actual depth of the landfill. This information needs to be included.
- 6) **Section 2.3, Nature and Extent of Landfill Waste** – This section should also identify any targets potentially affected by the site. Please add this information.
- 7) **Section 2.4, Analytical Data** – This section states that the underlying soil, sediment, and groundwater at this site will be addressed under a separate site-wide Remedial Investigation/Feasibility Study program in future years. As this action will somewhat reduce the mobility of the underlying soil and sediment, a delay in their investigation will be acceptable. However, the groundwater mobility will not be reduced and monitoring of the groundwater at this site is required under the landfill closure regulations listed as ARAR in comment number 2 above. Therefore, the groundwater investigation should not be put off. A determination of whether the groundwater is currently affected should be performed as part of this action.
- 8) **Section 2.4.1, Landfill Gas Data and Evaluation** – The chemical formula for methane should be written out as CH₄, rather than CH⁴, as was listed herein.
- 9) **Section 2.5, Streamlined Risk Evaluation** – This section should specify the possible threats/risks to human health or the environment, as well as, the uncertainties involved, in order to justify taking the proposed action. The evaluation should identify the contaminants of concern, the affected media, exposure pathways, the contaminant concentrations, and the toxicity associated with those chemicals. A Conceptual Site

Model should be prepared, included, and discussed within the document as well.

- 10) **Section 3.0, Identification of Remedial Action Objectives** – The bulleted items should also state that this remedial action will provide reduced mobility of contaminants within the landfill due to the reduction of infiltration through the cap.
- 11) **Section 3.2, Determination of Remedial Action Scope** – In number 3 it is stated that areas of bushes and shrubs will be planted on the top surface of the landfill and trees will be planted near the proposed new playground and recreational field. In order to not disturb or compromise the integrity of the cap, all bushes and shrubs should be of the shallow rooted variety and the trees should not be located on the cap at all, but outside the cap boundary.
- 12) **Section 3.5** – The first sentence's verb should be in the plural form.
- 13) **Section 3.5.3** – The action-specific ARARs for the capping alternative are listed in comment number 2 above. These should be mentioned and discussed here.
- 14) **Section 4.1.2, State Acceptance** – The State does not consider the current cap to be compliant with Illinois' landfill closure regulations. Therefore, the State does not believe the No Action alternative is protective of human health or the environment.
- 15) **Section 4.2** – This alternative should also include Operation and Maintenance (O&M) of the current cap and long-term monitoring associated with the gas and leachate being produced within the landfill.
- 16) **Section 4.2.2, Administrative Feasibility** – This site would need to be added to the Land Use Control Memorandum of Agreement (LUC MOA) between the Navy and Illinois EPA. As part of that agreement and per Illinois regulations, regularly scheduled monitoring and reporting of all land use controls is required.
- 17) **Section 4.2.2, State Acceptance** – The State does not consider the current cap to be compliant with Illinois' landfill closure regulations. Therefore, the State does not believe the Institutional Controls alternative is protective of human health or the environment.
- 18) **Section 4.3** – Why is this alternative not called a landfill cap? That is what it is.
- 19) **Section 4.3** – This section should present the specifics of the engineered cap in more detail. It should provide the added depth of the low-permeability clay along with the total depth of the final clay cover over the landfill waste.

- 20) **Section 4.3.1** – The first sentence should be followed by a sentence stating that reducing the amount of infiltration entering the waste mass would therefore reduce the amount of leachate generated and limit the possible mobility of any contaminants within the landfill.
- 21) **Section 4.3.1, Compliance with ARARs** – As stated previously, there are action-specific ARARs for the capping alternative. Therefore, the first sentence is incorrect. The regulatory requirements, mentioned in the last sentence, which would be the landfill closure requirements, are not applicable, but they are relevant and appropriate for this site. See comment number two for a list of those regulations that are considered relevant and appropriate by the State.
- 22) **Section 4.3.1, Reduction of Toxicity, Mobility, or Volume through Treatment** – This alternative would reduce the mobility of the waste and any contaminants within the waste by limiting the amount of water infiltrating the surface of the landfill. The cap would also be considered a form of containment, contrary to what is stated in the last sentence. Additionally, as per comment number 7 above, the effects of the landfill on the local groundwater will need to be evaluated to determine if there are any groundwater contamination issues.
- 23) **Section 4.3.2** – It should also be mentioned in this section that the landfill cap is a presumptive remedy of containment as listed in the USEPA Presumptive Remedy for CERCLA Municipal Landfill Sites Directive.
- 24) **Section 4.3.2, Administrative Feasibility** – This site would need to be added to the LUC MOA between the Navy and Illinois EPA. As part of that agreement, regularly scheduled monitoring and reporting of all land use controls is required.
- 25) **Section 4.3.2, State Acceptance** – Provided the cap is designed and constructed in compliance with the specified ARARs and the site is added to the LUC MOA, Illinois EPA would be able to concur with a choice to implement this alternative.
- 26) **Section 4.4** – The estimated total volume of waste to be removed is not given in the text. That estimated waste volume should be reported in this section.
- 27) **Section 4.4.1, Reduction of Toxicity, Mobility, or Volume through Treatment** – The last sentence should state that any possible groundwater contamination would be addressed along with the removal action and any additional remedial action to address those groundwater issues would follow as well.
- 28) **Section 4.4.2, State Acceptance** – Provided the removal and disposal are performed in compliance with the appropriate Illinois regulations; Illinois EPA would be able to concur

