

RESPONSE TO COMMENTS
40 CFR §761.61(c) Risk-Based Approval
Indiana Harbor Confined Disposal Facility
3500 Indianapolis Blvd., East Chicago, Indiana
IND082547809

INTRODUCTION

The public comment period for this Approval began on March 1, 2017, with a public notice in the Northwest Indiana Times on February 28, 2017. The notice and announcement requested comments regarding the draft risk-based PCB disposal Approval also indicated that a public meeting would be held on March 6, 2017. The notice further indicated that a portion of that meeting was reserved only for taking comments from the public on the proposed Approval. Per this notice, the public comment period ended on March 31, 2017. Additional comments were received after the March 31 deadline by the United States Environmental Protection Agency (EPA), and it was determined that a second public information session would be held. Notice regarding that second information session was again placed in the Northwest Indiana Times on June 20, 2017. Two notices were published, included one in English and one in Spanish. That second informational session was held on June 22, 2017.

After considering public comments, EPA and the Indiana Department of Environmental Management (IDEM) decided to pursue the evaluation of alternatives to address Toxic Substances Control Act (TSCA) regulated PCB contaminated sediment from the Indiana Harbor and Canal (IHC). The Great Lakes National Program Office (GLNPO) managed the Feasibility Study (FS) and it was completed under EPA's Great Lakes Legacy Act (GLLA) authority and in partnership with the IDEM, Indiana Department of Natural Resources (IDNR) and ArcelorMittal.

RESPONSE TO PUBLIC COMMENTS

The following responses have been prepared by the EPA to address the concerns expressed by the public during the public comment period. The comments are described in the following sections along with the response and any Approval changes made as a result of the comments.

Public Participation Process

1. Comment: Commenters stated that the notice of the proposed permit and the comment period was not published in Spanish and, therefore, the non-English speaking population was not given notice of this process and could not participate in the comment period. It was not publicized to majority Latino organizations and agencies so they could not alert their constituencies to this process. The permit should be denied until this is rectified.

Response: Attempts were made to provide public notice utilizing Hispanic news media. The Agencies contacted local officials for assistance in this search and were informed that

there were no specific Hispanic newspapers printed in the Region. The EPA did place notice in the Northwest Indiana Times in English and Spanish. EPA prepared a fact sheet in both English and Spanish which was available at the second public meeting. Additionally, a Spanish speaking interpreter was present during both public meetings.

2. Comment: Commenters stated that only one public comment meeting was scheduled for a city with a population of almost 30,000 residents. Additional meetings should be scheduled to give the residents an adequate opportunity to lodge their concerns about this project. Opportunities to comment should be given to the residents of Gary, given its proximity to East Chicago and status as an Environmental Justice community, and Whiting. This process should include all the regional entities and citizens and the permit should be denied until all of the regional stakeholders have been heard from.

Response: The Northwest Indiana Times serves citizens northwestern Indiana, including the Gary and Whiting communities. The public comment period allowed anyone to provide comments on this approval process. The public meeting was open to anyone wishing to attend to voice their opinions, express their concerns, or learn more about the Approval. EPA held a second public meeting to give more opportunity for the citizens of the area to be heard.

3. Comment: Commenters stated that there is a concern that this is a fait accompli before any public comment opportunity, that there is no other option that remains available.

Response: As a result of comments received from the public, EPA conducted a feasibility study (FS). The FS evaluated various options for the dredging and disposal of IHC PCB contaminated sediments. The FS was completed in December 2018 and is available at <https://www.epa.gov/in/indiana-harbor-canal>.

Environmental Justice

4. Comment: Commenters stated the U.S. Army Corps of Engineers proposed project to dump additional toxic sludge in the Confined Disposal Facility, located in East Chicago, would create additional, unequal, racially discriminatory burdens on an already overburdened environmental justice community. The environmental issues have ranged from the USS Lead Superfund site, brownfields sites, heavy industry and industrial releases into the atmosphere and waterways. The cumulative impact of contaminants such as PCB's and lead in this area, where there are so many other sources of PCB's and lead, needs to be considered. Environmental justice concerns dictate that the off-site disposal option be seriously considered.

Response: The off-site disposal option was considered as part of the Feasibility Study, which was completed in December 2018. This option was determined to be infeasible. EPA considers the removal of the contaminated sediments from the environment in an uncontrolled setting into a controlled and monitored CDF as a benefit to the area and protective of human health and the environment.

5. Comment: Commenters stated that East Chicago has a population of 36% who are living at or below the federal poverty line. It is a minority-based city with 42.9% African American, 50.9% Hispanic and a White population of 7.2%.

Response: EPA acknowledges that East Chicago is a minority-based City with economic concerns. EPA's goal is to provide an environment where all people enjoy the same degree of protection from environmental and health hazards and equal access to the decision-making process to maintain a healthy environment in which to live, learn and work. EPA works with all stakeholders to constructively and collaboratively address environmental and public health issues and concerns.

6. Comment: Commenters stated that the CDF is within one-half mile of a high school, an elementary school, a city park and golf course, and a residential area. It is located within proximity to Whiting, North Hammond and the south end of Chicago. It is on the canal which feeds into Lake Michigan which is the water supply for numerous municipalities from Illinois and Chicago across northern Indiana into Southwestern Michigan.

Response: Because of the proximity of the impacted Indiana Harbor Canal to East Chicago schools, neighborhoods, and parks, the Agencies believe it is necessary to remove and appropriately manage the impacted canal sediments. Approximately 3,700 cubic yards of PCB-contaminated sediment with PCB levels greater than 50 PPM will be removed from hotspots in the Indiana Harbor and additional contaminated sediments will be dredged from the Indiana Harbor Canal and disposed into the Indiana Harbor Confined Disposal Facility (CDF). Removing the contaminated sediments from the canal will reduce the potential for contamination of Lake Michigan from the sediments. The CDF has been designed with a slurry wall system, a steel sheet pile anchor-wall, clay dike walls and groundwater controls to contain those contaminated sediments and to prevent releases and potential additional harm to Lake Michigan. Disposal of the TSCA-regulated PCB contaminated sediments in the CDF is safe and poses no unreasonable risk of injury to health or the environment.

7. Comment: Commenters stated that TSCA requires U.S. EPA to consider vulnerable populations, such as pregnant women and children, and asked how this risk-based permit approval decision complied with the new TSCA requirements.

Response: EPA evaluated this Approval based on the technical components of the CDF and the risk associated with the disposal of the TSCA regulated sediments into the CDF. Disposal of the TSCA-regulated PCB contaminated sediments in the CDF is safe and poses no unreasonable risk of injury to health or the environment

8. Comment: A commenter stated that Indiana Department of Environmental Management (IDEM) should not grant this permit until it adopts a comprehensive and enforceable Environmental Justice rule to determine the health of effects on poor and minority communities. Since IDEM does not have such an enforceable rule, it is unqualified to assess the risks to this population.

Response: Consulting with IDEM, the Indiana regulations (both laws and rules) apply to every regulated entity in every location regardless of the surrounding community. IDEM is tasked to ensure that every regulated entity complies with those regulations. Indiana does not have, nor has plans to develop, regulations that might impose additional requirements or responsibilities on regulated entities due to its neighboring economic or ethnic characteristics. IDEM believes that every Indiana citizen deserves equal consideration regarding environmental protection.

9. Comment: So, we can't have these arbitrary, capricious, piecemeal decisions on addressing the toxic threats in this community. We need a holistic treatment of this waste to clean this area up and restore it so that it has unrestricted uses. You can't have a city made up of sacrifices on us. That's not a city. That's people living among waste disposal sites.

Response: EPA understands that the communities adjacent to the CDF currently have other current environmental issues. Various authorities govern various cleanups, but it doesn't mean the decisions are arbitrary or capricious. There are a structured set of laws and regulations that EPA uses to address the various types of facilities in East Chicago. Each response to threats to the community is conducted in accordance with those specific regulations and specific Agency governing the issue. It is not EPA's intent to make the citizens of East Chicago feel as if they are living among waste disposal sites, but in some instances, it is necessary to remove contamination from an uncontrolled setting, consolidate contamination, cap, and monitor sites to minimize the threat they pose to the community and the environment.

Risk Assessment

10. Comment: Commenters stated that the approval is based upon flawed assumptions and modeling of risks to human health and impacts to Northwest Indiana, the community of East Chicago, Indiana, and Lake Michigan's environment. The risk assessment uses Powderhorn Lake instead of closest local bodies of water such as Lake George etc, for 'Margin of Exposure Estimate for Average Daily Dose of Dioxin in Resident Adult'.

Response: For the current CDF operation, EPA considered the assumptions and modeling of health risks in the assessment document known as the "Supplemental Risk Assessment of Potential Air Emissions from the Indiana Harbor and Canal Confined Disposal Facility" (SRA 2006). The SRA considered the potential health risk from multiple water bodies in the vicinity of East Chicago.

