

The Need to Issue Principal Threat Waste Contaminated Sediment Guidance Sediment Management Work Group¹ April 4, 2018

The concept of Principal Threat Waste (PTW) was originally intended as an advisory process to be helpful in streamlining and focusing decision-making on appropriate waste management options in light of the Comprehensive Environmental Response, Compensation, and Liability Act's (CERCLA's) preference for treatment "where practicable." While prior U.S. Environmental Protection Agency (U.S. EPA) Records of Decision (RODs) involving contaminated sediment, such as the 2014 Lower Duwamish Waterway Superfund Site (LDW) ROD, addressed PTW in a manner consistent with U.S. EPA guidance, more recent RODs at other sediment megasites have inappropriately used PTW to drive remedial action determinations toward increasing mass removal (i.e., dredging). In fact, it appears that at some sediment sites, PTW has been elevated to become a de facto 10th "overriding" National Contingency Plan (NCP) remedy selection factor. In essence, the use of PTW has recently been used to override the NCP's existing tried-and-true criteria, despite the fact that the NCP is a promulgated rule, while the existing November 1991 Superfund Publication 9380.3-06FS titled "A Guide to Principal Threat and Low Level Threat Wastes" (referred to herein as the PTW Fact Sheet) is merely a guidance document. This alarming trend ignores the express purpose and intended use of the PTW Fact Sheet, which clearly states: "Although remedy selection decisions are ultimately site-specific determinations based on an analysis of remedial alternatives using the nine evaluation criteria, these expectations help to streamline and focus the remedial investigation/feasibility study (RI/FS) on appropriate waste management options."

Recent examples of PTW overreaching include the 2016 ROD for the Portland Harbor Superfund Site (Portland Harbor) and the 2017 ROD for the San Jacinto River Waste Pits Superfund Site, where containment or other in situ remedies would be more appropriate and consistent with the NCP and U.S. EPA's sediment remediation guidance. At both sites, the incremental cost of sediment removal compared to capping is significant and highly disproportionate to its reduced protectiveness, particularly given the unavoidable releases of contaminants that occur during dredging that have been widely demonstrated to adversely impact the surrounding environment. In addition, compared to proven and reliable containment remedies, unnecessary removal actions dramatically increase the length of time required to implement a cleanup remedy, resulting in waterbodies not being available for beneficial redevelopment in a timely fashion. Management of PTW with an emphasis on sediment removal is inconsistent with the PTW Fact Sheet and the goals outlined by the 2017 U.S. EPA Superfund Task Force recommendations, which are focused on expediting cleanup and remediation, accelerating site reuse, and increasing the potential opportunities for the redevelopment of these valuable resources.

This paper presents reasons why U.S. EPA should issue a new contaminated sediment-specific PTW guidance document to address the complex issues posed by contaminated sediment sites, focusing and updating the more general and older PTW Fact Sheet. Issuance of a new, sediment site-specific guidance on PTW will provide a much-needed correction of the misuse and

¹ The views expressed in this paper are those of SMWG as a group, and not of any individual Member of SMWG.

misapplication of the concept of PTW that currently is occurring at many contaminated sediment sites.

1. History and Origin of the PTW Concept

The concept of PTW set forth in the NCP and the PTW Fact Sheet is narrow and has limited applicability. It pertains only to “source material,” defined as material containing hazardous substances that “act as a reservoir for migration of contamination” to environmental media, and was originally intended to focus on highly mobile and toxic substances in groundwater environments. It reflects a preference for treatment (not removal/dredging) only of certain “source material”: that which “cannot be reliably contained or would present a significant risk to human health or the environment should exposure occur.” It is critical to remember that PTW is not a mandatory waste classification requirement, and the guidance is directly connected to site-specific considerations regarding its application. The PTW Fact Sheet specifically acknowledges that “**other** source materials **can** be safely contained and that treatment for all waste will **not** be appropriate or necessary to ensure protection of human health and the environment, nor cost effective” (emphasis added).