with a choice to implement this alternative.

- 29) **Section 5.1.2** – Alternatives 1 and 2 would also not comply with Illinois Landfill Closure Regulations (action-specific). Alternative 3 would comply with those regulations.
- 30) **Section 5.1.4** – Alternative 3 would reduce the mobility of the source material due to the reason listed.
- 31) **Section 5.1.4** – Alternative 4 would reduce the volume on-site, but would not reduce the volume, in general, as it would only be relocated.
- 32) **Section 5.2.2** – As mentioned previously, there would be additional administrative requirements for Alternatives 2 and 3 due to adding the site to the LUC MOA between the Navy and Illinois EPA. As part of that agreement, regularly scheduled monitoring and reporting of all land use controls would be required.
- 33) **Section 6.0** - In number 3 it is stated that areas of bushes and shrubs will be planted on the top surface of the landfill and trees will be planted near the proposed new playground and recreational field. In order to not disturb or compromise the integrity of the cap, all bushes and shrubs should be of the shallow rooted variety and the trees should not be located on the cap at all, but outside the cap boundary.
- 34) **Table 5-1** – This table will need to be updated according to the comments above regarding ARARs, etc...

If you have any questions regarding this correspondence, you may contact me at (217) 557-8155 or via electronic mail at Brian.Conrath@epa.state.il.us.

Sincerely,

Brian A. Conrath

Brian A. Conrath
Remedial Project Manager
Federal Facilities Unit
Federal Site Remediation Section
Bureau of Land

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cc: Owen Thompson, USEPA (HSRL-5J)

RESPONSES TO IEPA COMMENTS

(1) Executive Summary – The capping alternative should be stated as being a presumptive remedy of containment as listed in the USEPA Presumptive Remedy for CERCLA Municipal Landfill Sites Directive.

RESPONSE: The final EE/CA will state that the capping alternative, the selected alternative for implementation, is a presumptive remedy for containment consistent with the USEPA Presumptive Remedy for CERCLA Municipal Landfill Sites Directive.

(2) Executive Summary, Number 1 – According to 35 Illinois Administrative Code (IAC) Part 218.310, No person shall cause or allow the discharge of more than 3.6 kg/hr (8 lbs/hr) of organic material into the atmosphere from any emission unit, except as provided in Sections 218.302, 218.303, 218.304 of this Part and the following exception: If no odor nuisance exists the limitation of this Subpart shall apply only to photochemically reactive material. The gas vent for this landfill will need to meet this standard or else some type of treatment of the gas may be necessary, such as destruction using a flare.

RESPONSE: The emissions of landfill gas from the proposed vent will certainly be well below the 8 lbs./hr. threshold value. From the more than 20 Geoprobe holes which were placed through the existing cap and from the 3 piezometers installed in the waste mass for the purpose of leachate sampling, there is no evidence of landfill gas under pressure. No odor issues currently exist with the facility either. The vent as proposed will comply with the emission standard.