A local fisher is an individual (adult or child) who is a resident of the local area in the vicinity of the CDF and who also obtains a significant portion of the diet from consuming fish harvested from a local water body. Consequently, the applicable exposure pathways were:

- Consumption of fish fillets harvested from a local waterbody;
- Exposure pathways expected for a Local Area Resident in addition to fish consumption;

A waterbody located within the Study Area was determined to be a candidate waterbody for evaluation if: a) significant fishing is known to occur and/or b) information is available to indicate that access for fishing is possible and fishing is recommended by a State natural resource agency or other organization which promotes recreational fishing.

The individual who harvests fish from one of these Lakes is assumed to be a high-end fish consumer in keeping with the concept that the SRA will evaluate Reasonable Maximum Exposure levels within the selected scenarios. The two waterbodies selected for evaluation were Lake George and Powderhorn Lake (Section 6.3). Because of similarities in the size of the two Lakes and their distance and direction from the CDF, it was not possible, *a priori*, to determine which Lake might receive higher impacts from CDF contaminants due a combination of direct deposition and overland runoff of contaminants. Consequently, it was necessary to evaluate contaminant impacts to both Lakes. The following estimates of cancer risk and non-cancer hazard were obtained based on the assumption that each waterbody could support the intake level of a high-end consumer:

Table 6-12: Estimated Cancer Risk and Hazard Index from Local Fish Consumption				
Waterbody	Cancer Risk		Hazard Index	
	Adult Fisher	Child Fisher	Adult Fisher	Child Fisher
Lake George:	< 1.0E-08	< 1.0E-08	0.0738	0.0479
Powderhorn Lake:	5.3E-06	6.8E-07	0.0655	0.0425

As shown in Table 6-12, the evaluation indicated that fishing from Powderhorn Lake gave significantly higher estimates of cancer risk than fishing from Lake George. Fishing from Lake George gave slightly higher estimates of Hazard Index than fishing from Powderhorn Lake.

11. Comment: A commenter stated that human health risk estimations and real time monitoring and operational response actions have been over simplified to a single surrogate chemical: Naphthalene – a solid at ambient temperatures that undergoes sublimation – a chemical with different physical properties than the normal evaporation for the majority of the known Volatile Organic Chemicals (VOCs) present in the IHC’s “heavily contaminated sediments” along with those same contaminants present in soils, floating free phase hydrocarbon layers, and groundwater at the ECI Site & unlined USACE Confined Disposal Facility (CDF).

Response: Since a mixture of volatile contaminants are found in the sediment, a mixture of volatile contaminants would likely be emitted after placement in the CDF. The Supplemental Risk Assessment (SRA) used naphthalene as a surrogate volatile organic pollutant to represent all volatile contaminants of concern. The toxicity characteristics of naphthalene represent the highest cancer slope factor (highest potential cancer risk) and

highest noncancer burden (highest potential for noncancer risk) compared to all other volatile contaminants that EPA identify as actually being present in Indiana Harbor sediments. This approach presumed that all (100%) of the allowable 25 tons per year of volatile emissions from the CDF would be composed of naphthalene. This is a simpler method to implement than the multiple chemical, full volatilization emission model, and is highly conservative. In reality, the volatile emission load will include other less toxic compounds. Consequently, the actual cancer risk and noncancer hazard levels will be below the levels estimated for naphthalene.

12. Comment: A commenter stated that hazards and risks from sources of potential contaminate release and routes of exposure during dredging activities and CDF operations were all lumped into an unproven premise and undocumented conclusion that the CDF's emissions dwarf consideration of any other sources of exposure such as dredging location, debris removal & disposal, CDF cell water pumping, and groundwater extraction. Waste water treatment plant operations were not quantified or adequately considered.

Response: The Supplemental Risk Assessment (SRA) interpreted the Indiana emission limits for the original USACE Registration to apply to the entire operation of the CDF including the dredging and transport of project sediments to the CDF. Consequently, a separate analysis of contaminant emissions from the dredging/transport operation was not performed for the SRA. This was considered justified for the following additional reasons: 1) The time required for dredging and transport is a very small fraction of the total time that sediments will spend in the CDF where volatile emissions could occur over several months during any dredging season; 2) the surface area of the transport barge (< 0.5 acre) is minimal compared to the total surface area from which volatile contaminants could be released in the CDF (approximately 80 acres); and 3) particulate matter release during dredging/transport is predicted to be negligible because sediments will remain saturated with water and no dry sediments will be generated that could be subjected to wind erosion.

13. Comment: A commenter stated that the U.S. EPA and the Indiana Department of Environmental Management ("IDEM") draft approval letters state that disposal of the PCB contaminated material into the CDF "should not pose an unreasonable risk to human health or the environment." It seems probable that the risk to the East Chicago community is greater with onsite disposal than if the material is transported and disposed of outside of East Chicago. We have not seen a recent human health and environment risk analysis comparing on-site disposal, off-site disposal, or other options. If one has been done in the past, it should be updated with current data and assumptions.

Response: The EPA evaluated alternatives for the remediation and disposal of the PCB contaminated material in the IHC. The results of this evaluation are detailed in the Feasibility Study Report completed in December 2018.

14. Comment: A commenter stated that there should be a lot more collaboration between the Corps of Engineers, EPA and IDEM, and even the CDC, and even the ASTDR. There are multiple different standards of what is acceptable and what is not acceptable. IDEM states they have brought some of theirs into conformance with EPA, but neither EPA nor IDEM

are in accordance with the CDC. The CDC says zero parts in the case of a lot of the contaminants.

Response: For the navigational dredging project, the USACE is removing sediments to accomplish an engineering objective for the IHC, namely, dredging sediments to increase the available draft depth for cargo ships and barges. The USACE is not removing sediments to accomplish a chemical contaminant remediation objective for the Harbor/Canal. But the Harbor/Canal has also been designated as a Great Lakes Area of Concern (AOC). When the USACE project is completed, EPA and the State of Indiana may be able to secure funding to continue additional sediment removal to accomplish environmental and human health remediation goals for the Harbor. In that case, EPA and the State will work together to determine acceptable cleanup standards for the primary chemical contaminants that make the Harbor an AOC. Those standards could accomplish both human health protection and ecological protection objectives.

Treatment

15. Comment: Commenters stated that the Superfund Amendments and Reauthorization Act (SARA) requires U.S. EPA to give preference to and use permanent solutions and alternative treatment technologies “to the maximum extent practicable” with “reductions in volumes, mobility, and toxicity” of the wastes. The intent of Congress is clear that simple open dumping of toxic and/or hazardous substances is an unacceptable risk to human health and the environment and should require treatment of wastes prior to land disposal.

Response: The preference for treatment is part of the evaluation criteria for choosing response actions for sites in the Superfund program, which the Indiana Harbor and Ship Canal is not. The sediments in the Indiana Harbor and Ship Canal are not subject to CERCLA or SARA and, therefore, the preference for treatment is not applicable as a matter of law. However, even under CERCLA, as amended by SARA, treatment is a “preference,” not a requirement, and the offsite disposal of hazardous substances without such treatment “should be the least favored alternative remedial action where practicable treatment technologies are available.” No such practicable treatment technologies exist for the IHC PCB contaminated sediments. Contaminated sediment removal and disposal into the CDF will reduce the mobility of the PCBs in the environment and poses no unreasonable risk of injury to health or the environment

16. Comment: Commenters stated the USACE indicated that mixing of TSCA and non-TSCA sediment within the CDF will increase the volume of polychlorinated biphenyl (PCB) contaminated sediments, clearly opposite the intent of the United States Congress under SARA.

Response: As stated above, the CDF is not subject to SARA. The CDF already contains PCBs below 50 ppm and adding approximately 3,700 cubic yards of sediments that have PCB levels greater than ppm will not significantly change the waste profile of a CDF that contains over 2 million cubic yards of material.

17. Comment: Commenters stated that the USACE investigated eighteen innovative treatment technologies and dismissed them as not cost effective or unable to treat all contaminants with one technology. Combinations of treatment technologies were never evaluated. The TSCA permit approval must be denied or modified and USEPA and IDEM must require USACE to treat any wastes generated from dredging to a level that eliminates risks to human health and the environment using combinations of available innovative treatment technologies to reduce the toxicity, mobility, or volume of toxic chemical and/or hazardous dredging wastes.

Response: Contaminated sediment removal from the IHC and disposal into the CDF will reduce the mobility of the PCBs in the environment and poses no unreasonable risk of injury to health or the environment. There is no requirement under TSCA to evaluate alternative treatment technologies. TSCA approves or denies an application for disposal on the merits of the application. However, EPA performed a feasibility study and evaluated various treatment options. It was found that it was not practicable to incinerate or treat the PCB contaminated sediments. You can view the FS at <https://www.epa.gov/in/indiana-harbor-canal>.

