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Hearing on "Oversight of CERCLA Implementation"
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Major Points:

- For over 30 years, the EPA has successfully identified and treated hundreds of Superfund sites, typically old abandoned landfills or industrial properties. However, the "typical" Superfund site profile has changed from abandoned landfills and industrial properties to complex mining and river sediment sites, often referred to as mega sites. These mega sites are far more complicated, expensive, and time consuming than traditional Superfund sites.

- To assist EPA Regions and Project Managers in making scientifically sound and nationally consistent risk management decisions, EPA issued two critical policy guidance documents: Principles for Managing Contaminated Sediment Risks at Hazardous Waste Sites (OSWER Directive 9285.6-08, 2002) and the comprehensive (170 pages) Contaminated Sediment Remediation Guidance for Hazardous Waste Site, (OSWER 9355.0-85, 2005) (EPA Sediment Guidance or Sediment Guidance).

- The substance of the Sediment Guidance presents a comprehensive, technically sound policy roadmap for addressing complexities associated with contaminated sediment sites. However, the EPA's recent disregard of NCP regulations and the Sediment Guidance are significantly delaying remediation of impacted sites and the redevelopment of our nation's waterways.

- Appropriate application of CERCLA's NCP provisions, the EPA's Contaminated Sediment Guidance, and the recommendations in my testimony would result in making remedies faster, fairer, and more efficient. Similarly, they would significantly accelerate the redevelopment of Superfund sites located along our nation's waterways.

Chairman Shimkus, Ranking Member Tonko and Members of the Committee:

Thank you for holding this important oversight hearing on the Comprehensive Environmental Response, Compensation and Liability Act of 1980, otherwise known as CERCLA, or Superfund. My name is Steven Nadeau, and I am an environmental law attorney with more than three decades of experience representing potentially responsible parties (PRPs) at complex superfund sites across the country, including Michigan, Illinois, Indiana, Ohio, New York, New Jersey and the Pacific Northwest. I also serve as the Coordinating Director for the Sediment Management Working Group (SMWG), which is an ad hoc group of Superfund technical practitioners dedicated to ensuring remedial actions at Superfund sites are based on sound science and risk-based solutions.

I am delighted to be here before you today to share my experience with the Superfund program. However, before I do I must say that these views are my own and do not represent the views of any particular client or member of SMWG.

Congress enacted CERCLA in response to a growing desire for the federal government to ensure the cleanup of the nation’s most contaminated sites and to protect the public from potential harm.

CERCLA authorizes the cleanup and enforcement actions of federal agencies, such as the Environmental Protection Agency (EPA), to respond to actual or threatened releases of hazardous substances into the environment. CERCLA establishes a broad liability scheme that holds past and current owners and operators of facilities, from which a release occurs, financially responsible for cleanup costs, natural resource damages, and the cost of federal public health

studies. Accordingly, the EPA identifies PRPs for hazardous substances releases to the environment and then either requires them to clean up the sites or undertakes the cleanup on its own using the Superfund trust fund and/or costs recovered from potentially responsible parties. The liability of these PRPs has been interpreted by the courts to be strict, joint and several, and retroactive.

I- The New Reality of the Superfund Program

For over 30 years, the EPA has successfully identified and remediated hundreds of Superfund sites, typically old abandoned landfills or industrial properties. However, the "typical" Superfund site profile has changed from abandoned landfills and industrial properties to complex mining and river sediment sites, often referred to as mega sites. These mega sites are far more complicated, expensive, and time consuming than traditional Superfund sites. These mega-sites typically reflect hundreds of years of urban and industrial activity, from hundreds and even thousands of sources – public and private. As such, these sites present the challenge of addressing the environmental impacts of ongoing urban and industrial use, rather than cleaning up discreet releases from individual entities.

For example, large-scale, contaminated sediment remediation projects on urban rivers, like the Willamette River, can often include dozens of PRPs, cost over $1 billion dollars, and drag on for decades. Contaminated sediment is a widespread and costly problem in the United States. Its wide distribution results from the propensity of many contaminants that migrate or are discharged to surface waters to accumulate in sediment or in suspended solids that later settle. Furthermore, contaminants can persist in sediment over long periods if they do not degrade (i.e.

metals) or if they degrade very slowly. The map below shows EPA-identified watersheds as of 2004 containing areas of concern for sediment contamination.