(3) Executive Summary, Number 2 – The hydraulic conductivity value for the Low Permeability Layer should be stated here. That value should be 1×10^{-7} cm/s or lower to comply with the Illinois Landfill Closure Regulations that are ARAR at this site. A list of those parts of the Illinois Administrative Code (IAC) that Illinois EPA considers ARAR for this site follows:

- 35 IAC 811.110(g) Deed Notification**
- 35 IAC 811.111(c) Post-Closure Maintenance and Frequency of Inspection**
- 35 IAC 811.111(d) Planned Uses of Property**
- 35 IAC 811.311(a) and (b) Landfill Gas Management System**
- 35 IAC 811.314(a) and (b) Final Cover System**
- 35 IAC 811.318 Groundwater Monitoring Systems**
- 35 IAC 811.319 Groundwater Monitoring Programs**
- 35 IAC 811.320 Groundwater Quality Standards**
- 35 IAC 811.324 Corrective Action Measures**

RESPONSE: The project plans and specifications for the design and construction of the proposed landfill cap specify a minimum permeability requirement of 1×10^{-7} cm./sec. for

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the additional cap material to be placed. This will be specifically stated in the final EE/CA document. The existing soil cap on the landfill was sampled and tested for permeability, and found to be in the range of 1×10^{-7} cm./sec. to 1×10^{-8} cm./sec. These test results are included in Appendix C of the EE/CA.

The proposed landfill cap, consisting of the existing cap plus 2 feet of additional low permeability soil plus topsoil and vegetation, will provide a minimum total of 3 feet of low permeability soil plus vegetative layer above the waste. This proposed cap will meet the requirements of IAC 807.502 (a) and (b) and will be protective of human health and the environment as described therein.

Other elements of IAC Sec. 811 as noted above will be treated as applicable and relevant and implemented as they can be applied to this facility and as noted in additional responses below.

(4) Section 2.1, Background – This section does not give any description of the extent of the landfill, such as the depth of the waste material or the depth to native material beneath the landfill. Please add this information.

RESPONSE: The extent of the landfill waste was investigated by TolTest, Inc. in Sept. 2000. The delineation study is included in Appendix G of the EE/CA. The lateral extent of waste is clearly identified by this study. The boundary of the waste limits is also shown on Figure 2-1 in the EE/CA.

The depth of waste is inferred to be approximately 12 feet as described in the TolTest report. Additionally, soil borings were performed by Clayton Group Services in December, 2002 for the purpose of installing piezometers for leachate sampling. These borings terminated at approximately 14 feet below grade and were still in waste material. Therefore, the actual depth of the waste is unconfirmed, but believed to be approximately 15 feet below grade. The soil boring logs are included in Appendix A of the EE/CA. Borings or Geoprobos will be performed through the waste when the groundwater monitoring system is installed to positively identify the base elevation of the waste body.

(5) Section 2.3, Nature and Extent of Landfill Waste – As above, this section does not give details on the actual depth of the landfill. This information needs to be included.

RESPONSE: As noted in Response to (4) above.

(6) Section 2.3, Nature and Extent of Landfill Waste – This section should also identify any targets potentially affected by the site. Please add this information.

RESPONSE: Residential family housing (no basements) units are located immediately north of the landfill. Skokie Creek is immediately east of the landfill. Additional family

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housing units are located opposite the landfill east of Skokie Creek. A description of these potential receptors will be included in the final EE/CA.

(7) Section 2.4, Analytical Data – This section states that the underlying soil, sediment, and groundwater at this site will be addressed under a separate site-wide Remedial Investigation/Feasibility Study program in future years. As this action will somewhat reduce the mobility of the underlying soil and sediment, a delay in their investigation will be acceptable. However, the groundwater mobility will not be reduced and monitoring of the groundwater at this site is required under the landfill closure regulations listed as ARAR in comment number 2 above. Therefore, the groundwater investigation should not be put off. A determination of whether the groundwater is currently affected should be performed as part of this action.

RESPONSE: A groundwater monitoring plan, including proposed well locations and construction details, parameters to be sampled and analyzed for, and sampling schedule, will be included in the final EE/CA. The program will provide for upgradient and downgradient monitoring of groundwater. It is proposed that sampling will be performed quarterly for the first year and annually thereafter for an additional four years. The wells will be installed after completion of the landfill cap.

(8) Section 2.4.1, Landfill Gas Data and Evaluation – The chemical formula for methane should be written out as CH₄, rather than CH⁴, as was listed herein.

RESPONSE: This change will be made to the final EE/CA.

(9) Section 2.5, Streamlined Risk Evaluation – This section should specify the possible threats/risks to human health or the environment, as well as, the uncertainties involved, in order to justify taking the proposed action. The evaluation should identify the contaminants of concern, the affected media, exposure pathways, the contaminant concentrations, and the toxicity associated with those chemicals. A Conceptual Site Model should be prepared, included, and discussed within the document as well.

