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ABA SECTION OF ENVIRONMENT ENERGY AND RESOURCES

Superfund and Natural Resource Damages Litigation Committee Newsletter

Vol. 7, No. 1 **December 2011**

NOTE FROM THE CHAIR

Welcome to the Superfund and Natural Resource Damages Litigation Committee. The committee, its listserv and webpage, and this newsletter are intended to be a comprehensive source of information regarding developments in Superfund and national resources damages (NRD) litigation, law, and policy. I hope you find them useful. If you have any suggestions for additions or improvements, or if you would like to become more active in the committee, please let me know.

There are a number of new and exciting developments in our field to keep an eye on in the year ahead, some of which are discussed in this edition of the newsletter: creative natural resource damage settlement approaches, like the restoration up-front protocol being used on the Duwamish in my fair city of Seattle; NRD credit banking; and new and ever-improving methods of characterizing contamination. On the litigation front, the Deepwater Horizon trial of liability, limitation, exoneration, and fault allocation is scheduled to commence on February 27, 2012, before Judge Carl Barbier in the Eastern District of Louisiana. A second trial, regarding damages for selected claimants and entitlement to and amount of punitive damages available, is set for July 16, 2012. The trial is certain to be a topic of conversation at the 41st Annual Conference on Environmental Law in Salt Lake City, just around the corner on March 22—24, 2012.

As we wind down 2011, I extend my best wishes to you for the holiday season, and look forward to seeing you in Salt Lake City.

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EDITORS' NOTE

We have what we think is another interesting issue that ranges from the halls of the Supreme Court to shores of the other Washington's Elliott Bay. After a discussion of the potential implication of the Court's consideration of *Sackett v. EPA*, articles cover such diverse topics as the EPA Community Engagement Initiative, the application of ecosystem services valuation and an approach for satisfying natural resource damage claims. Continuing our series on determining liability, an article looks at the evolution and current status of the active involvement standard under the Resource Conservation and Recovery Act (RCRA). The final article describes the importance of considering bioavailability when assessing the risk of contaminated sediments and introduces guidance developed by state regulators of the Interstate Technology and Regulatory Council.

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Upcoming Section Programs—

For full details, please visit the "Events & CLE" link on our Section Web site:

www.americanbar.org/environ/

January 18, 2012
Beyond 2012: Meeting the Nation's Environmental, Energy and Resources Challenges
Live CLE Webinar

February 1-7, 2012
ABA Midyear Meeting
New Orleans

February 22-24, 2012
30th Annual Water Law Conference
San Diego

March 22-24, 2012
41st Annual Conference on Environmental Law
Salt Lake City

April 19-20, 2012
2012 ABA Petroleum Marketing Attorneys' Meeting
Washington, DC

June 1, 2012
2012 National Spring Conference on the Environment
Baltimore, MD

Past programs materials and podcasts are available for purchase. Please click on the shopping cart icon on the Section Calendar Archive located here:

http://www.americanbar.org/groups/environment_energy_resources/events_cle/section_calendar_archive.html

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We again ask for your help in submitting articles or suggesting topics for upcoming issues. While all submissions are welcome, we are specifically looking for someone who is interested in preparing a CERCLA case law update. As we wish to increase publication opportunities for law students, please pass the word to your alma mater that we welcome student submissions.

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Call for nominations

The Section invites nominations by May 14, 2012 for the following awards that will be presented at the ABA Annual Meeting in Chicago, in August 2012.

- ***Environment, Energy, and Resources Government Attorney of the Year***—exceptional achievement by a federal, state, tribal, or local government attorney who has worked or is working in the field of environmental, energy, or natural resources and is esteemed by his/her peers and viewed as having consistently achieved distinction in an exemplary way.
- ***Law Student Environment, Energy, and Resources Program of the Year***—best student-organized educational program or public service project of the year focusing on issues in the field of environmental, energy, or natural resources law.
- ***State or Local Bar Environment, Energy, and Resources Program of the Year***—best CLE program or public service project of the year focused on issues in the field of environmental, energy, or natural resources law.

For more details about these awards, please visit the Section Web site at www.ambar.org/EnvironAwards.

SACKETT TO 'EM: COULD THE SUPREME COURT DECISION IN *SACKETT V. EPA* LIMIT EPA'S AUTHORITY UNDER CERCLA

Seth Jaffe

I. Introduction/Background

On June 28, the Supreme Court granted certiorari in *Sackett v. EPA*, which challenges the constitutionality of the Environmental Protection Agency's (EPA) use of unilateral administrative orders under section 309 of the Clean Water Act (CWA). Chantell and Michael Sackett own a lot in a residential subdivision. After the lot was graded to build their home, the Sacketts received an administrative compliance order from EPA claiming that they filled a jurisdictional wetland without a federal permit. According to the petitioners, they were provided no evidentiary hearing or opportunity to contest the order.