As noted above, however, U.S. EPA has recently extended the application of PTW far beyond its intended scope; moreover, U.S. EPA has recently used the inflated scope of PTW management as a basis to require mass removal (i.e., dredging) over more protective containment or treatment technologies. This application of the PTW designation is inappropriate for several reasons, including the following:

- As noted in the 2014 LDW ROD and other earlier U.S. EPA contaminated sediment remedy decisions, not all contaminated sediment sites necessarily have PTW or require removal of PTW. As is fairly typical at contaminated sediment sites, the LDW ROD concluded that “no direct evidence of any significant amounts of non-aqueous phase liquids has been found in the LDW sediments” (p. 115). Only sites with waste materials that meet the narrow definition of PTW should achieve a PTW designation and should be managed consistent with PTW guidance. At many sites, there are no “source materials” present, and even if there are, they may be source materials that can be reliably contained or do not present a significant risk to human health or the environment should exposure occur.
- PTW designation does not override the NCP’s remedy selection process. The selection of an appropriate waste management strategy is to be determined solely through the remedy selection process outlined in the NCP, particularly 40 CFR 300.430(e)(9)(iii).
- PTW designation establishes a preference for treatment, not removal, and even then, the preference for treatment may be overcome in specific situations that are common at contaminated sediment sites.
- PTW designation is a site-specific determination that applies only to “source material” that “cannot be reliably contained or would present a significant risk to human health or the environment should exposure occur,” which does not apply to most contaminated sediments.
- U.S. EPA’s 2005 *Contaminated Sediment Remediation Guidance for Hazardous Waste Sites* (Sediment Guidance), which is more recent and more specifically applicable to

sediment sites than the PTW Fact Sheet, states that PTW designation is frequently inapplicable to sediment sites (Sediment Guidance, Section 6.7).

- No threshold level of risk is established for PTW in the PTW Fact Sheet beyond the generalized statement that “where toxicity and mobility of source material combine to pose a potential risk of 10^{-3} or greater, generally treatment alternatives should be evaluated.” Therefore, site-specific considerations evaluating whether PTW can be “reliably contained” should be used to evaluate the impacts associated with toxicity and mobility, rather than applying the PTW designation without addressing these considerations.

2. Two Recent Examples—Portland Harbor Superfund Site and the San Jacinto River Waste Pits Superfund Site

2.a. Portland Harbor Superfund Site

U.S. EPA’s January 2017 Portland Harbor ROD calls out three categories of PTW, which it describes as “PTW source material,” “PTW that cannot be reliably contained,” and “PTW highly toxic.” However, the Portland Harbor ROD provides no analysis of how any of these forms of PTW meets the definition of PTW in the PTW Fact Sheet or the Sediment Guidance. Highlight 3 in the PTW Fact Sheet states the following wastes will generally be considered to constitute PTW:

- **“Liquids**—waste contained in drums, lagoons or tanks, free product (NAPLs) floating on or under groundwater (generally excluding groundwater) containing contaminants of concern.”
- **“Mobile source material**—surface soil or subsurface soil containing high concentrations of contaminants of concern that are (or potentially are) mobile due to wind entrainment, volatilization, (e.g., VOCs), surface runoff, or subsurface transport.”
- **“Highly-toxic source material**—buried drummed non-liquid wastes, buried tanks containing non-liquid wastes, or soils containing significant concentrations of highly toxic materials.”

The Portland Harbor ROD defines PTW source material as sediments offshore of two properties that contain “globules or blebs of product in surface and subsurface sediment.” Globules and blebs do not achieve the PTW Fact Sheet definitions for either liquids or mobile source material. Nor does the ROD show that these forms of contamination “act as a reservoir for migration of contamination” (PTW Fact Sheet) or cannot be reliably contained by capping through site-specific evaluations.

The Portland Harbor ROD designated large geographic areas as “PTW highly toxic” based on its assessment of the presence of 10^{-3} cancer risk, which they estimated using U.S. EPA tissue-to-sediment risk-based models adapted from the forward calculations in the baseline risk assessments.

