



July 29, 2013

Environmental Stewardship Concepts, LLC

**ESC Comments on:
LCP Upland Soils - Operable Unit 3 (OU3) Remedial Investigation (RI)
and Feasibility Study (FS) February 2013**

General Comments

While protection of human and ecological receptors can include reduction of contaminants, as well as limiting exposure, the emphasis at any cleanup site should be the proper reduction of contaminants. Of greatest concern is not using the most protective and conservative approaches toward human and ecological health for all site contaminants. This approach includes using a future residential scenario within the *Human Health Baseline Risk Assessment (HHBRA)* and not eliminating data from the *Baseline Ecological Risk Assessment* or the *HHBRA* for purposes of recalculating and obtaining lower risk, both cancer and non-cancer risks. The standard approach that the *Environmental Protection Agency (EPA)* uses and recommends for assessing PCBs at a site is as congener specific profiles, not as Aroclors. The assessment of polychlorinated biphenyls (PCBs) should be revised accordingly. Additionally, proper fate and transport models should be used to properly incorporate site-specific conditions to determine the possibility for leaching of contaminants into groundwater at the Site, consistent with EPA. The remediation alternatives are few and poorly evaluated and do not include any newer remediation technologies that are used regularly at other similar CERCLA (*Comprehensive Environmental Response, Compensation, and Liability Act* or Superfund) sites.

Specific Comments

- This report needs an Executive Summary and an abbreviations list for purpose of making it more readable by the public.

3.4.1 Chemical-Specific Remedial Goals (RGs or RGOs -Remedial Goal Options) for Protection of Human Health

- “Honeywell has no intention of converting any portion of the property to residential use, and this restriction will be recorded (i.e., deed restriction) to prevent such future use in the event the property or portions thereof are sold. Therefore, presentation of human health RGs is specific to future industrial and commercial worker exposure.”
 - However, the Remedial Investigation for this Site states:

“On June 27, 2012, Glynn County purchased 35 acres of land in the northeast quadrant of the Site, including the area of the former Sunshine Drive-in Theater, where the County plans to build a detention facility. This purchase was facilitated by a Ready for Reuse Determination issued by USEPA Region 4 on March 22, 2012 for the northeast quadrant of the Site (corresponding to Quadrant 1 identified in the OU3 HHBRA).”



If any residential use of the land is to be allowed, the protection of human health must be considered under a future residential use scenario, not just for future industrial or commercial worker exposure.

If the remedial plan will leave the site with contaminant levels that are not acceptable for residential or recreational use, the city, county, state and EPA will need to concur, and the neighborhood community associations will have to be consulted specifically.

3.4.2 Chemical-Specific RGs for Protection of Ecological Health

- “The RGOs based on NOAEL [*no observable adverse effects level*] and LOAEL [*lowest observable adverse effects level*] toxicity endpoints for each receptor were used in a “Nodal” or “Rule of 5” approach that creates a matrix of potential RGOs across the nodal spectrum.”
 - Please give a brief explanation for the “Nodal” and “Rule of 5” approaches as they pertain to determining the RGOs.

3.4.3.1 Overview of the Leaching Analysis from the RI Report

- The *dilution attenuation factor* (DAF) is not calculated using a site-specific set of conditions that are then used as part of a fate and transport model needed to accurately determine a site-specific DAF. The document needs to be revised to account for EPA guidance, or remove the use of DAFs.
 - As stated in the “Determination of Ground Water Dilution Attenuation Factors” (EPA Office of Solid Waste, 1994):
“For any specific site, the DAF depends on the interaction of a multitude of site-specific factors and physical and bio-chemical processes. The DAF also depends on the nature of the contaminant itself; i.e., whether or not the chemical degrades or sorbs. As a result, it is impossible to predict DAF values without the aid of a suitable computer fate and transport simulation model that simulates the migration of a contaminant through the subsurface, and accounts for the relevant mechanisms and processes that affect the receptor concentration. The Agency has developed the EPA Composite Model for Leachate Migration with Transformation Products (EPACMTP; EPA, 1993a, 1994) to assess the groundwater quality impacts due to migration of wastes from surface waste sites.”

3.4.3.3 Contaminant Level RGs for Soil Leaching

- This section states that soil screening levels were refined based on two criteria, but based on numerical listing, only one is noted in this section (Ingestion-Based Exposure Route). This omission needs to be fixed.