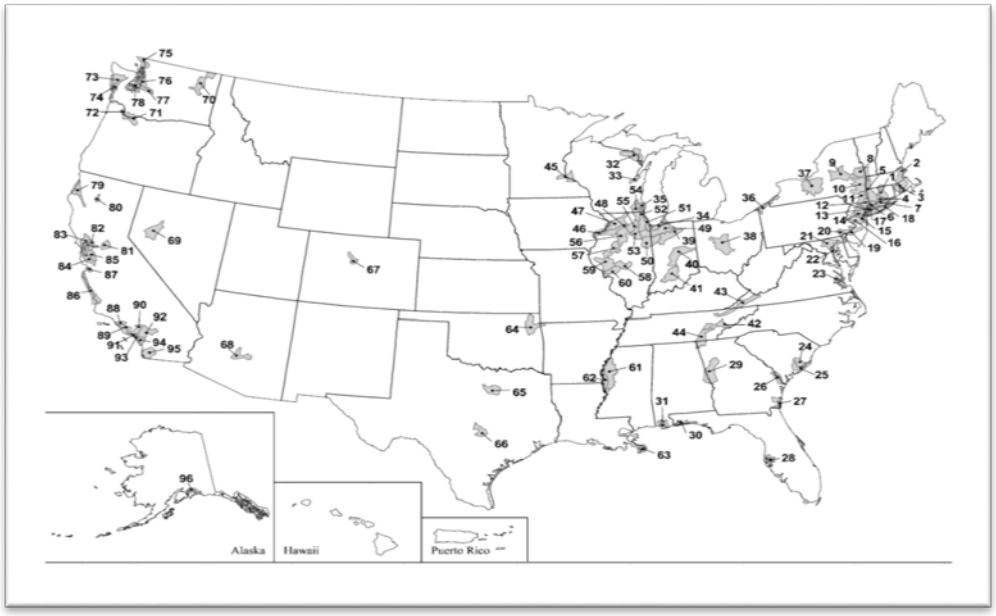

Figure 1: Source: Environmental Protection Agency - National Sediment Quality Survey, 2nd Edition (2004)

To put costs in perspective, in 1998, in a limited survey of the problem, EPA estimated that 1.2 billion cubic yards of sediment is contaminated nationwide. Assuming dredging is required, the total cost, using a conservative $250 per yard for dredging, would be a staggering $300 billion. Since then, scores of additional contaminated sediment sites have been identified.

From a regulatory standpoint, contaminated sediments and mining sites are challenging to manage. There is a limited range of remedial techniques that one can employ for managing contaminated sediments, including dredging; application of in-situ amendments to bind up contaminants; capping or covering contaminated sediments with clean material; and relying on natural processes to reduce risk, while monitoring the site to ensure that contaminant exposures are decreasing or stable. Each approach differs in complexity and cost. Dredging typically is the

most complex and expensive, and monitored natural recovery is the least intrusive and least expensive. In addition, each remedial action has certain trade-offs between the short-term and long-term risks that are created during implementation and the anticipated risk reduction from the remedy.

To assist EPA Regions and Project Managers in making scientifically sound and nationally consistent risk management decisions, EPA issued two critical policy guidance documents: Principles for Managing Contaminated Sediment Risks at Hazardous Waste Sites (OSWER Directive 9285.6-08, 2002) and the comprehensive (170 pages) Contaminated Sediment Remediation Guidance for Hazardous Waste Site, (OSWER 9355.0-85, 2005) (EPA Sediment Guidance or Sediment Guidance). The EPA Sediment Guidance was meticulously developed by EPA over a five-year period and was the subject of internal review, comment from EPA's Regions, and extensive public comments.

The substance of the Sediment Guidance presents a comprehensive, technically sound policy roadmap for addressing complexities associated with contaminated sediment sites. However, as I describe below, the EPA's recent application of the Sediment Guidance has severely limited the effectiveness of the Superfund program at sediment sites. In fact, the failure to follow the NCP and the Sediment Guidance often has devastating and long lasting impacts on local communities and their citizens. For example, risks to human health and the environment posed by contaminated sediments are ongoing during delays of ten to twenty years or more in order to complete studies deemed necessary due to an aversion of decision-making in the face of some uncertainty. Similar lengthy delays often occur beyond the study phase if large scale dredging remedies are implemented over a decade or more. Lengthy removal remedies often

result in disruption of commercial and recreational use of the waterway for many years and preclude redevelopment along the waterbody.