For polychlorinated biphenyls (PCBs) and dioxin/furans, U.S. EPA approximated the 10^{-3} cancer risk by multiplying the 10^{-6} cancer risk-based goals by 1,000 for each chemical under the human health fish consumption pathway. For benzo(a)pyrene equivalents (BaPEq), U.S. EPA followed the same procedure using a sediment direct-contact cleanup level for high-frequency fishers. Based on U.S. EPA’s models, the 10^{-3} risk-based concentration for pesticides (referred to as DDX) is not equivalent to 1,000 multiplied by the 10^{-6} concentration (6.1 micrograms per kilogram; also the

cleanup level for DDX in the ROD). This approach results in PTW concentrations that are inconsistent with U.S. EPA's baseline human health risk assessment (BHHRA) that did not identify any risks greater than 10^{-3} for dioxin/furans, pesticides, or BaPEq for any scenario evaluated. For total PCBs, a greater than 10^{-3} cancer risk was found in the BHHRA for three fish consumption scenarios: subsistence (mixed diet, fillet), recreational (mixed diet, fillet), and tribal (whole body and fillet). However, the PTW Fact Sheet states the following: "Source material' is defined as material that includes or contains hazardous substances, pollutants or contaminants that act as a reservoir for migration of contamination to groundwater, to surface water, to air, or acts as a source for **direct exposure**" (emphasis added). U.S. EPA's ROD states that under this approach, surface water concentrations assumed to equal ambient water quality criteria yield target tissue concentrations greater than risk thresholds.

The fish consumption pathway risks do not represent direct exposures from source materials but rather integrate contaminant contributions from sediment, surface water, and diet. Consequently, direct exposure to sediments does not pose risks greater than 10^{-3} for PCBs. In addition, contaminants in fish do not represent a "reservoir for migration" of contamination to other media. The end result of U.S. EPA defining "PTW highly toxic" by these methods is that the Portland Harbor ROD designates material containing PCBs at 200 parts per billion as PTW, which is 5 times lower than the PCB Remedial Action Level applicable to sediments within the navigation channel (i.e., point sediment concentration requiring active cleanup to achieve the long-term cleanup level). This conclusion is directly contrary to the LDW ROD and all other sediment RODs in the Pacific Northwest. Moreover, this decision results in roughly \$100 million in additional remedial action costs that cannot be shown as necessary to reduce unacceptable risk.

The Sediment Guidance is clear that PTW only exists where the factors of highly toxic or highly mobile **combine** with a condition of "not reliably containable." The Portland Harbor ROD acknowledges that all chemical concentrations present in the site, with just two exceptions (chlorobenzene and naphthalene), can be reliably contained using non-site-specific modeling parameters. Thus, none of the areas where these contaminants are undetected should be designated as PTW. Accordingly, if all PCB, polycyclic aromatic hydrocarbons (except naphthalene), and DDX concentrations present at the site can be reliably contained, then U.S. EPA is not required to address them as PTW. In the BHHRA, measured naphthalene concentrations did not pose a greater than 10^{-3} risk for any media or scenario evaluated and therefore do not constitute PTW. Chlorobenzene is not a carcinogen and therefore does not exceed the 10^{-3} or greater risk threshold for the highly toxic determination of PTW.

Lastly, the Portland Harbor ROD incorporates an unprecedented approach in its management of PTW that requires prescriptive remedial technology assignments based on the presence of PTW that are inconsistent with U.S. EPA guidance and practice. For example, the Portland Harbor ROD requires dredging in all areas containing PTW source material and the placement of a treatment layer in caps and residual covers in all areas where PTW (as defined by the Portland Harbor ROD) exists, even if the PTW is removed by dredging. The ROD does not include any evaluation of implementability or effectiveness, let alone cost-effectiveness, for these prescriptive technology assignments. This prescriptive technology approach is inconsistent with the PTW Fact Sheet, which states, "The selection of an appropriate waste management strategy is determined solely through the remedy selection process outlined in the NCP (i.e., all remedy selection decisions are

site-specific and must be based on a comparative analysis of the alternatives using the nine criteria in accordance with the NCP).”