4.0 General Response Actions

- The five listed response actions are extremely generic, giving little information on the associated remedial technologies associated with these actions, or the site-specific comparison of these actions.



4.5 Removal/Disposal

- “Based upon many years of Site-specific experience with this type of response action, it is assumed excavated soils would pass TCLP testing and be eligible for Subtitle D disposal”
 - Spell out TCLP (*toxicity characteristic leaching procedure*) on first reference, as there is no abbreviations list that accompanies this report.
 - Notwithstanding the “many years of experience,” actual sampling and testing is required. We recommend deleting this statement completely.

5.2.1 Review of Modeled Risk Estimates

- “No data gaps or uncertainties were identified for Quadrant 1. Past remedial actions included a shallow surface soil removal and a soil cap at former above ground storage tank locations.”
 - What subsurface testing has been done for a location known to contain storage tanks? There is a potential for storage tank leakage in the subsurface soil.
- “The calculated risk estimates for future industrial and/or excavation worker reflects the occurrence of Aroclors contributing 90% of the overall HI in Quadrant 4 soils... It is noted that more than 50% of the HI for the Excavation Worker Scenario is contributed by Aroclor-1260. The soil dataset for Aroclor-1260 is highly skewed, with a small number of moderate- to high-concentration detections and a preponderance of non-detect results. To quantitatively evaluate the effects associated with this skewed dataset for Aroclor-1260, the ELCR [cancer] and HI [non-cancer] estimates were recalculated for Quadrant 4 following the exclusion of appropriate select data records. For surface soil, these are the same sample locations omitted from the ecological risk characterization presented in the Appendix C of the OU3 RI Report.”
 - This process is tantamount to throwing out data, for the purpose of recalculating and obtaining a lower numerical risk estimates for ELCR (*excess lifetime cancer risk*) and HI (*hazard index*). Also, this risk is not calculated for a future residential scenario, which would be the most protective and conservative assessment.

5.2.2 Action Areas for Human Health Protection

- “As shown in the preceding section, the Excavation worker scenario was the only non-residential receptor evaluated in the HHBRA with ELCR or HI estimates that exceeded threshold criteria. When these estimates were subjected to further scrutiny, there is sufficient information to support the conclusion that the HI estimates presented in the HHBRA are exaggerated due to the skewed nature of Quadrant 3 and 4 soil datasets and the fact that substantial areas of clean backfill were not numerically accounted for in the HHBRA. Based on this information, no action areas are proposed on the basis of human health risk”
 - Again, the most protective and conservative estimates would be based on a future residential scenario.
 - The data may not be thrown out or combined/recombined so that recalculation of ELCR and HI become lower.



- Clean backfill areas do not need to be evaluated with regards to human health protection or be used to average out areas of higher contamination within a given Quadrant.

5.3.5 Aroclor-1268

- This section presents several significant problems regarding PCBs at the site.
 - Notwithstanding the RI and FS reporting the PCB contamination as Aroclor 1268, from a toxicological perspective, and for risk estimation, the most straightforward method to address the contamination is by using the PCB congener composition of the soil samples, not the Aroclor 1268 concentrations. Once the PCB congener composition is known, then the individual PCBs can be toxicologically evaluated according to the relative toxicity of each compared with other known compounds. The authors of the FS are likely aware of the literature and EPA documents regarding this approach, referred to as the Toxic Equivalency method for dioxins, furans and PCBs. EPA in a 2005 Guidance memo explains the value and utility of measuring PCB congeners in environmental samples, rather than Aroclors or total PCBs:

"PCB congener-specific data provide the best and most scientifically defensible basis for evaluating the ecological hazards that may be associated with PCB contamination in the environment. Information and examples presented in this memorandum give scientific support to this premise." (Memo by David Cleverly: NCEA-C-1315; ERASC-002F; March 2005; attached)
 - An abundant literature on PCB toxicity examines the effects and mechanism and mode of action of individual PCB congeners, various mixtures, and even environmental mixtures as found in various locations. The toxicology literature indicates that the most sensitive mammals are in the family *Mustelidae*, the mink and otters. Investigations into PCB toxicity in wildlife are found in the peer-reviewed literature and in the results of work conducted for specific PCB contaminated sites, such as the Housatonic and Hudson Rivers. In a site-specific investigation of PCB toxicity, researchers fed PCB contaminated fish from the Housatonic River to mink, using herring as a control feed. Their conclusions were:

"The no observable adverse effect level (NOAEL), lowest observable adverse effect level (LOAEL) and estimated threshold doses based on decreased kit survival were calculated. The estimated threshold dose expressed as dietary total PCBs is 2.4 ug total PCBs/g feed. If expressed as dietary TEQ concentrations, the estimated threshold dose is 33.2 pg TEQs/g feed or 3.6 pg TEQs/g body weight/day. When expressed as hepatic TEQ concentration, the estimated threshold dose is 111 pg TEQs/g." (S. Bursian, R. Aulerich, B. Yamini, and D. Tillett. 2003. DIETARY EXPOSURE OF MINK TO FISH FROM THE HOUSATONIC RIVER: EFFECTS ON REPRODUCTION AND SURVIVAL;



report to Weston for the EPA Ecological Risk Assessment of the Housatonic River; attached).

Similar work was completed for Hudson River fish contaminated with PCBs (see Bursian et al 2013 a and b).

The literature provides good toxicity information for the most sensitive species, mink and river otter, which are target species in this site as well. The FS needs to be based on up to date PCB toxicity information. There are two recommendations for correcting this section:

- 1) analyze the soil samples by measuring PCB congeners and applying the EPA-approved TEQ (*Toxic Equivalency Quantity*) methodology;
- 2) use the most up-to-date PCB toxicity values for mink, applying the TEQ results from the above analysis of PCB congeners in soil.

Once these corrections are made, then the FS can more accurately assess the remediation that is needed at the site. Failing completion of the two steps indicated above, then the conservative assumption is to assume that the PCB contaminated areas are sufficiently toxic to pose unacceptable risks to wildlife receptors and remediate via removal or a treatment that detoxifies the soil.

5.4.2 Review of Leaching Contaminant of Concern COC in Vadose Soil Zone

- Quadrant 4 Analysis: “Within this region and down gradient to the west, the caustic brine pool (CBP) effects on the constituent solubility are evident in the results of groundwater data, and this condition does not necessarily imply ongoing leaching. In fact, USEPA did not consider data from this region when evaluating soil leaching for the Site.”
 - It doesn’t make sense to not test an area that is known to “enhance the solubility of metals (and organics) to dissolve into groundwater.”

7.0 Assemblage and Preliminary Evaluation of Remedial Alternatives

- These few remedial alternatives are poorly evaluated and all of them rely on the institutional control of deed restriction.
- There is no consideration of newer remedial technologies for soil cleanup, such as bioremediation.
- There is no conclusion statement or alternatives preference to indicate what further steps need to be taken after this FS.



Literature Cited

Bursian, S.J., R.J. Aulerich, B. Yamini, DE Tillett. 2003. Dietary exposure of mink to fish from the Housatonic River: effects on reproduction and survival. Final Report to EPA. Weston Solutions, West Chester, PA, USA.

Bursian, S.J., J. Kern, R.E. Remington, J.E. Link, S.D. Fitzgerald. 2013a. Dietary exposure of mink (*mustela vison*) to fish from the upper Hudson River, New York, USA: effects on reproduction and offspring growth and mortality. Environmental Toxicology and Chemistry 34(4):780-793.

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Cleverly, D. 2005. US Environmental Protection Agency, Office of Research and Development. Memorandum: Response to ecological risk assessment forum request for information on the benefits of PCB congener-specific analyses. NCEA-C01314 ERASC-002F

US Environmental Protection Agency, Office of Solid Waste. 1994. Appendix E Determination of Ground Water Dilution Attenuation
http://www.epa.gov/superfund/health/conmedia/soil/pdfs/appd_e.pdf

These comments are being submitted to the EPA. A copy of these comments will be posted on the Glynn Environmental Coalition (GEC) website (<http://www.glynnenvironmental.org/>) and highlights included in a newsletter, sent to GEC subscribers and also posted on the GEC Website.

This report was produced by Environmental Stewardship Concepts, LLC (ESC, LLC) for and in cooperation with the Glynn Environmental Coalition. As a Technical Advisor, ESC, LLC provides independent analysis of the reports and data related to the Superfund Sites referenced to help support a well-informed community.

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