18. Comment: Commenters asked where is USACE's technology development program and the five-year public reviews concerning technical dredging and disposal literature where USACE uses all reasonable efforts to take advantage of any advances in technologies.

Response: The TSCA application process does not require that the USACE demonstrate that there has been an evaluation of advances in treatment technologies. The EPA evaluates that TSCA Approval request on the merits of the application and the suitability of the facility. The USACE holds treatment technology presentations in East Chicago prior to each dredging event. The next USACE presentation should take place in Spring 2019.

Indiana Harbor Dredging Project

19. Comment: Commenters stated that the United States Army Corps of Engineers' (USACE) plan fails to recognize that their congressionally mandated mission involves navigation and environmental quality and that cost and navigation are not the only considerations. This proposed TSCA permit approval is part of environmental remediation actions and restoration efforts in the Grand Calumet River Area of Concern (AOC) with natural resource damages and impacts to human health and our environment in Northwest Indiana. The USACE must not be allowed to utilize the excuse of maintenance dredging to avoid requirements of the state, federal, DOD and U.S. Army environmental laws, regulations, and policies by making compliance decisions solely upon the lowest possible costs.

Response: USACE applied to EPA for a risk-based approval of the Indiana Harbor CDF as a disposal site for the PCB contaminated sediments dredged from the IHC. The USACE can perform navigational dredging but must properly dispose of the dredged material. The EPA evaluation of USACE's risk-based application focuses on the suitability of the CDF as a safe disposal site for the PCB contaminated sediments and whether the method of disposal poses an unreasonable risk of injury to health or the environment.

20. Comment: A commenter stated that the USACE plan is ultimately the most expensive possible relying on the cheapest short-term cost option without adequate consideration of long-term hazards and costs. They chose a disposal technology by default – the cheapest way possible using open dumping of untreated wastes in their CDF on the cheapest location found in decades – an unmitigated active RCRA/CERCLA site in an abandoned oil refinery on the IHC.

Response: USACE evaluated several options and disposal sites before selecting the ECI site and constructing the CDF. This evaluation is detailed in the Environmental Impact Statement (EIS).

21. Comment: A commenter stated the USACE has taken coercive public positions in seeking this Permit Approval by threatening not to dredge the IHC if the permit is not approved and issued all the while emphasizing how much “heavily contaminated sediments” continue to disperse into Lake Michigan and hamper navigation on the IHC.

Response: The USACE has been dredging the IHC since 2012. To our knowledge, USACE plans continue navigational dredging of the IHC. However, the decision to approve the CDF as a disposal site for the TSCA level sediments is not contingent on whether USACE continues to dredge. USACE’s ability to dispose of the TSCA level sediments in the CDF depends on EPA’s and IDEM’s decision on the application.

22. Comment: Commenters stated that USACE’s dredging in the IHC only removes 55% of the toxic contamination in some locations and exposes layers of sediment known to have higher levels of toxic and/or hazardous contaminants. This will result in a major increase of release of these toxic chemicals to Lake Michigan and to the air of East Chicago, Indiana. Leaving heavily contaminated toxic industrial wastes behind is not a permanent remedy to protect people’s health or the environment. We need to address the entirety of the contamination or we’re going to be coming back here because we didn’t address the source of where those contaminants are coming into the canal. The USACE should not be allowed to leave these more highly contaminated sediments in place and should be required to dredge the IHC to a clean bottom.

Response: Sediment containing PCBs will remain in the IHC after the navigational dredging of the canal is completed. After dredging in the elevated PCB impacted areas, USACE will place cover material over the impacted sediment to prevent future migration of this sediment. Dredging and covering of contaminated sediments is consistent with cleanups that have been performed by EPA on the Grand Calumet River.

23. Comment: A commenter requested documentation on how additional releases of PCBs from contaminated sediments will be prevented and asked if USACE will cover up toxic levels of PCBs that will be exposed after dredging.

Response: USACE will cover the higher-level PCB contaminated sediment that remains in place in the IHC after the navigational dredging.

24. Comment: Commenters stated that the USACE's plan has ongoing deficiencies and problems including location, design, construction, operation, dredging practices and procedures, and technology deployed. This plan does not constitute a cleanup or remedial action plan to eliminate threats and risks to human health and Northwest Indiana's environment, the community of East Chicago, Indiana or Lake Michigan.

Response: The plan removes PCB regulated sediment from the IHC and disposes of it in the CDF, where it is securely contained, managed and monitored and poses no unreasonable risk of injury to health or the environment. Although this is a navigational project, it ensures the proper and safe disposal of PCB contaminated sediments, removing them from an active, aquatic environment. Where higher levels of PCBs are exposed after dredging, USACE will install a cover to prevent exposure to these sediments.

25. Comment: A commenter asked how the unexpected difficulties presented by the characteristics of the dredged wastes, such as unexpected amounts of debris, alter the planned handling procedures for the dredged wastes.

Response: The USACE has been dredging and disposing of sediments from the IHC since 2012. The debris is separated from the sediment, washed, placed into a roll-off box and transported by truck to the west cell of the CDF for disposal. The wash water is sent to the treatment plant.

26. Comment: A commenter stated that due to USACE's poor characterization of the IHC's contaminated sediments, it is now necessary to improvise a crude separation technology for unexpected amounts of debris from IHC dredged wastes by using large screens in open barges and washing CDF influent wastewater over dredged wastes by the excavator bucket full and pressurized hose manifold – the cheapest way possible to deal with the mess and perhaps the most risky also.

Response: Removing debris from dredge is always challenging and EPA does not consider USACE's methods to be an improvised system. USACE separates the debris from the sediment, washes it, places it in a roll off box, transports it via truck to the western cell for disposal. To further delineate and refine the volume of TSCA sediment in the IHC, GLNPO conducted two rounds of sediment sampling in the IHC in 2018. Over 150 additional sediment samples were collected from the IHC throughout these sampling events.

Indiana Harbor Site Classification

27. Comment: A commenter stated the PCB levels found in the IHC are comparable to other PCB contaminated sites in the U.S., like the Hudson River Superfund site, requiring designation as Superfund Site and the removal of contaminants from sediment. The commenter asked why the IHSC is not a Superfund Site.

Response: The Grand Calumet River was looked at as a possible Superfund candidate in the late 1990's. It differs from sites like the Hudson and Sheboygan PCB Sites in that the Grand Calumet River and Indiana Harbor are very industrial and there is a complex mix of contamination and facilities already under enforcement. For example, the first 5 miles of the eastern section of the Grand Calumet River was dredged under a RCRA consent decree with US Steel. Given the existing enforcement and mix of facilities and contamination, the Superfund approach was rejected.

28. Comment: A commenter stated all this stuff got into Indiana Harbor and the ship canals from the steel mills. The commenter asked about the steel mills' financial responsibility for the contamination.

Response: The TSCA approval evaluation does not rely on any apportionment of the costs for navigation dredging by the USACE.

29. Comment: A commenter stated that there shouldn't be any difference between the options that private industry has and options the Corps has. If they don't have authorization, then let's seek authorization.

Response: By law, the USACE is authorized to dredge sediments in the federal navigation channel without regulation by EPA, under most circumstances. Disposal of sediments that contain PCBs at or over 50 ppm is one of those circumstances that requires an approval from EPA. Private companies have to meet the same requirement, if they want to dispose of PCB sediments that are at or over 50 ppm in a similar unit. In this case, the USACE has the same obligation as any private company.

Indiana Harbor CDF Disposal Cost Comparison

30. Comment: A commenter stated the Federal Government should perform a detailed cost comparison analysis, including a cost-benefit calculation, and risk analysis regarding on-site disposal, off-site disposal, and other options. The additional cost to transport and dispose of the material off-site may be made up by cost savings during the post-closure care period. Since the funding to pay for the CDF operations, closure and post-closure is expected to come from taxpayer money, the lowest cost alternative should be selected, unless there is a good reason to select a higher cost option.

Response: EPA evaluated potential remedial alternatives for the management and disposal of Indiana Harbor PCB contaminated sediment. EPA considered the off-site disposal alternative and cost was one of the criteria used to evaluate the alternatives. The Feasibility Study report documenting the remedial alternative evaluation was completed in December 2018. You can find the report at <https://www.epa.gov/in/indiana-harbor-canal>.

Former ECI Site Investigation and Remediation

31. Comment: Commenters stated that the unlined CDF Land Disposal Site was built on top of an old refinery and chemical pesticide location with no RCRA corrective action or other

remediation prior to construction. Hazards and risks from underground conditions at the ECI Site and CDF include grossly contaminated soils, a 10-foot-thick free phase hydrocarbon layer, floating free product containing PCBs up to 850 ppm, Phenol contamination at 750,000 ppm and contaminated groundwater with VOC's up to 2,130 mg/L. There was a failure to consider the hazards and risks of exposure to known contaminants migrating off-site including failure to control known plumes of migrating contaminants. The commenters asked why the contaminated soil and groundwater hadn't been addressed or remediated at the ECI site and CDF.