II- Typical Issues and Challenges at Contaminated Sediment Sites

Despite the existence of a sound national contaminated sediment policy (as embodied in the EPA Sediment Guidance), the current EPA Superfund program is not functioning properly at mega sites. For example, at contaminated sediment sties, the Sediment Guidance and the remedy selection criteria within the National Contingency Plan (NCP) regulation are being disregarded by the EPA Regions at many sediment sites, particularly where it is needed the most—at mega sediment sites (with projected costs greater than $50 million, with several exceeding $1 billion dollars)[1]. This disregard of NCP regulations and the Sediment Guidance are significantly delaying the remediation of impacted sites and the redevelopment of our nation's waterways.

The complexity of large contaminated sediment sites is unparalleled in the Superfund program because these sites are so large, often consisting of ten to thirty river miles or large lakes or harbors associated with expansive watersheds. These large sediment sites frequently involve comingled contaminants from multiple sources, which may result in impacts to human

[1]The magnitude of these sediment sites is extraordinary: Lower Willamette River, Portland OR –the proposed remedy is estimated by the Region to cost close to $1 billion, although many experts believe the actual cost will run well over $1.6 billion; Lower Passaic River, NJ - $1.7 billion; Lower Duwamish, Seattle WA – $395 million; Gowanus Canal, NY – $560 million; and the Fox River, WI –originally estimated to cost $390 million, but costs now are projected to exceed $1 billion.

Mining sites frequently traverse rivers and creeks for dozens of miles, often involving small, rocky creeks that are virtually impossible to completely address. Mine tailings have spread over thousands of acres, and acid mine drainage (AMD) that is expected to continue for thousands of years. In 2004, the EPA Inspector General estimated that 63 mining sites would collectively cost up to $7.8 billion to clean up (or more than $120 million per site on average), with almost one-third of those costs borne by taxpayers. (See EPA OIG, Nationwide Identification of Hardrock Mining Sites, 2004-P-00005, March 31, 2004). Examples include: Coeur d'Alene Basin ROD Amendment (August 2012) (estimated cost of $635 million over 10 years) and Iron Mountain Mine (a $950 million settlement was agreed to by Aventis in 2000 to address AMD and other cleanup costs; the AMD remedy has been funded to run "in perpetuity" because the mine is expected to continue to produce AMD for 2,500 to 3,500 years).

health via fish consumption, but sources of risk are not easily identified and are often difficult to quantify.

These difficult and unpredictable factors have led to numerous issues and challenges at contaminated sediment sites, many of which are described below.

- **Source control, especially at large urban rivers**

At some sites, as noted above, EPA is selecting multi-mile, multi-million yard sediment remedies without adopting measures to reasonably control continuing contamination sources before implementing those remedies, which is required by the Sediment Guidance. The failure to adequately characterize and control upstream and adjacent sources can result in remedies that are almost certain to be recontaminated, often shortly after remedy completion, especially in large urban rivers.

  - Example: Gowanus Canal (NY) – The Record of Decision (ROD) fails to address municipal storm water outfalls that contribute hundreds of millions of gallons of contaminated roadway water, which is known to be a significant source of pollution. This leaves the waterway completely vulnerable to recontamination and failure after completion of the remedy at a cost of more than $550 million.

- **Lengthy and costly studies, spurred by ultra-conservatism and the fear of proceeding in the face of uncertainty, despite the availability of sufficient information to make sound decisions**

The length of the RI/FS phase at large contaminated sediment sites is running ten to twenty years with investigation and administrative costs running over $150 million with little to no risks areas being addressed. Such delays are spurred on by regulatory conservatism and an emphasis on dredging, even where it is not cost-effective or necessary based on the best available science.

As a result, appropriate risk management is delayed, community-based redevelopment of waterfronts is impaired, and resources that could be used to implement a cleanup are instead spent on unnecessary and unproductive studies.

- Example: Willamette River (OR) RI/FS – 15 years duration and a cost of over $100 million

- **EPA's reliance on "mass removal"--disregarding the Sediment Guidance's strong emphasis on risk reduction**

EPA's unrealistic risk scenarios and failure to apply the sediment guidance has led to overly conservative remedies that focus on "mass removal," which often results in significant release of contaminants from the sediment into the water. Sediment sites differ significantly from traditional upland CERCLA sites in that more intrusive remedies (i.e., dredging) can substantially increase the risk of harm to human health and the environment. Despite the use of Best Management Practices, resuspension and release of contaminants during dredging is inevitable and unavoidable. This can cause short term and long term adverse impacts to the waterbody and fish, such as elevating fish tissue concentrations significantly compared to pre-dredging conditions or compared to remedies with less reliance on mass removal. Ignoring these impacts of construction and fish recovery deprives communities of the use of their natural resources.