RESPONSE: A table which shows the pathways, COCs, and receptors for surface water, soil, and groundwater, will be prepared and included in the final EE/CA. COCs will be based on leachate analysis, which is included in Appendix B of the EE/CA.

(10) Section 3.0, Identification of Remedial Action Objectives – The bulleted items should also state that this remedial action will provide reduced mobility of contaminants within the landfill due to the reduction of infiltration through the cap.

RESPONSE: This change will be incorporated into the final EE/CA.

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(11) Section 3.2, Determination of Remedial Action Scope – In number 3 it is stated that areas of bushes and shrubs will be planted on the top surface of the landfill and trees will be planted near the proposed new playground and recreational field. In order to not disturb or compromise the integrity of the cap, all bushes and shrubs should be of the shallow rooted variety and the trees should not be located on the cap at all, but outside the cap boundary.

RESPONSE: Data will be included in the final EE/CA demonstrating that any plant materials used on the cap will have shallow (typically 3 feet or less) root zones. Trees on the cap will be deleted from the revegetation plan.

(12) Section 3.5 – The first sentence's verb should be in the plural form.

RESPONSE: This change will be made in the final EE/CA.

(13) Section 3.5.3 – The action-specific ARARs for the capping alternative are listed in comment number 2 above. These should be mentioned and discussed here.

RESPONSE: Reference to the applicable ARARS, as listed in IEPA comment #2, will be made in the final EE/CA. The capping alternative will be a 3 foot thick low permeability (1×10^{-7} cm/sec.) clay layer overlain by 6 inches of topsoil and vegetation.

(14) Section 4.1.2, State Acceptance – The State does not consider the current cap to be compliant with Illinois' landfill closure regulations. Therefore, the State does not believe the No Action alternative is protective of human health or the environment.

RESPONSE: This comment will be noted in the final EE/CA.

(15) Section 4.2 – This alternative should also include Operation and Maintenance (O&M) of the current cap and long-term monitoring associated with the gas and leachate being produced within the landfill.

RESPONSE: A description of the O & M activities required will be included in the final EE/CA. They will basically consist of quarterly monitoring and inspection of the cap and the gas venting system components.

(16) Section 4.2.2, Administrative Feasibility – This site would need to be added to the Land Use Control Memorandum of Agreement (LUC MOA) between the Navy and Illinois EPA. As part of that agreement and per Illinois regulations, regularly scheduled monitoring and reporting of all land use controls is required.

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RESPONSE: *The final EE/CA will state that the Forrestal site will be added to the Land Use Control Memorandum of Agreement between the US Navy and the IEPA, and that future monitoring and reporting will occur per the requirements of that agreement and applicable Illinois regulations.*

(17) Section 4.2.2, State Acceptance – The State does not consider the current cap to be compliant with Illinois’ landfill closure regulations. Therefore, the State does not believe the Institutional Controls alternative is protective of human health or the environment.

RESPONSE: *This comment will be noted in the final EE/CA.*

(18) Section 4.3 – Why is this alternative not called a landfill cap? That is what it is.

RESPONSE: *The alternative will be changed to describe it as a landfill cap.*

(19) Section 4.3 – This section should present the specifics of the engineered cap in more detail. It should provide the added depth of the low-permeability clay along with the total depth of the final clay cover over the landfill waste.

RESPONSE: *The specifics of the cap configuration have been described in previous comment responses. They will be included in Sec. 4.3 of the final EE/CA.*

(20) Section 4.3.1 – The first sentence should be followed by a sentence stating that reducing the amount of infiltration entering the waste mass would therefore reduce the amount of leachate generated and limit the possible mobility of any contaminants within the landfill.

RESPONSE: *The additional language describing the net effect of the reduced infiltration being a decrease in leachate generated and therefore in reduced mobility of contaminants transported into groundwater or surface water will be incorporated in the final EE/CA.*

(21) Section 4.3.1, Compliance with ARARs – As stated previously, there are action-specific ARARs for the capping alternative. Therefore, the first sentence is incorrect. The regulatory requirements, mentioned in the last sentence, which would be the landfill closure requirements, are not applicable, but they are relevant and appropriate for this site. See comment number two for a list of those regulations that are considered relevant and appropriate by the State.