Response: In 2017, EPA and IDEM conducted groundwater sampling at the ECI site and did not find the levels of contamination in groundwater described in this comment. There were no PCBs detected in the groundwater. EPA is aware of the historical environmental issues found at the ECI Site. Because of these issues and the activities conducted historically at the site, the property is subject to the RCRA Corrective Action requirements and will ultimately have an approved closure plan. Additionally, since the CDF will be accepting PCBs at concentrations of 50 ppm or greater, its operation and closure is subject to the federal and state PCB regulations which include operational requirements and a closure plan. The design of the CDF, the operational requirements and the closure plan will prevent contamination migration from the CDF and control risks from past operations of the site.

32. Comment: A commenter stated that ECI Site demolition included dumping left over refinery, chemical, and pesticide production wastes in unlined impoundments situated in wetland areas along the West (Lake George) Branch of IHC making groundwater monitoring for CDF leaks almost impossible in the area's grossly contaminated Calumet Aquifer.

Response: There are paired wells at the CDF and it is possible to monitor the groundwater at it. In 2017, EPA and others conducted groundwater sampling at the CDF. There were low levels of VOC's detected in certain wells and not others. There were no PCBs detected in the groundwater. Per the USACE, only the obstructions (abandoned pipes, utilities, storage tanks) they encountered at the site were removed from the ground and contained on site. The contractor's waste was taken off site by licensed waste hauler. The oil that ARCO pumped from the site was taken off site.

33. Comment: A commenter stated future subsidence caused by deteriorating underground infrastructure such as sewers, underground storage tanks, underground process vessels, pipelines, utilities, etc. was not adequately identified, remediated, or properly considered prior to CDF construction and operation and approval of this permit.

Response: USACE removed all obstructions (abandoned pipes, utilities, storage tanks), apart from four deep obstructions, prior to the construction of the CDF. It was determined that these obstructions would not affect the performance of the slurry wall. USACE is able to maintain an inward gradient at the site. If there is an issue with the deep obstructions in the future, EPA will require appropriate action to ensure no contaminants leave the CDF.

USACE Project Management and Implementation

34. Comment: A commenter stated that the Indiana Harbor CDF was built on top of an active Superfund and Hazardous waste site and that USACE money is never enough to do the job right. There is not enough money to complete the RCRA Corrective Action at ECI, for removal of underground pipelines at ECI, for a liner or leachate collection system for the CDF, to hydraulically dredge IHC to clean depths and to separate and treat dredged wastes prior to disposal. There is enough money to grab and plop, slop and wash, slurry and pump, and hydraulically open dump toxic and hazardous dredged wastes in an unlined CDF within 1/2 mile of two schools, a city golf course, and residences for 30 years.

Response: The CDF property, due to historical activities, is subject to RCRA Correction Action. The CDF was constructed with a containment slurry wall and a sheet pile wall keyed into a clay layer. In addition, there is a groundwater gradient control system consisting of 96 extraction wells ensuring that groundwater flows into, not out of, the site. There are 40 monitoring wells, 2 ultrasonic water level indicators, 14 groundwater piezometers and clay dike walls encompassing and dividing the two cells. EPA has determined that these controls, the air monitoring in the area, and the conditions of Approval will allow for the disposal of PCB contaminated sediments in the CDF in a manner protective to human health and the environment which poses no unreasonable risk of injury to health or the environment.

35. Comment: A commenter asked how the unexpected difficulties presented by the characteristics of the dredged wastes, such as unexpected amounts of debris, alter the handling procedures for the dredged wastes.

Response: The debris is separated from the sediment, washed, placed into a roll-off box and transported by truck to the west cell of the CDF for disposal. The wash water is sent to the treatment plant.

Indiana Harbor CDF Permitting Decision

36. Comment: Commenters stated that the permitting decision should not be limited to consideration of the risk-based disposal approval process but should be based on the overall project including the ECI Site and Confined Disposal Facility (CDF) site conditions, CDF construction history, and CDF and dredging operational problems and procedural changes including:

- CDF design change to two large unlined cells;
- discharge of groundwater extraction wells to the CDF's unlined cells;
- use of CDF's influent wastewater as dredged waste disposal process water;
- unexpected increases in dredged debris handling and washing;
- slurring of dredged wastes for hydraulic placement;
- ponded CDF operation impacts on the Waste Water Treatment Plant (WWTP);
- ponded CDF operation impacts on the hydrogeology of the Calumet Aquifer;
- unexpected decreases in several extraction wells capacity and pump failures; and
- unexpected reduction of inward groundwater gradient and difficulties in maintaining necessary capacity for groundwater extraction during dredging operations.

Response: The Agencies reviewed all aspects of the CDF to ensure the safe and effective disposal and containment of the PCB contaminated sediment so it would pose no unreasonable risk of injury to health or the environment. This includes the change in CDF design to a ponded facility and the groundwater gradient system. The ECI site is also subject to RCRA Corrective Action and will also be addressed under the RCRA Program. Capping of the CDF is part of the remedy for the ECI site.

Indiana Harbor CDF Risks

37. Comment: A commenter stated that there was a failure to consider impacts to contaminate emissions and hazards and risks from changes in USACE's planned dredging and unlined CDF operations including:

- CDF design changes to two large unlined cells;
- discharge of groundwater extraction wells to the CDF's unlined cells;
- use of CDF's influent wastewater as dredged waste disposal process water;
- unexpected increases in dredged debris handling and washing;
- slurring of dredged wastes for hydraulic placement;
- ponded CDF operation impacts on the Waste Water Treatment Plant (WWTP);
- ponded CDF operation impacts on the hydrogeology of the Calumet Aquifer;
- unexpected decreases in several extraction wells capacity and pump failures; and
- unexpected reduction of inward groundwater gradient and difficulties in maintaining necessary capacity for groundwater extraction during dredging operations.

Response: As part of the evaluation of USACE's risk-based application, EPA and IDEM evaluated the design and operation of the CDF, the disposal procedures for the dredged sediment and debris, the site geology and hydrogeology, the operation and capacity of the WWTP, and the groundwater gradient control system design and operation. EPA determined that the construction and operation of the CDF met the requirements for a risk-based approval and poses no unreasonable risk of injury to health or the environment.

38. Comment: A commenter stated that USACE's application for this permit offers no information on the risk or risk reduction provided by the groundwater extraction & gradient system or any specific risk information or risk reduction objectives for any groundwater cleanup or ongoing off-site migration of contaminants.

Response: The groundwater extraction and gradient control system is designed to control the migration of contaminants by ensuring the level of the groundwater outside of the slurry wall is higher than the level inside the slurry wall. This ensures that groundwater will flow into the site and no contaminants will be released from the CDF. The remainder of the site will be addressed under the RCRA program. The eventual capping of the CDF will be part of the site remedy.

39. Comment: Commenters stated approval of the TSCA permit does not ensure risk reduction because it fails to eliminate hazards and risks by implementing an impermanent solution leaving the toxic wastes in place with no reduction in toxicity and depends upon a containment strategy with perpetual maintenance and costs and institutional controls near schools, parks, and residences in the highly populated area of Northwest Indiana. The risks to human health and our environment is understated by not considering the CDF's additive, cumulative, and synergistic impacts to elevated ambient levels of existing pollution in Northwest Indiana, the community of East Chicago, Indiana, and Lake Michigan.

Response: The EPA performed a Supplemental Risk Assessment (SRA) to assess the risk from volatile emissions and particulate emissions from the CDF. EPA performed this additional risk study to provide updated information regarding potential exposures from the CDF. The 2006 SRA's purpose was to estimate potential health risks from the incremental emissions from the CDF. It could not estimate cumulative health risks from all other existing background exposures, but the SRA did evaluate multiple potential exposure pathways for individuals who could reside at various locations in the vicinity of the CDF. The SRA based the potential level of emissions from the CDF on the annual regulatory permit limits for volatile constituents and particulate matter constituents required in Indiana Administrative Code. Even when volatile constituents and particle-bound constituents were assumed to be emitted at the annual Indiana permit limit, long-term cancer risks and noncancer hazard estimates for local residents were found to be quite low. Cancer risks for the combined exposure pathways to residents were found to contribute less than 1 case in 100,000 of additional individual cancer risk and no significant level of long-term noncancer health effects. Since the time when the SRA evaluation was performed, USACE has modified the design of the CDF to convert the dredged sediment disposal to a fully ponded operation. That modification permanently reduces the annual emission levels of particles and particle-bound contaminants to a level well below the Indiana annual permit limit used in the original SRA.