- Example: Commencement Bay (WA) – After two major dredging projects were completed, concentrations of PCBs in fish tissue are still higher than they were over twenty years ago before dredging began (38 ppb before and 70 ppb after).

- Example: Lower Duwamish River (WA) – Remedial alternatives 3 through 6 of the Feasibility Study would have all achieved approximately the same level of long-term

risk reduction, yet Region 10 selected a remedy that required 460,000 cy of additional dredging (a 94% increase) and added four additional years of dredging/construction time. This will inevitably result in a substantial release of contaminants to the river during the Region's estimated seven years of dredging.

- **Disregard and disrespect of the recommendations of NRRB/CSTAG and lack of senior HQ support for NRRB/CSTAG's recommendations**

EPA established the Contaminated Sediments Technical Advisory Group (CSTAG) as a panel of 18 experts in the field of sediment remediation drawn from each EPA Region, Headquarters, and EPA's Office of Research and Development to provide expert advice and foster consistency with the NCP and the EPA Sediment Guidance, including the critical remedy selection decision. The role of CSTAG's experts was greatly diminished in 2011 when CSTAG's review was combined with the previously separate National Remedy Review Board (NRRB) review.[2] EPA's Regions frequently disregard the recommendations of NRRB/CSTAG because the review is considered advisory and non-binding. Of equal significance is that, based on the current EPA decision-making process, senior EPA Headquarters management is not responsible for the remedy selection decision at mega-sediment sites and is not providing support for CSTAG/NRRB's recommendations when they are ignored.

  - Example: Gowanus Canal (NY) – NRRB/CSTAG recommended that the Region evaluate several specifically listed alternatives that could reduce the amount of

[2] In the combined NRRB/CSTAG review, CSTAG's role has been greatly diminished, with only two or three CSTAG representatives (instead of the full panel of 18 experts) listening in on the NRRB deliberations. This well-intended streamlining significantly diluted and changed the nature of the internal EPA peer review, because the CSTAG's members consist of some of the leading U.S. EPA sediment experts, whereas the NRRB members typically are senior Regional Superfund Program Managers, normally not schooled in complex sediment issues. Notwithstanding their diminished nature, the combined NRRB/CSTAG reviews have recognized and commented on many of the same Regions' inconsistencies with the NCP and Sediment Guidance noted in this memorandum and have made specific recommendations to the Regions to correct those inconsistencies, many of which have been ignored by the Regions without consequences.

dredging based on what CSTAG saw as the "expected limited effectiveness of dredging." However, the Region's Feasibility Study failed to consider CSTAG's recommended alternatives.

- Example: Lower Passaic (NJ) – In its 2014 review of Region 2's Proposed Plan, CSTAG/NRRB noted remedial goals fell below background levels, but the Region's Proposed Plan and eventually the ROD still included remedial goals that were below anthropogenic background. NRRB/CSTAG also recommended that the Region address the potential for recontamination after the proposed remedy was implemented for the Lower Passaic River, yet the final Conceptual Site Model issued by the Region did not adequately account for ongoing sources and the potential for sediment recontamination.

- **Selection of cleanup standards that are unachievable**

While the CERCLA program focuses on contamination caused by local releases into the environment, some contaminants in water and sediment can be naturally occurring or the result of ongoing human-caused sources. Some contaminants, such as mercury, are transported atmospherically before being deposited on soil or in waterbodies. Under both CERCLA and the Sediment Guidance, cleanup standards are not to be established below anthropogenic background concentrations. "Anthropogenic background" refers to the level of contaminants that is present as a result of human sources (not specifically related to the contaminated site in question) and causes sediments not to recover to the levels below those numbers. Despite this policy, which recognizes the reality of other sources that will prevent achieving remedial goals, some EPA Regions' decisions inappropriately require cleanups that are impossible to achieve because they set remedial goals below anthropogenic background.

- Example: Lower Duwamish (WA) – The 2014 ROD inappropriately requires remedial goals to achieve natural background levels, which are not achievable due to anthropogenic conditions.
- Example: Lower Passaic River (NJ) – EPA selected remediation goals that are $1/10^{th}$ of background levels for mercury and PCBs.