The alternative evaluation included in the Portland Harbor ROD demonstrates that virtually all material at the site can be reliably contained, and where U.S. EPA’s analysis indicates it may not be contained (based on generalized modeling conditions, rather than site-specific evaluations), the material does not represent a direct 10^{-3} or greater cancer risk. Accordingly, the ROD should not have identified any PTW areas. This outcome would be consistent with U.S. EPA’s treatment of the same issue at the LDW Superfund Site and other similar sediment cleanup sites.

2.b. San Jacinto River Waste Pits Superfund Site and Engineered Capping

U.S. EPA’s October 2017 ROD for the San Jacinto Waste Pits Superfund Site justified its decision to convert an existing engineered cap with a proven protectiveness record to dredging in part based on an inappropriate designation of those materials as PTW. An existing armored cap was installed at the site in 2011 after a lengthy evaluation of alternatives as part of a Time-Critical Removal Action that included a detailed, site-specific evaluation of sediment removal alternatives consistent with the NCP before the engineered cap was installed. U.S. EPA subsequently designated sediments reliably contained below the cap as PTW during the development of the Proposed Plan based on an unsupported assumption that a future hypothetical storm could potentially result in catastrophic changes in the course of the San Jacinto River. Ignoring detailed monitoring data verifying that the existing cap is still effectively containing underlying contaminants even following Hurricane Harvey, and despite site-specific feasibility study analyses demonstrating that modest enhancements to the existing engineered cap would significantly increase long-term function and reliability, U.S. EPA inappropriately designated sediments reliably contained below the cap as PTW because of the prior-stated concern.

Engineered capping at contaminated sediment sites is a widely used and accepted remedial technology. In the context of contaminated sediment sites, capping has been successfully used to manage contaminated sediments for more than 20 years. More than 1,000 acres of sediment caps have been constructed over the past 25 years at more than 50 federal and state cleanup sites. According to the National Research Council, “Greater experience with capping remedies has been gained over the last decade; cap performance can be better predicted and quantified.”² Experience has shown that although a certain amount of monitoring and maintenance is required for any cap, the capping technology is both safe and effective. In fact, engineered caps designed following U.S. EPA and U.S. Army Corps of Engineers guidance, such as that currently in place at the San Jacinto River Waste Pits Superfund Site, continue to function as designed and meet cap performance standards. The application of a PTW designation to justify a risky and costly removal of a functioning cap at the San Jacinto Waste Pits Superfund Site is inappropriate and inconsistent with the Sediment Guidance, PTW Fact Sheet, and NCP.

² National Research Council, 2007. *Sediment Dredging at Superfund Megsites: Assessing the Effectiveness*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/11968>.

3. Detailed Discussion of the Applicability of PTW Designations at Contaminated Sediment Sites

The use of PTW designations to drive remediation decisions at contaminated sediment sites is both inappropriate and inconsistent with the PTW Fact Sheet and other, more authoritative U.S. EPA guidance, as discussed in the following sections.

3.a. Not All Sites Contain PTW

As an initial matter, not all sites contain material that meets the narrow definition of PTW, and there is no requirement that U.S. EPA designate material as PTW unless it clearly meets the PTW criteria. Indeed, U.S. EPA has recognized that in some site-specific circumstances, the classification of waste as principal threat/low-level threat will not be applicable (PTW Fact Sheet, p. 2):

“The identification of principal and low-level threats is made on a site-specific basis. In some situations site wastes will not be readily classifiable as either a principal or a low-level threat waste, and thus no general expectations on how to best manage these source materials of moderate toxicity and mobility will necessarily apply. (NOTE: In these situations waste do not have to be characterized as either one or the other. The principal threat/low level threat waste concept and the NCP expectations were established to help streamline and focus the remedy selection process, not as a mandatory waste classification requirement.)”

Accordingly, for sites at which materials do not satisfy the criteria for PTW, the only appropriate action is for U.S. EPA **not** to designate material as PTW. As discussed in the following sections, such circumstances are often the case at sediment sites.