40. Comment: A commenter stated that elimination of organic pollutants like PAHs, PCBs, Furans, Dioxins, etc. lowers risks to human health and our environment. There are no known safe exposure levels for Dioxin and many of the pollutants known to be present in IHC dredged wastes.

Response: Disposal of the IHC contaminated sediments in the CDF will ensure that the sediments are in a controlled and monitored location reducing risks to human health and the environment compared to its current location in an active aquatic environment.

41. Comment: A commenter stated that the permit approval would enable USACE to continue with open dumping land disposal of toxic and/or hazardous wastes utilizing methods and facilities that:

Lack a Permanent Remedy;
Do not reduce toxic dredged waste Volume;
Do not reduce dredged waste Toxicity;
Does not reduce dredged waste Mobility;
Do not eliminate dredged waste Hazards and Risks;
Do not eliminate Human Exposures or Environmental Releases; and
Only has 65 years Monitoring but perpetual Maintenance and Costs.

Response: These are requirements which are applicable to Superfund sites. The sediments in the IHC are not subject to CERCLA or SARA and, therefore, are not applicable. Contaminated sediment removal and disposal into the CDF will reduce the mobility of the contamination decreasing the risks to human health and the environment .

CDF Approval – Regulatory Comments

42. Comment: A commenter stated that this Risk Based Permit Approval is arbitrary and capricious; violates the intent, spirit, and letter of the laws and regulations of the United States of America and State of Indiana including but not limited to: the Toxic Substances Control Act (TSCA), the Resource Conservation and Recovery Act (RCRA), Comprehensive Environmental Response and Compensation Liability Act (CERCLA) or Superfund, Superfund Amendments and Reauthorization Act (SARA), is contrary to the Department Of Defense’s (DOD) & U.S. Army’s own environmental regulations, policies, and programs.

Response: EPA and IDEM executed a Memorandum of Understanding (MOU) with USACE stating that RCRA and TSCA laws and regulations apply to this facility. EPA carefully evaluated the USACE risk-based application in accordance with applicable Agencies’ regulations, policies and programs.

43. Comment: Commenters stated that the permit approves land disposal of toxic and/or hazardous substances in an unlined CDF facility that could not otherwise be approved because it does not meet current design and construction standards, location requirements and standards for a toxic chemical waste landfill /toxic chemical waste impoundment or hazardous waste landfill / hazardous waste impoundment under state and federal laws & regulations applicable to toxic and/or hazardous waste land disposal facilities. The CDF does not meet the technical criteria of the Code of Federal Regulations Title 40, Part 34 Land Disposal Restrictions for Hazardous Waste which requires any person using a

chemical waste landfill to dispose of PCBs must use a chemical waste landfill that meets the criteria set forth in §761.75.

Response: USACE submitted a risk-based application to EPA for the disposal of the PCB contaminated sediments dredged from the IHC in the CDF. EPA considered this application in accordance with the PCB risk-based disposal regulations found at 40 CFR §761.61(c). The regulations contain options for evaluating facilities for TSCA material suitability. Both the 40 CFR §761.75 process and the 40 CFR §761.61(c) process can lead to a determination that a facility is suitable for TSCA material. The determination for this facility was made under 40 CFR §761.61(c). The PCB contaminated sediments are not Subtitle C waste by definition and do not have to meet the technical criteria of land disposal restrictions. USACE can build CDFs to their own specifications. EPA evaluated the CDF's suitability to accept TSCA material based on the USACE's risk-based application and determined it poses no unreasonable risk of injury to health or the environment.

44. Comment: A commenter stated that in Indiana you're not allowed to even locate the boundary of a Municipal Solid Waste Land Fill (MSWLF) within "Two thousand six hundred forty (2,640) feet from a public or nonpublic school." (329 IAC 10-16-1). Indiana Code § 13-20-12-2, Section 2 states "A person may not establish a sanitary landfill for the disposal of garbage, rubbish, or refuse on land in Indiana within one-half (1/2) mile of an area that has been subdivided for residential purposes."

Response: Per IDEM, the CDF is not a "municipal solid waste landfill" as defined by the Indiana Solid Waste Land Disposal Facilities regulations found at 329 IAC 10, specifically 329 IAC 10-2-116, and therefore is not subject to those setback requirements. Additionally, since this facility is not being authorized to operate as a "Chemical Waste Landfill" setback provisions set forth in the Indiana Regulations of Wastes Containing PCBs, 329 IAC 4.1 (specifically 329 IAC 4.1-8-3) also do not apply. EPA considers the CDF design, monitoring and operating requirements to be protective to human health and the environment.

45. Comment: A commenter stated that waste management regulations prohibit open dumping of solid waste in Indiana but that is essentially what USACE is doing with the dredged wastes from Indiana Harbor and Canal. Thousands of tons of debris, including tires, are routinely open dumped into the Indian Harbor CDF. Indiana Code 13-20-14 states that: "A whole waste tire may not be disposed of at a solid waste landfill."

Response: The CDF has been designed and is operated to safely manage dredged wastes from the IHC. It is not considered to be an open dump by EPA and poses no unreasonable risk of injury to health or the environment.

46. Comment: A commenter stated that in general land disposal facilities are not allowed to be located on top of pipelines.

Response: USACE submitted a risk-based application to EPA for the disposal of the PCB contaminated sediments dredged from the IHC in the CDF. EPA evaluated the CDF in accordance with the PCB risk-based disposal regulations.

47. Comment: Commenters stated that the approval permits land disposal of toxic and/or hazardous substances in a facility that cannot meet the DOD's and U.S. Army's own requirements for toxic, chemical, or hazardous waste land disposal. Under U.S. Army TM 5-814-7, Surface Impoundments require a liner system, leak detection system, leachate collection and removal systems, monitoring wells, run-on/run-off controls, overtopping controls, wind dispersal controls, cap (final cover), closure and post-closure care.

Response: EPA evaluated USACE's application in accordance with PCB regulations and determined the design and operating requirement to be a safe unit to dispose the IHC sediments that poses no unreasonable risk of injury to health or the environment.

48. Comment: Commenters stated that this approval sets a precedent by turning an entire USACE Confined Disposal Facility (CDF) into a fully-fledged TSCA toxic chemical land disposal facility. They asked if it makes sense to designate the entire CDF capacity of 4,800,000 cubic yards into a Toxic Substance Control Act toxic chemical land disposal facility when 200 thousand cubic yards capacity are requested by USACE.

Response: Because of the method which is being used to deposit sediment in the CDF and the management of waters within the CDF, EPA has determined that it was necessary to consider the entire CDF subject to the federal PCB regulations and requirements. This ensures the whole CDF is managed with conditions and according to regulatory requirements.

49. Comment: A commenter stated that the U.S. EPA, under SARA Section 121 is required to "take into account long-term uncertainties associated with land disposal, short and long-term potential for adverse health effects from human exposure, and future remedial action costs if the alternative remedial action in question were to fail.

Response: CERCLA and the requirements added by SARA apply to Superfund Sites. The sediments in the IHC are not subject to CERCLA or SARA. Disposal of the IHC contaminated sediments in the CDF will ensure that the sediments are in a controlled and monitored location lowering risks to human health and the environment reducing uncertainties compared to its current location in an active aquatic environment.

Indiana Harbor CDF Approval Comments

50. Comment: Comments stated that they were not convinced of the quality of work done by IDEM, by the U.S. EPA, or by the Corps of Engineers regarding this project. There should be an independent university-based evaluation of the work. It is well known that EPA and IDEM have screwed up over the years. It raises questions as to how effective EPA and IDEM will be with the CDF.

Response: EPA and IDEM geologists, hydrologists and engineers reviewed the CDF design and performed a thorough review of the application. Based on this review, EPA and IDEM prepared draft approvals which include conditions for the monitoring and oversight of the Indiana Harbor CDF. EPA takes pride in its work and believes the CDF operated in accordance with the conditions of the Approval will be a safe disposal site for the sediments.

Indiana Harbor CDF Design

51. Comment: Commenters stated that the location of the bentonite clay and sand cutoff slurry wall on the west, north and east sides of the CDF and the sheet pile wall on the south side of the CDF is arbitrary, restricted by existing infrastructure at the property. The slurry wall fails to encompass and contain known contaminated soils, plumes of groundwater contamination, and the “Free-Phase Hydrocarbon Layer” floating on top of groundwater up to 10 feet thick and migrating into the West (Lake George) Branch of the IHC. It makes it nearly impossible to establish groundwater monitoring wells to determine CDF leakage when all monitoring wells are located and screened in the same area of gross contamination. The facility cannot be adequately or conventionally monitored.