- **Selecting Remedies that Inappropriately Attempt to Address Every Possible Issue Up Front, Causing Substantial Delays in Remediation and Driving Away Parties Which Otherwise Would Step Up to Implement such remedies**

At many mega sediment sites, remedies are consistently being selected by the EPA under the Superfund Program that unrealistically and inappropriately attempt to address all site risks in one comprehensive, ultraconservative ROD. This often results in a release of contaminants that inevitably occur during dredging. Such RODs actually counter-productively stall remediation and drive away responsible parties who would otherwise be willing to implement appropriately phased remedies at mega sediment sites.

The Superfund Program has existing tools that could easily solve this problem: 1) Operable Units (dividing the site into areas or phases within a ROD or RODs), 2) Adaptive Management tools (that are designed to implement specific, focused remedies and then monitor the results and effectiveness before proceeding with additional remedial measures if necessary), and 3) Phasing remedy implementation to accomplish the same purpose as Adaptive Management.

These Superfund techniques have been successful at many large upland Superfund sites for years and the Sediment Guidance also recognizes that a phased approach "may be the best or only option" at complex sites and also specifically encourages the use an adaptive management approach. By utilizing these methods, mega sediment sites will be addressed faster, fairer, more effectively, and encourage responsible parties to undertake these important cleanups.

- **Implementability Issues**

EPA routinely fails to adequately consider the implementability of its remedies, as required by the NCP. Sediment remedy implementability issues often overlooked by EPA include: (i) the significant challenges associated with rail and highway transport of millions of cubic yards of dredged materials (as well as millions of cubic yards of capping and cover material); (ii) the difficulties of not accounting for the reliance on old infrastructure; (iii) the increase in barge traffic needed to transport dredged sediments and capping material; (iv) the consequences of disruption to communities' overall quality of life; (v) the significant long-term impact on commercial and recreational vessels trying to use a waterbody when dredging will continue 24 hours/day for decades; (vi) the impacting presence of hundreds of underwater utilities and obstructions; and (vii) the difficulty in finding adequate and community-acceptable locations for long term, large scale activities. These issues, among many other similar logistical issues, are frequently ignored in the remedy selection process and are inappropriately deferred to the design phase.

  - Example: Lower Passaic River (NJ) – The River Mile 10.9 2013-14 Interim Removal Action involved a relatively small dredging project in a heavily urbanized area of the NY/NJ metropolitan area containing numerous 100-year plus old swing and draw bridges. One of these bridges broke in the open position during the dredging, and replacement parts had to be hand-fabricated, resulting in substantial delays. EPA failed to consider the actual experience from the RM 10.9 removal and approved a remedy of about ten times the scope of RM 10.9 for the Lower Passaic River in the March, 2016 ROD without adequate consideration to the impact on bridges and other transportation infrastructure.

- **Disregard of the cost-effectiveness test set forth in CERCLA, the NCP, and the Sediment Guidance**

EPA routinely rejects remedies that provide equivalent risk reduction at lower costs in favor of more costly remedies that focus on excavating more soil but do not significantly reduce risk. This emphasis on excavation over risk reduction is inconsistent with the Sediment Guidance. Moreover, failure to consider cost-effectiveness is a major violation of CERCLA, the NCP, and the EPA Sediment Guidance. Under the NCP and the Sediment Guidance, remedies must have "costs [must be] proportional to the overall remedial effectiveness." This concept was further explained in the *Federal Register* preamble to the NCP, which states that "if the difference in effectiveness is small but the difference in cost is very large, a proportional relationship between the alternatives does not exist." [3]

  - Example: Lower Duwamish (WA) – Region 10's 2014 ROD selected an alternative (5C modified) that will cost at least $142 million more (representing a 71% increase) than the alternative with a comparable level of protectiveness.
  - Example: Lower Passaic (NJ) – Region 2's cost-effectiveness "analysis" for a $1.4 billion remedy consists of six sentences, provides no details as to how cost-effectiveness or proportionality were determined, and fails to address how the cost-effectiveness of the selected remedy was compared to other alternatives, as required by the NCP.

- **EPA Does Not Require All PRPs to Participate in Remedies**

EPA Guidance calls upon the Agency to involve all potential responsible parties in cleanup sites. The parties to be involved include public entities such as municipalities, public utilities,

[3] 55 Fed. Reg. 8728 (March 8, 1990).

and state and federal agencies. However, EPA does not consistently apply this Guidance and routinely fails to involve all of the parties responsible for a cleanup, leaving the burden to those entities EPA chooses to include. In particular, EPA does not consistently involve public entities in sediment site cleanups, which are in a unique position to contribute to remedies at sediment sites. Local governments can play an indispensable role in addressing off-river sources of recontamination and advocating for cost-effective remedies. Additionally, local governments are also more likely to be sensitive to the implementability of sediment remedies, as well as the impact of remedies on quality of life issues such as odor control, local traffic conditions, and coordinating economic development with environmental restoration.