The mere presence of any observation of non-aqueous phase liquid (NAPL) should not automatically trigger a PTW designation. NAPL can appear in many different forms, and the physical and chemical conditions at a site—specifically sediment sites with fine-grained material and low hydraulic conductivity—have a large effect on the mobility of NAPLs. The visual observation of “blebs, globules, small nodules, or thin stringers” does not mean the material is going to be highly mobile. These observations are not consistent with the PTW guidance that refers to “pools of NAPL,” because these terms signify that the NAPL consists of small, isolated, disconnected droplets that are immobile (i.e., below the residual saturation). In most cases, capillary resistance (i.e., pore entry pressure) does not allow the material to move, especially under low hydraulic gradients. Also, NAPLs in sediments tend to rapidly weather, leaving behind material of higher density and viscosity; both of these physical changes further reduce the potential for upward NAPL flow. NAPL mobility testing using current methods should be completed before any determination of “highly mobile” is applied. PTW determinations for material containing NAPL should be made based on site-specific mobility evaluations that involve consideration of the residual saturation and mobility of these materials within the sediment matrix and whether the NAPL can be reliably contained using site-specific evaluations.

3.b. PTW Determination Does Not Override the NCP Remedy Selection Process

As discussed in the PTW Fact Sheet, “Remedy selection decisions are ultimately site-specific determinations based on an evaluation of the nine evaluation criteria” in the NCP (PTW Fact

Sheet, p. 1). The purpose of PTW designation, when applicable, was simply intended to “streamline and focus the RI/FS on appropriate waste management options.” Certain past remedy decisions have placed great significance on the designation of contaminated sediments as PTW. However, the designation of contaminated sediment as PTW should not result in a different remedy selection decision than would result from the NCP remedy selection process. Therefore, if a PTW designation is applied to contaminated sediments, the administrator or other decision-maker should take measures to ensure that the NCP remedy selection process has been followed and that the remedy selection criteria have been properly applied. In particular, the “preference for treatment” that a PTW designation entails does not justify choosing a remedy that involves more mass removal (which is not necessarily a form of “treatment,” especially when the contaminated sediment is just landfilled). Nor does the PTW designation justify requiring some form of treatment be applied ex situ to the mass removed, which is being required in the Portland Harbor ROD. The remedy selection decision ultimately must be justified on the bases of the nine NCP criteria (Figure 1), and PTW designation should not be used to override these criteria and the NCP.

Figure 1 – Nine NCP Criteria

NCP Selection Criteria - RI/FS 40 CFR Part 300		
1	Overall protection of human health and the environment	
2	Compliance with ARARs	
3	Long-term effectiveness and permanence	
4	Reduction of toxicity, mobility, or volume through treatment	
5	Short-term effectiveness	
6	Implementability	
7	Cost	
8	State acceptance	Threshold Criteria Primary Balancing Criteria Modifying Criteria
9	Community acceptance	

3.c. PTW Designation Establishes a Preference for Treatment, Not Removal, and That Preference Can Be Overcome in Appropriate Circumstances, Which Are Often Found at Sediment Sites

The PTW Fact Sheet clearly states that the designation of material as PTW creates an “expectation” or “preference” for treatment. However, in recent instances, U.S. EPA regions have cited PTW designation to support **removal** of sediments (i.e., dredging), rather than treatment. This is a clear misuse of the PTW designation. In the case of sediment, the most applicable “treatment” technique is often in situ treatment (e.g., activated carbon amendments). While in situ methods may not be feasible in all instances (as discussed in the following paragraphs), when in situ treatment is indicated, the PTW Fact Sheet, if anything, expresses a presumption that such in situ methods be used **in preference to removal**. Thus, U.S. EPA Regions that have used PTW designations to support removal remedies are acting in contravention of U.S. EPA’s own guidance.

The PTW Fact Sheet is equally clear that the preference for treatment is not determinative: “These determinations, and the application of the expectations, serve as general guidelines and do not dictate the selection of a particular remedial alternative” (PTW Fact Sheet, p. 3).

The PTW Fact Sheet identifies several situations where waste that has been identified as PTW may nonetheless be contained rather than treated “due to difficulties in treating the wastes.” Specific examples, as noted in the PTW Fact Sheet (p. 3), of such situations include the following:

- “Treatment technologies are not technically feasible or are not available within a reasonable time frame.”
- “The extraordinary volume of materials or complexity of the site makes implementation of treatment technologies impracticable.”
- “Implementation of a treatment-based remedy would result in greater overall risk to human health and the environment due to risks posed to workers or the surrounding community during implementation.”
- “Severe effects across environmental media resulting from implementation would occur.”