Response: The slurry wall and sheet pile wall are designed to encompass and contain the PCB contaminated sediment disposed in the CDF. The groundwater gradient control system will ensure that no groundwater leaves the CDF. The EPA and IDEM sampled the groundwater inside and outside of the slurry wall in 2017. The monitoring detected no PCBs in the groundwater.

52. Comment: A commenter stated that they’d like to see the studies that show sheet piling is as effective as a slurry wall. We know slurry walls and liners leak so they’re not even effective long term.

Response: A slurry wall keyed into a clay layer is an effective containment strategy. The sheet pile wall with sealed interlocks was evaluated by an EPA Environmental Engineer knowledgeable in geotechnical engineering and determined to be an effective containment system.

53. Comment: Commenters stated that there was an emergency action required in April 2005 due to an entirely predictable “bathtub effect” after containment barriers installed caused failure of sheet steel piling wall along the Lake George Branch of the IHC was unforeseen by USACE.

Response: The old, existing sheet pile wall along the Lake George Branch of the IHC was in poor condition and a localized portion of this wall deflected toward the canal. To prevent further movement and the potential collapse of the wall, USACE placed stone into the Lake George Branch of the IHC along the deflected region. This is not the same wall as the sheet pile wall that contains the CDF.

54. Comment: Commenters stated the cutoff wall on three sides of the CDF was not constructed at the same time or using the same technique, contractors or material sources.

Response: USACE constructed the slurry wall in stages but each stage meets the permeability requirements specified by EPA.

55. Comment: Commenters stated that much of the underground infrastructure such as abandoned petroleum, processed oil and fuel pipes, utilities and underground storage tanks was left in place at the site. The underground pipelines are of unknown condition, ownership or content and were deliberately left in place under the site along with other “Industrial Fill” posing undetermined hazards and risks and compromising containment structure. This includes 4 “deep obstructions” USACE left in the slurry wall’s path. USACE has detailed construction deficiencies in the containment structure due to the “deep obstructions” and estimates there is a one gallon per minute leakage through the slurry cutoff wall because of the “deep obstructions”. What happens when the pipelines deteriorate is anybody’s guess.

Response: USACE is required to repair or perform corrective action if an inward gradient is not maintained or if a slurry wall fails. If conditions at the CDF change over time, USACE will evaluate and perform repairs, as needed. USACE will maintain an inward gradient, as required by the Approval, which will offset any change in conditions at the site.

56. Comment: Commenters stated that the CDF relies upon a containment strategy consisting of a slurry cutoff wall, inward groundwater gradient pumping scheme, earthen clay dikes, and a RCRA cap after an estimated 30 years of open dumping operation to prevent any migration of toxic and/or hazardous substances into the community of East Chicago, Indiana. Active containment via groundwater drawdown is already experiencing pump failures and well capacity reductions due to CDF site conditions and lack of remedial and corrective actions before CDF construction.

Response: It is in the nature of pumps to fail, even under the best conditions. USACE monitors these pumps and the entire groundwater gradient system and replaces pumps, when necessary.

57. Comment: Commenters stated that the CDF was constructed without any synthetic or engineered clay liner. You're relying on a liner of native clay underneath this, which is formed by glaciers and has natural formations that render it not impermeable, but permeable. There are numerous known geologic features within the glaciated terrain that allow these facilities to leak, whether it be a landfill or a CDF. There is a lack of any empirical verification that the quality of the underlying clay layer is consistent, stable and secure.

Response: USACE investigated the ECI site and determined that there is 60 to 65 feet of silty clay underneath the site that exceeds the permeability requirements specified in the PCB regulations.

58. Comment: Commenters stated that there is no leachate collection system to control hydrostatic pressure and capture contaminated water from under the CDF.

Response: A typical leachate collection system is constructed above the base liner in a landfill and collects fluid that contacts and is transmitted through the waste in a landfill. The CDF is constructed with a slurry and sheet pile wall system that contains the contaminated water. USACE pumps and treats water within the CDF, while maintaining an inward gradient. EPA's Approval requires USACE to meet a 2-foot inward groundwater gradient before placing any PCB contaminated sediment in the CDF. This system will prevent the migration of any contaminated water from the CDF.

59. Comment: A commenter stated that a RCRA cap is planned to lessen water infiltration into the CDF except the expanded capacity 40-foot-high CDF has a larger surface area than the formerly flat ground surface which actually will increase the amount of water infiltration by comparison.

Response: The RCRA cap will be constructed of clay and synthetic liners that will prevent the infiltration of water. RCRA caps are designed with slopes to shed water reducing infiltration.

60. Comment: ECI Site demolition included dumping left over refinery, chemical, and pesticide production wastes in unlined impoundments situated in wetland areas along the West (Lake George) Branch of IHC making groundwater monitoring for CDF leaks almost impossible in the area's grossly contaminated Calumet Aquifer.

Response: The EPA and IDEM performed groundwater monitoring at the site in 2017. The monitoring detected no PCBs in the groundwater. The groundwater gradient control system will ensure that no contaminants are released from the CDF.

CDF Capacity and Disposal

61. Comment: Commenters stated that disposal of the IHC TSCA-level material should be limited to a small, precise, well-documented location within one specific cell of the Indiana Harbor CDF.

Response: The Approval does discuss the expected placement of the PCB impacted sediment in the east cell of the CDF. Records must be generated documenting information such as; when the sediment was placed, at what elevation, and the amount of sediment. This information shall be retained in facility records for twenty years after the CDF is no longer used for disposal of IHC dredged materials.

62. Comment: Commenters stated that a condition should be added to the proposed approval limiting disposal in the CDF to sediment from areas within East Chicago and prohibiting disposal of sediments or contaminants from other communities or any other water or body of water or projects outside of the Indiana Harbor Shipping Canal.

Response: The Approvals limit the source of the sediment to the sediment USACE dredges from the Indiana Shipping Canal. Disposal of dredged sediment from other sources, either within East Chicago or outside of East Chicago, will require an Approval modification.

63. Comment: Commenters stated that, due to the limited amount of PCB sediment relative to the capacity of the CDF, the entire facility should not be designated as a TSCA facility.

Response: Because of the method which is being used to deposit sediment in the CDF and the management of waters within the CDF, EPA determined that it was necessary to consider the entire CDF subject to the federal PCB regulations. Approving both cells of the CDF under TSCA, ensures that the containment features and other requirements of the Approval apply to the entire CDF.

64. Comment: USACE justification for use of mechanical dredging is lower water content but subsequent slurry and pump with hydraulic open dumping operations defeats such justification by mixing dredged sediments with water pumped from the CDF to create a slurry not unlike that which hydraulic dredges create with sediments that are only 10-20% solids and result in an increase of 300-400% over the in-place sediment volume” how has U.S. EPA evaluated the hazards & risks associated with this significant change from USACE’s original Plan?

Response: The CDF was evaluated for handling the slurried PCB sediments. Air monitoring has not shown any exceedances of air monitoring standards when sediments are slurried into the CDF. How USACE handles the water management during the dredging is not part of this Approval. Water management decisions by USACE were primarily made for wastewater treatment concerns. EPA reviewed and evaluated USACE’s proposed change to a ponded facility as part of the risk-based disposal approval for the Indiana Harbor CDF. This evaluation included review of the hydraulic placement of the sediment slurry in the CDF.

CDF Groundwater Extraction and Gradient Control System

65. Comment: Commenters asked if the USACE provided the required 2-foot inward groundwater gradient prior to operation of the CDF in 2012 and if USACE has maintained the required 2-foot inward groundwater gradient since 2012?

Response: USACE has already established the required 2-foot inward groundwater gradient. During the startup phase of the groundwater gradient system operation, USACE

conducted system adjustments and improvements necessary to achieve the required 2-foot inward groundwater gradient. EPA understands that temporary situations will occur resulting in fluctuations of slightly less than 2-foot elevation differences between outside and inside the slurry wall system, along limited portions of the wall. Approval conditions have been established to address and remedy equipment failures or other issues that could result in prolonged deviation from the 2-foot inward groundwater gradient requirement.

66. Comment: A commenter asked if the USACE switched to a ponded CDF because of difficulty in maintaining the proper inward groundwater gradient during dredging and dewatering operations?

Response: The USACE changed to a ponded CDF to control and minimize particulate matter and volatilization of PCBs from the CDF.

67. Comment: Commenters stated that pumping water from the bottom of the Calumet Aquifer and dewatering 100,000 to 200,000 cubic yards of dredged waste through the CDF each year has complicated USACE's containment strategy since clogged extraction wells have caused pump failure and reduced well capacity in 3 areas of the Indiana Harbor CDF. The extraction wells are a key component of the USACE's Containment Strategy for the toxic and/or hazardous industrial chemical wastes under the CDF and the dredged materials hydraulically pumped into place there.