- Example: Lower Passaic River (NJ) – EPA did not identify any public entities as responsible parties until after the remedy was selected, despite the fact that controlling ongoing municipal discharges (CSOs) are a critical part of the success of any remedy selected in order to avoid recontamination.

- **EPA has failed to follow its Guidance and procedures governing PRP-lead RI/FS Work**

At least two recent Regional decisions have disregarded the long-standing Superfund process applicable to PRP-lead RI/FS sites. This constitutes an unprecedented violation of the letter and spirit of EPA's Superfund RI/FS Guidance. This significant departure from EPA Superfund protocol should not have been permitted at the senior EPA Regional level or by EPA Headquarters.

- Example: Lower Willamette (OR) - In January 2016, at the Willamette River (Portland Harbor) site, Region 10 unilaterally decided to inform the PRP Group, which had fully implemented all work for over 15 years on the RI/FS (including human health and ecological risk assessments) and had spent in excess of $100 million on that work, that it was rescinding the delegation of the PRP-lead status for the FS.

- Example: Lower Passaic (NJ) – In 2014, at the Lower Passaic River site, Region 2 decided to revise and re-issue an EPA-lead Focused Feasibility Study that covered only the lower eight miles of the site study area. The PRP-lead RI/FS, comprehensively covering the entire 17 mile study area, had been in the works for over 10 years, at a cost of over $150 million. The PRP Group's work had been performed under extensive oversight of Region 2, consistent with Superfund RI/FS Guidance. This March 2016 action by EPA preempted the extensive PRP RI/FS work, which covers the full 17 mile study area not just the lower eight miles targeted by EPA's interim action.

III – Solutions

Based on my extensive work at sediment sites across the country and the issues outlined above, I respectfully request you consider the following recommendations to improve remedy selection decisions at the EPA. Implementing these recommendations will protect human health and the environment, aid cost effectiveness, provide for efficient use of natural resources, and save taxpayer dollars.

1. EPA Headquarters should strictly require Regions to adhere to CERCLA, the NCP, and the Sediment Guidance at the site investigation, remedy evaluation, and remedy selection stages at all contaminated sediment sites.

2. Senior EPA Headquarters staff should be responsible for approving sediment remedy decisions over $50 million after review and evaluation of the Region's proposed remedy by the NRRB and CSTAG. Congress should require that all Superfund remedies over $50 million be approved by the EPA Administrator.

3. The remedy-selection recommendations by the NRRB and CSTAG should be incorporated into the Agency's formal decision process, rather than their current status as a completely non-binding (and largely ignored) internal agency peer review. NRRB/CSTAG remedy decisions should be binding subject to rebuttal by the Region handling the site.

4. The pre-2011 CSTAG and NRRB process involving a comprehensive review of mega sediment sites by the full CSTAG should be restored to permit the Agency's leading subject-matter sediment experts around the country to provide detailed review and comment on the consistency of Regional Proposed Plans with the NCP and the Sediment Guidance.

5. Well-established Superfund processes such as Operable Units, Adaptive Management, or Phased Remedies should be utilized at sediment mega sites rather than attempting to address virtually all site issues, large and small, up front in one massive, ultraconservative removal remedy. This will accelerate cleanups and reduce the risk that remedy implementation itself will cause more harm than good.

6. Every ROD should comply with the cost-effectiveness requirement of the NCP by including a detailed and transparent analysis demonstrating the "proportionality" between the anticipated risk reduction of each remedial alternative and the incremental cost of such alternative. This will force the Regions to actually conduct a detailed evaluation of the proportionality cost-effectiveness requirement

of the NCP rather than simply stating the remedy is cost-effective, which is the current, unacceptable practice.

7. EPA Headquarters should be required to engage in effective oversight of Regions to ensure that Regions are following EPA Guidance on involving public entities in sediment clean-ups.

Appropriate application of CERCLA’s NCP provisions, the EPA’s Contaminated Sediment Guidance, and these recommendations would result in making remedies faster, fairer, and more efficient. Similarly, they would significantly accelerate the redevelopment of Superfund sites located along our nation’s waterways. Again, I want to thank the committee for holding this important hearing, and I look forward to answering your questions.