Each of these situations commonly occurs at sediment sites. As noted previously, in situ treatment technologies are either not applicable or have not been demonstrated to be effective at some sediment sites. Contaminated sediment sites are also notorious for being among the largest and most complex sites (often extending over 20 miles and thousands of acres), with enormous volumes of impacted materials that make implementation of treatment technologies impracticable. In addition, dredging operations frequently involve greater overall risk to human health and the environment than engineered capping, enhanced natural recovery, or monitored natural recovery. These extended-duration dredging programs do not align with the guidance of a “reasonable time frame” and are not consistent with the recent U.S. EPA Superfund Task Force recommendations to expedite remediation, redevelopment, and reuse. Finally, dredging (and the risk of contaminated sediment resuspension and re-release) is known to carry a significant risk of adverse effects across environmental media.³

Engineered caps that include a reactive layer (e.g., incorporating activated carbon and/or organoclay amendments) function in a treatment capacity by targeting the dissolved and/or NAPL phase transport of contaminants, which is depleting the amount of source material in the sediments below. While caps function to isolate and contain contaminants remaining at the site, many of them also function as a treatment technology and address the requirements for a “preference for treatment.” A good example of this is the LDW ROD, which notes, “The remedy does include potential treatment of some contaminated sediment through provisions for amendment of caps and ENR [enhanced natural recovery] with activated carbon or other contaminant-sequestering agents.”

³ For a discussion of the risks posed by dredging-generated resuspension, release, and residuals, see the following:

- Bridges et al., 2010. “Dredging Processes and Remedy Effectiveness: Relationship to the 4 Rs of Environmental Dredging.” *Integrated Environmental Assessment and Management* 6(4):619–630.
- Patmont et al., 2018. “Environmental Dredging Residual Generation and Management.” *Integrated Environmental Assessment and Management* 2018:1–9.

3.d. PTW Designation Applies Only to “Source Material” That “Cannot Be Reliably Contained or Would Present a Significant Risk to Human Health or the Environment Should Exposure Occur,” Which Does Not Refer to Most Contaminated Sediment at Contaminated Sediment Sites

As discussed in the previous section, a PTW designation applies only to a limited subset of the term “source material.”⁴ “Source material” is defined as “material that includes or contains hazardous substances, pollutants, or contaminants that act as a reservoir for migration of contamination to groundwater, to surface water, to air, or acts as a source for direct exposure.” PTW is only source material that “cannot be reliably contained or would present a significant risk to human health or the environment should exposure occur.” Therefore, by definition, contaminated materials that can be reliably contained are not PTW. At contaminated sediment sites, the contaminants of concern are often embedded beneath layers of more recent sediment accumulation. Whether through natural sediment accumulation or by the installation of amended or unamended caps, it is often the case that contaminated sediments do not serve “as a significant reservoir for the migration of contamination” or “as a source for direct exposure.” Moreover, such materials can be reliably contained and do not present a significant risk to human health or the environment should exposure occur. Therefore, in general, contaminated sediments do not fall within the definition of PTW.

3.e. Sediment Guidance, Which Is Both More Recent and More Focused Than the PTW Fact Sheet, Discourages the Application of PTW Designations at Sediment Sites

U.S. EPA’s Sediment Guidance embodies national policy on contaminated sediment and should be followed at all contaminated sediment sites. The Sediment Guidance was issued for use “by federal and state project managers considering remedial response actions or non-time-critical removal actions” under CERCLA (Sediment Guidance, p. 1-1). It was developed over a period of 8 years (1998 to 2005) and was the subject of extensive comments by the U.S. EPA Regions and the public. The Sediment Guidance provides a risk management decision-making framework to assist with selecting appropriate remedies at contaminated sediment sites. As such, the Sediment Guidance constitutes U.S. EPA’s most comprehensive and authoritative policy guidance on remedial decisions at contaminated sediment sites. The Sediment Guidance is 14 years more recent than the PTW Fact Sheet, and at over 200 pages, it is far more comprehensive and authoritative than the three-page PTW Fact Sheet.