Response: USACE promptly repairs or replaces any clogged extraction wells to minimize any interruption in the operation of the groundwater gradient system. The clogging of the extraction wells is not caused by the volume of water or where water is coming from.

68. Comment: Commenters asked about the effects of pumping from the bottom of the Calumet Aquifer. USACE's permit application does not say anything about the limits to or uncertainty of pumping from the bottom of the aquifer in perpetuity. The pumping, combined with infiltration of water downward through the CDF could create a mixing action upon the Calumet Aquifer's contaminated contents.

Response: The slurry wall and the enhanced sheet pile wall, tied into the clay layer underlying the aquifer, comprise the CDF. The PCB contaminated sediment and the water that is inside the CDF are prevented from migration into the aquifer outside of the CDF by the maintenance of the 2-foot inward gradient through operation of the groundwater gradient system (GGS). The GGS, operating in conjunction with the CDF through the period of the GGS operation, will contain any contaminants that may migrate to the groundwater due to historic activities.

69. Comment: Commenters stated that USACE is pumping from the bottom of the Calumet Aquifer and doing nothing to extract and destroy, recover, or treat contaminated soil, the "Free Phase Hydrocarbon" layer of contamination floating on top of the groundwater, or the contaminated groundwater itself. The USACE application offers no information on the risk or risk reduction provided by the groundwater extraction & gradient system or any

specific risk information or risk reduction objectives for any groundwater cleanup or ongoing off-site migration of contaminants.

Response: The GGS was established as a requirement to enhance the operation of the CDF and to minimize impact from historical releases that currently reside in the groundwater or on the water table. The groundwater monitoring and extraction wells installed around the perimeter of the CDF, both inside and outside the wall system, establish an inward flow potential of groundwater and a localized lowering of the water table within the wall system. The Approval is not focused on treating hydrocarbons in the groundwater. The Approval is for placement of TSCA level PCBs in a safe, managed and monitored facility that poses no unreasonable risk to health or the environment.

Indiana Harbor CDF Water Treatment

70. Comment: A commenter asked how the USACE changes from un-ponded to ponded operation impacted influent characteristics and volume of water to be treated?

Response: The difference in water volume which requires treatment is minimal between the un-ponded versus ponded methods for disposing of the dredged sediment. Groundwater pumped from the groundwater gradient system should remain similar. Dewatering would have occurred in the un-ponded operation requiring treatment, and storm waters that contacted sediment would have also required treatment. The chemical characteristics of these waters is expected to be very similar to those waters generated from the ponded operation.

71. Comment: A commenter stated that the USACE has yet to finalize a design or install a final operational Waste Water Treatment Plant (WWTP) thus making it difficult, if not impossible, to determine hazards & risks from WWTP emissions. Significant VOC and other Hazardous Air Pollutants (HAPs) have been observed from WWTPs at oil refinery operations and this source should not be dismissed without further investigation and quantification of threats to human health and the environment.

Response: On-site wastewater treatment operations are being conducted within an enclosed treatment system. Waters are mechanically filtered using filter media such as activated carbon prior to closed pipe discharge to either the East Chicago Sanitary District or the NPDES permitted discharge in the canal. There should be no emissions from this system since it is a closed system.

Air Emissions and Monitoring

72. Comment: Commenters stated dredging will expose the higher-level PCB contaminated sediments below the surface of the mud and sediments in the harbor and ship canal. This will result in a major increase of release of PCB and PAHs to Lake Michigan and the air of East Chicago, Indiana.

Response: There is the potential for higher level PCB contaminated sediment to be exposed as part of the environmental dredging project. However, there will be a cover placed over these areas to control any releases to Lake Michigan and air emissions. Air quality in the area is monitored by USACE and they adjust their operating procedures if dredging and disposal affects air quality.

73. Comment: Commenters stated that air monitoring stations should be placed based on historic wind rose data for this area, where you are most likely to detect something, and not at the four corners of the compass point. Real time air monitoring should be based upon current meteorological conditions at the time of monitoring.

Response: USACE considered wind rose data when selecting placement of the air monitoring stations. The corners were chosen based on prevailing wind directions.

74. Comment: A commenter stated that continuous state of the art monitoring utilizing Infrared, LIDAR, and Gas Chromatography devices should be deployed for air monitoring of as many known contaminants and their sources as possible.

Response: Ambient air sampling for the CDF is conducted using high-volume samplers positioned around the perimeter of the site. The purpose is to provide “fence-line” concentrations, so that the potential for any off-site impact can be determined and rectified, if necessary.

75. Comment: A commenter noted that USACE stated that “During the treatability testing, it was estimated that the concentrations of the dominant volatile components would be very near zero” and asked if this is because all or most of the VOCs will evaporate from the CDF.

Response: Volatile compound concentrations in the ponded water in the CDF are low for multiple reasons. First, a large portion of the pond consists of rainwater, which has essentially no VOCs. Second, the groundwater (which is potentially a source of VOCs) is a very small fraction of the total volume of water. Third, the sediment (which would be the source of VOCs in dredge water) has low VOC concentrations; most of the pollutants in the sediment are less volatile organic compounds plus heavy metals. Fourth, the volatile compounds tend to remain sorbed to the sediment particles; these compounds are not very soluble in water. Fifth, the pond is biologically active, and the algae and bacteria naturally present in the ponded water tend to break down dissolved compounds over time (including ammonia and any carbon compounds). Finally, some volatilization could occur, although it is not a measurable quantity in the quiet pond. Ambient air monitoring detects volatile compounds in the air around the CDF, however these are attributed to other local sources since air concentrations with the CDF are similar to concentrations measured before dredging started.

76. Comment: Commenters stated that there have been no studies of the emissions and the factors that affect PCB and asked for a study of the emissions of airborne PCBs from the CDF. The CDF may be a new source of airborne PCBs to the region and there is inadequate evidence to determine whether a ponded CDF operation and covering the TSCA-level sludge with other sludge will prevent volatilization of PCBs. The expanded CDF's two cells ponds are large enough to have whitecaps in high wind events and meteorological events could disturb toxic and/or hazardous dredged wastes and create aerosols from the untreated pond water. By not considering the CDF's additive, cumulative, and synergistic impacts to elevated ambient levels of existing pollution in Northwest Indiana, the community of East Chicago, Indiana, and Lake Michigan, it adds risks to human health and our environment.

Response: As part of the Supplemental Risk Assessment (SRA), EPA reviewed data on contaminant identification and concentration levels in buried sediments to predict the contaminant concentration levels in the CDF sediments after dredging and disposal. USEPA reviewed the available data record (i.e., "historical data") on sediments in the project area to select data sets that were judged to most appropriately represent the chemical identity and characteristics of sediments planned for dredging and placement in the CDF. Available published models for predicting volatile and particulate emission rates from sediments were reviewed. U.S. EPA, USACE and independent scientists who have developed and published the models, reviewed and discussed the major advantages, disadvantages, and uncertainties inherent in the theoretical models. Emission rate models and regulatory emission limits were combined to devise strategies for modeling the emission rates of volatiles and particulates for use in the SRA. Air quality in the area is monitored by USACE and they adjust their operating procedures if dredging and disposal affects air quality.

77. Comment: Commenters stated that hazards and risks from sources of potential contaminate release and routes of exposure during dredging activities and CDF operations were all lumped into an unproven premise and undocumented conclusion that the CDF's emissions dwarf consideration of any other sources of exposure such as dredging location, debris removal and disposal. CDF cell water pumping, groundwater extraction, and waste water treatment plant operations were not quantified or adequately considered. The USACE has yet to finalize a design or install a final operational Waste Water Treatment Plant (WWTP) thus making it difficult to determine hazards and risks from WWTP emissions. Significant VOC and other Hazardous Air Pollutants (HAPs) have been observed from WWTPs at oil refinery operations and this source should not be dismissed without further investigation and quantification of threats to human health and the environment.

Response: On-site wastewater treatment operations are being conducted within an enclosed treatment system. Waters are mechanically filtered using filter media such as activated carbon prior to closed pipe discharge to either the East Chicago Sanitary District or the NPDES permitted discharge in the canal. There should be no emissions from this system since it is a closed system.

78. Comment: A commenter stated that there is no plan in the permit for what happens if an exceedance occurs in the air pollution outputs. If an excessively high level of airborne PCB's is detected at the high school, it's not clear that it leads to the project shutting down. There hasn't been any kind of pilot test to verify that that's unlikely to happen.

Response: Air monitoring for PCBs is both a requirement of this Approval and the IDEM, Office of Air Quality (OAQ). The Indiana Harbor & Canal Confined Disposal Facility was issued, July 9, 2012, a Registration for a New Source pursuant to 326 IAC 2-5.1 by the OAQ. This Registration served as the transition from construction phase monitoring requirements to operation monitoring requirements. A copy of this Registration can be viewed at <https://vfc.idem.in.gov/DocumentSearch.aspx>, choosing "Air Quality System (AQS ID)" under Alternate Field, and typing the ID # 089-31941-00471. Please also note that you must check the reCAPTCHA box before search will occur. Additionally, all required submittals and inspection documents can be found at this location.