The Court's order granting certiorari identified two questions—whether pre-enforcement judicial review of an administrative compliance order is available under the CWA and, if not, whether the inability to seek pre-enforcement judicial review violates the Due Process Clause of the Constitution. If the Court reaches the constitutional question in *Sackett*, it could very well have significant implications for the Comprehensive Environmental Response, Compensation, and Liability Act's (CERCLA) unilateral administrative order provisions.

The Court's decision to grant certiorari in *Sackett* was surprising, to say the least. Earlier this summer, the Supreme Court denied a very similar certiorari petition by GE seeking to challenge the constitutionality of EPA's use of unilateral administrative orders issued under section 106 of CERCLA. Furthermore, the Ninth Circuit decision being appealed in *Sackett* followed the lead of all four other circuit courts that had already addressed the question of pre-enforcement review under the CWA. So, not only did the Supreme Court grant certiorari in a CWA case even though it denied certiorari challenging a very similar provision under CERCLA, it did so without a circuit split to resolve.

Obviously, the Court could affirm the Ninth Circuit and uphold the CWA's scheme as constitutional. Such an outcome would solidify the constitutionality of the CERCLA scheme as well. What is much more difficult to assess is the effect on CERCLA of a Supreme Court ruling in *Sackett* that strikes down the CWA's unilateral administrative order procedures.

The Court could reverse the Ninth Circuit on three alternative grounds, two of which would pose little or no threat to the continued use of administrative orders under CERCLA. First, the Court could find that the text of the CWA does not bar pre-enforcement review. Second, the Court could find that the CWA gives unilateral administrative orders the independent force of law. Either of these holdings would necessarily be based on the text of the CWA, which differs significantly from CERCLA. Thus, any opinion based on these lines of reasoning would not extend to CERCLA. However, were the Court to conclude that the Due Process Clause requires that pre-enforcement judicial review be available for unilateral administrative orders under the CWA, such a holding would likely render CERCLA's scheme unconstitutional as well, though a few distinguishing factors may be able to save it.

II. Potential Holdings Based on Statutory Interpretation of the CWA

A. Pre-enforcement Review Is Available Under the CWA

The narrowest ground on which the Court could reverse the Ninth Circuit would be that the CWA in fact provides for pre-enforcement review of unilateral administrative orders. Such a holding would rely on the absence of any explicit bar to pre-enforcement review in the text of the CWA and on section 704 of the Administrative Procedure Act (APA), which provides for judicial review of "final agency action for which there is no other adequate remedy in a court." Section 704 of the APA requires that judicial review be available for "final agency action," but also permits a statute to expressly provide when an agency action is not yet "final." Unlike CERCLA, which explicitly bars pre-enforcement review, the CWA has no explicit language barring pre-enforcement review or classifying unilateral administrative orders as nonfinal action. Although the Ninth Circuit found that the statute *implicitly* bars pre-enforcement review, the Supreme Court could overturn that interpretation based on the text of the statute and find that pre-enforcement review is available under the current scheme.

B. CWA Makes a Compliance Order Issuable on the Basis of "Any Available Information" and Gives It the Independent Force of Law

The second potential holding rooted in the text of the CWA would find its basis in the Eleventh Circuit case of *TVA v. Whitman*, 336 F.3d 1236 (11th Cir. 2003), on which the Sacketts have relied extensively. *TVA* dealt with administrative compliance orders (ACOs) under the Clean Air Act (CAA). The Eleventh Circuit found the CAA scheme unconstitutional because the ACOs were issuable "on the basis of any information available" *and* noncompliance with an ACO automatically triggered civil and criminal penalties. The court reasoned that, because an ACO can be issued unilaterally by the administrator and then becomes an independent obligation, the defendant never gets an opportunity to argue, before a neutral tribunal, that he/she has not violated the CAA. In such a situation, the administrator is the ultimate arbiter of guilt or innocence, and the courts are relegated to a forum that conducts a proceeding on the issue of whether the EPA *order*, not the CAA itself, has been violated. The Eleventh Circuit relied on the details of the precise scheme in the CAA, which both gave the administrator broad discretion to issue ACOs without review and gave those ACOs the force of law (holding that "a violation of an ACO can itself serve as the basis for the imposition of extensive civil fines or imprisonment. *Section 7413(b)*, for example, provides that a civil action can be commenced not only when a person has violated an SIP or EPA regulation, but also after a party fails to comply with an 'order.'") The Ninth Circuit in *Sackett* found that the CWA scheme did not have both of these troublesome elements, despite the Eleventh Circuit's explicit insistence in *TVA* that the CAA and CWA statutory regimes with respect to these issues were substantively identical.