On the subject of PTW, the Sediment Guidance (Section 6.7) states the following (emphasis added):

“For the majority of sediment removed from Superfund sites, treatment is not conducted prior to disposal, generally because sediment sites often have widespread low-level contamination, which the NCP acknowledges is more difficult to treat. However, pretreatment, such as particle size separation to

⁴ Although the PTW Fact Sheet lists examples of “source materials” including “contaminated sediments and sludges,” the context makes clear that this refers to sediments and sludges that have accumulated in tanks or impoundments and not contaminated sediments in rivers, harbors, estuaries, or other waterbodies that are part of the general environment. In this regard, it is important to note that the PTW Fact Sheet was released in 1991, long before U.S. EPA had significant experience with contaminated sediment sites and 14 years before the publication of U.S. EPA’s Sediment Guidance.

distinguish between hazardous and non-hazardous waste disposal options, is common. **Although the NCP provides a preference for treatment for “principal threat waste,” treatment has not been frequently selected for sediment.** High cost, uncertain effectiveness, and/or (for on-site operations) community preferences are other factors that lead to treatment being selected infrequently at sediment sites.”

The increasingly prominent role that PTW designations have made in recent remedy decisions at contaminated sediment sites is directly contrary to recognition in the Sediment Guidance that contamination at sediment sites is frequently widespread and low level and, therefore, inappropriate for PTW treatment. Moreover, the Sediment Guidance states, “In-situ containment can also be effective for PTW, where that approach represents the best balance of the NCP nine-remedy selection criteria” (Sediment Guidance, p. 7-4; Figure 2).

Figure 2. U.S. EPA Sediment Guidance Remedy Selection Considerations

Chapter 7: Remedy Selection Considerations

Highlight 7-1: NCP Remedy Expectations and Their Potential Application to Contaminated Sediment
<p>EPA expects to use treatment to address the principal threats posed by a site, wherever practicable:</p> <ul style="list-style-type: none"> In general, wastes, including contaminated sediment, may be considered a principal threat where toxicity and mobility combine to pose a potential human health risk of 10^{-3} or greater for carcinogens (U.S. EPA 1991d). For these areas, project managers should evaluate an alternative that includes treatment. However, the practicability of treatment, and whether a treatment alternative should be selected, should be evaluated against the NCP’s nine remedy selection criteria. Based on available technology, treatment is not considered practicable at most sediment sites
<p>EPA expects to use engineering controls, such as containment, for waste that poses a relatively low long-term threat or where treatment is impracticable:</p> <ul style="list-style-type: none"> Containment options for sediment generally focus on in-situ capping. A project manager should evaluate in-situ capping for every sediment site that includes low-level threat waste. Where a containment alternative is clearly not appropriate for a detailed evaluation, project managers should evaluate ex-situ containment (i.e., disposal without treatment). It should be recognized that in-situ containment can also be effective for principal threat wastes, where that approach represents the best balance of the NCP nine remedy selection criteria

4. Recommendation for Further Action

For all the reasons discussed herein, it is critical to remove the unnecessary and counterproductive impediment to efficient and cost-effective evaluation and remediation of contaminated sediment sites posed by the inappropriate use of the dated PTW guidance.

U.S. EPA should issue **new guidance** on PTW, specifically applicable to contaminated sediment sites, that restores the limited and appropriate role of the PTW designation and application at sediment sites. The new sediment site-specific PTW guidance should restore the original concept of PTW as a helpful waste management tool. The new PTW guidance should also underscore that PTW is not to be used to override the NCP’s remedy selection criteria, as has been the case at several sites at which PTW was used as an inappropriate justification to require significant sediment removal, even though removal was not technically justified or consistent with the NCP remedy selection requirements. The issuance of new PTW guidance specific to contaminated

sediment sites and the more appropriate use of the PTW concept will align with the U.S. EPA Superfund Task Force Recommendations to expedite cleanups and implement remediation in a sustainable manner, which will in turn accelerate site reuse and potential opportunities for redevelopment of these valuable resources.