The Registration does contain information regarding Air Monitoring and Action Steps in the event of exceedance, including the development of an Environmental Protection Plan. The Registration establishes, at a minimum, actions for response including covering of stockpiles, spray foam application, reducing excavation rates, increasing groundwater pumping rates, altering dredging/placement rates, reducing the surface area of sediment placement, or reducing/ceasing dredging. The USACE will employ contingency measures such as controls during sediment off-loading and placement in the CDF.

79. Comment: Commenters asked if or when air or water monitoring levels exceeded levels regulated by EPA or IDEM. The commenters wanted to know what was done to let the public know and what has been done to prevent that from happening again.

Response: There have not been any exceedances in the air monitoring system. Emissions modeling indicates that exceedances are not likely.

80. Comment: Commenters stated that the Army Corps of Engineers has made it very hard to find, access and interpret monitoring data. There are not any results that the public can understand and know what constitutes public risk and what level the chemicals harm human health.

Response: One requirement of the IDEM Registration is the placement of air monitoring results on the world wide web. This information can be found at <https://www.lrc.usace.army.mil/Missions/Civil-Works-Projects/Indiana-Harbor/Air-Quality-Data/>. This information includes both historic and real-time data. USACE is in the process of updating their website in order to present the air data in a more easily understood format.

Air monitoring for PCBs is both a requirement of this permit and the IDEM, Office of Air Quality (OAQ). The Indiana Harbor & Canal Confined Disposal Facility was issued, July

9, 2012, a Registration for a New Source pursuant to 326 IAC 2-5.1 by the OAQ. This Registration served as the transition from construction phase monitoring requirements to operation monitoring requirements. A copy of this Registration can be viewed at <https://vfc.idem.in.gov/DocumentSearch.aspx>, choosing "Air Quality System (AQS ID)" under Alternate Field, and typing the ID # 089-31941-00471. Please also note that you must check the reCAPTCHA box before search will occur. Additionally, all required submittals and inspection documents can be found at this location

Indiana Harbor CDF Operation, Closure and Post-Closure

81. Comment: A commenter stated that if the decision is made to place the TSCA material into the CDF, the existing Emergency Action Plan (EAP) should be reviewed to ensure that it complies with TSCA requirements. Regardless of whether TSCA material is deposited into the CDF, training requirements, as stated in the EAP, should include periodic table top exercises and drills that involve local, county, and state emergency management personnel as well as East Chicago Waterway Management District (ECWMD) representatives. Initial training for new personnel should be conducted in accordance with the training provisions of the EAP and Appendix B. Refresher training should occur whenever new conditions exist, and as frequently as necessary to ensure the efficacy of the EAP.

Response: The EPA Approval require USACE to keep the Emergency Action Plan updated with appropriate procedures and contacts.

82. Comment: A commenter stated that the Draft Approval includes language related to the PCB cleanup standard for areas outside the CDF cells but within the fence line of the CDF. Since the ECWMD plans to redevelop or re-use the CDF property after site closure, it should be involved, and have the final say, in, the determination regarding the PCB cleanup standard. referenced in paragraph 97 of the Draft Approval.

Response: The cleanup standards specified in paragraph 97 of the EPA Approval are in accordance with the standards specified in the PCB regulations.

83. Comment: A commenter asked about what procedures are in place to ensure the CDF site is properly and safely managed and closed in the future. Because of the uncertainty of the current Trump administration's initial position on funding for environmental programs, there are concerns about the operation and maintenance and closure and post-closure care of the CDF.

Response: This Approval requires USACE to submit a closure and post-closure care plan for EPA and IDEM review and approval.

Notifications and Submittals

84. **Comment:** A commenter stated that emergency notifications need to include to local authorities, schools, residents, local businesses & workers not just U.S. EPA, IDEM and ECWMD.

Response: The local emergency response personnel will provide local emergency notifications as part of their emergency procedures as appropriate.

85. **Comment:** A commenter, the ECWMD, requested notification of various submittals and reports, including those set forth in Paragraphs 48, 49, 58, 66, 74, 79, 80, 81, 83, 86, 87, 88, 94, and 95 of the Draft Approval.

Response: As part of the Cooperation Agreement between the ECWMD and the USACE, ECWMD can request the submittals and notifications from USACE.

86. **Comment:** A commenter stated that Paragraph 77 of the Draft Approval states that records will be disposed of after 20 years and requested that all documents relating to the location of TSCA material be maintained indefinitely, and that all other records scheduled for destruction, whether related to TSCA material or not, be offered to ECWMD prior to destruction.

Response: As part of the Cooperation Agreement between the ECWMD and the USACE, ECWMD can request these documents from USACE.

Indiana Harbor CDF Owner/Operator

87. **Comment:** Commenters stated that it is not clear whether USACE or ECWMD has the responsibility for unfunded future liabilities, third-party claims and perpetual maintenance of the CDF.

Response: After the TSCA Approval is issued to the USACE, they will have responsibility for the CDF in perpetuity. The Cooperation Agreement between USACE and ECWMD apportions the liability for the CDF between them. ECWMD has set aside funds within the ECI Facility Trust to address that potential future responsibility.

88. **Comment:** Commenters asked why ECWMD is not included in the Approval if ECWMD, as owner of the CDF site, has liability for future costs, maintenance, and emergency response. How does this comply with laws and regulations pertaining to “Transfer of property” for the CDF?

Response: There is no legal requirement for the owner to be on the CDF Approval. As long as the operator has the necessary access and authority, the Approval can be issued to just the operator. That access and authority is captured in the Project Cooperation Agreement between the USACE and ECWMD that governs the use of ECI property by the USACE for operating the CDF.

89. Comment: A commenter stated that the Feddeler, LLC interest in a parcel of property within the CDF should be resolved before finalizing the Approval and placing any TSCA regulated material into the CDF.

Response: The Feddeler LLC interest, which was an old railroad easement, is already buried by at least a million cubic yards of contaminated sediment. There is no significant impact on the interest if the next million cubic yards contain TSCA materials or not. The USACE is planning to place another approximately 1 million cubic yards on top of the easement regardless of the issuance of the TSCA Approval.

Former ECI Property Use

90. Comment: Commenters stated that the community, the City of East Chicago, and the ECWMD Board have concerns about the ability to re-use and/or redevelop the site after the CDF is closed. The goal should be unrestricted use for the CDF site not a 160-acre sacrifice zone in the middle of East Chicago, Indiana and the Marquette Plan area that is off-limits forever. The PCB-contaminated sediment should be removed from the canal but not be placed into the CDF and should be disposed of in an off-site facility.

Response: In an October 31, 2008 letter from EPA to USACE, EPA notified USACE that they can propose a recreational or other use of the CDF as part of the CDF closure plan application and review process. EPA and IDEM will review any proposed reuse of the CDF to ensure it protects human health and the environment.

91. Comment: A commenter stated the site should be turned over to ECWMD or the City of East Chicago for redevelopment and/or reuse after the site is properly closed in accordance with application regulations (TSCA or RCRA). ECWMD has always planned that it would be able to reuse the site for recreational or other approved purposes. This is a huge parcel of property that sits in a prime location near the high school and the Canal in the middle of the City. It's also in the middle of an industrial area, so the parcel could be redeveloped into additional industrial properties. Nothing in the PCA or any other document precludes ECWMD or the City of East Chicago from redeveloping the site, provided such redevelopment does not interfere with features required for site closure.

Response: The ECWMD is the owner of the ECI site where the CDF is located. As stated above, potential use of the CDF is possible after the facility is closed. Potential uses would need to be reviewed by EPA and IDEM so that they are not incompatible with the CDF.

92. Comment: A commenter stated that the Army Corps of Engineers is responsible for that land, and it could be off limits forever. The future use of the land should benefit the residents that are taking on the burden of the CDF.

Response: The USACE operates the CDF but is not the owner of the property. As stated above, future land use is possible, but it will need to be reviewed by EPA and IDEM to be sure that the use does not harm the CDF.

93. Comment: Redevelopment of a TSCA-regulated facility will be more complicated and possibly costlier than development of a site regulated by less onerous RCRA requirements.

Response: To complete the remediation and closure of the former ECI site under RCRA, IDEM will require the contaminated property to be capped. Under RCRA and TSCA, any cap must be monitored and maintained, and any future redevelopment plans reviewed and approved to safeguard the integrity of the cap. The USACE planned to dispose of the TSCA materials in the CDF as part of the original design that was evaluated and approved in 2001 in the Environmental Impact Statement and already built the CDF to that standard so there are no significant additional construction costs.