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RESPONSE: *Reference will be made to the applicable ARARs as listed in IEPA comment #2. Language will be included in Sec. 4.3.1 as to how this alternative addresses these listed ARARs in the final EE/CA.*

(22) Section 4.3.1, Reduction of Toxicity, Mobility, or Volume through Treatment – This alternative would reduce the mobility of the waste and any contaminants within the waste by limiting the amount of water infiltrating the surface of the landfill. The cap would also be considered a form of containment, contrary to what is stated in the last sentence. Additionally, as per comment number 7 above, the effects of the landfill on the local groundwater will need to be evaluated to determine if there are any groundwater contamination issues.

RESPONSE: *This section will be revised to include a description of reduced mobility and of the containment provided by the capping alternative. Effects on groundwater are presently unknown pending the installation and sampling of monitoring wells. Based on the contaminants present in the leachate (Appendix B), impacts to groundwater are anticipated to be negligible. Actual groundwater quality issues will be addressed following the implementation of the monitoring program as described in the response to comment #7 above.*

(23) Section 4.3.2 – It should also be mentioned in this section that the landfill cap is a presumptive remedy of containment as listed in the USEPA Presumptive Remedy for CERCLA Municipal Landfill Sites Directive.

RESPONSE: *The presumptive remedy will be noted in this section of the final EE/CA.*

(24) Section 4.3.2, Administrative Feasibility – This site would need to be added to the LUC MOA between the Navy and the Illinois EPA. As part of that agreement, regularly scheduled monitoring and reporting of all land use controls is required.

RESPONSE: *See response to comment #22 above.*

(25) Section 4.3.2, State Acceptance – Provided the cap is designed and constructed in compliance with the specified ARARs and the site is added to the LUC MOA, Illinois EPA would be able to concur with a choice to implement this alternative.

RESPONSE: *This comment will be noted in the final EE/CA.*

(26) Section 4.4 – The estimated total volume of waste to be removed is not given in the text. That estimated waste volume should be reported in this section.

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RESPONSE: *The estimated waste volume was used for calculating the cost for this alternative. The volume will be stated in this section of the final EE/CA.*

(27) Section 4.4.1, Reduction of Toxicity, Mobility, or Volume through Treatment – The last sentence should state that any possible groundwater contamination would be addressed along with the removal action and any additional remedial action to address those groundwater issues would follow as well.

RESPONSE: *This section will state that a groundwater monitoring program would be established prior to the implementation of this alternative in order to assess the nature and extent of any off site contamination caused by the landfill, and that such contamination will be addressed as required by applicable regulations as part of this alternative.*

(28) Section 4.4.2, State Acceptance – Provided the removal and disposal are performed in compliance with the appropriate Illinois regulations; Illinois EPA would be able to concur with a choice to implement this alternative.

RESPONSE: *This will be noted in the final EE/CA.*

(29) Section 5.1.2 – Alternatives 1 and 2 would also not comply with Illinois Landfill Closure Regulations (action-specific). Alternative 3 would comply with those regulations.

RESPONSE: *This will be noted in the final EE/CA.*

(30) Section 5.1.4 – Alternative 3 would reduce the mobility of the source material due to the reason listed.

RESPONSE: *The reduction of mobility from implementing the capping alternative was addressed by the response to comment #20 above.*

(31) Section 5.1.4 – Alternative 4 would reduce the volume on-site, but would not reduce the volume, in general, as it would only be relocated.

RESPONSE: *This point was recognized and noted on table 5-1 which summarized the remedial alternatives, but it will also be noted in this section of the final EE/CA.*

(32) Section 5.2.2 – As mentioned previously, there would be additional administrative requirements for Alternatives 2 and 3 due to adding the site to the LUC MOA between the Navy and Illinois EPA. As part of that agreement,

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regularly scheduled monitoring and reporting of all land use controls would be required.

RESPONSE: *See response to comment #16 above.*

(33) Section 6.0 – In number 3 it is stated that areas of bushes and shrubs will be planted on the top surface of the landfill and trees will be planted near the proposed new playground and recreational field. In order to not disturb or compromise the integrity of the cap, all bushes and shrubs should be of the shallow rooted variety and the trees should not be located on the cap at all, but outside the cap boundary.

RESPONSE: *See response to comment #11 above. The revegetation plan will be modified in the final EE/CA to remove tree from the planting schedule and to provide only shallow rooted type of shrubs.*

(34) Table 5-1 – This table will need to be updated according to the comments above regarding ARARs, etc...

RESPONSE: *The table will be modified to reflect all the response to comments.*