The Supreme Court could adopt the position of the Eleventh Circuit and the Sacketts, finding that the CWA's administrative order scheme is substantively

equivalent to the CAA's, and therefore unconstitutional. Such a holding would find its basis in two provisions of the CWA. First, the CWA permits the Administrator to issue an order "[w]henever *on the basis of any information available to him* the Administrator finds that any person is in violation of section 1311, 1312, 1316, 1317, 1318, 1328, or 1345 of this title. . . ."

The CWA then provides that violating such orders is an independent offense for which the administrator may impose a civil penalty, stating that "any person who violates any order issued by the Administrator under subsection (a) of this section, shall be subject to a civil penalty not to exceed $25,000 per day for each violation. . . ." Indeed, the Ninth Circuit acknowledged that the CWA, read literally, creates the same constitutional problem as the CAA. However, invoking the doctrine requiring courts to interpret statutes to avoid constitutional problems whenever possible, the Ninth Circuit interpreted "any order" "to refer only to those compliance orders that are predicated on *actual*, not alleged, violations of the CWA, as found by a district court in an enforcement action according to traditional civil evidence rules and burdens of proof." However, the current Supreme Court may not be inclined to work so hard to avoid the apparent plain meaning of the statute, particularly when the legislative history suggests that the CWA was crafted using the CAA as a model. The more literal reading that the Court might adopt would be that the CWA scheme contains the constitutionally offensive combination of unilateral orders issuable on "any information" and an independent obligation to abide by such orders.

If the Supreme Court were to rule against EPA on either of the above grounds, CERCLA's order authority would not be in jeopardy. As mentioned previously, CERCLA explicitly bars pre-enforcement review, so any holding in *Sackett* that there is no such bar in the CWA would be inapplicable to CERCLA. Second, although unilateral administrative orders under CERCLA are issuable on "any available information," the statute does not give them the independent force of law. Instead, CERCLA requires that an action be brought in district court to enforce the order, during which proceeding an underlying violation of CERCLA must be proved for the court to impose penalties. CERLCA thus authorizes the courts, not EPA, to impose penalties, and requires that the court find a statutory violation before enforcement. Thus, CERCLA would survive even if the CWA were struck down on those grounds.

III. Supreme Court Reversal on Due Process Grounds

While the two potential narrow holdings discussed above would pose little or no threat to the continued use of unilateral administrative orders under CERCLA, a broader holding finding that pre-enforcement review is *constitutionally required* would likely render provisions of CERCLA inoperative. If the Court, in deciding *Sackett*, interprets the CWA to bar pre-enforcement review and finds such a bar unconstitutional, CERCLA's administrative order provisions would presumably be unconstitutional as well.

The D.C. Circuit in *GE v. Jackson* ruled that CERCLA's bar on pre-enforcement review was not unconstitutional because, in the ultimate enforcement action, the court can only impose penalties if the party violating the valid order "willfully" failed to comply "without sufficient cause." According to the court, these "willfulness" and "sufficient cause" requirements are analogous to "good faith and reasonable grounds defenses the Supreme Court has found sufficient to satisfy due process." The Ninth Circuit in *Sackett* found language in the CWA that also was, in its opinion, equivalent to good faith and reasonable grounds defenses. The CWA commits the final determination of the amount of a civil penalty to judicial discretion and lists six equitable factors that the court should consider in setting the amount of the penalty. One of those factors is "good-faith efforts to comply." If the Supreme Court were to find that, despite the protections of equitable discretion, the CWA is unconstitutional, then CERCLA would almost certainly be unconstitutional as well. There is very little to distinguish between the equitable defenses against civil penalties provided by the two statutes. If the "good-faith" and other defenses do not cure the due process violation in the CWA setting, the "willfulness" and

"sufficient cause" defenses likely do not cure the defect in the CERCLA setting.

IV. Could CERCLA's Order Authority Still Be Saved?

There is, however, one potentially dispositive aspect in which the CWA and CERCLA differ—CERCLA requires that EPA determine that an "imminent hazard" exists prior to issuance of an administrative order. Neither the Ninth Circuit in *Sackett* nor the D.C. Circuit in *GE v. Jackson* had occasion to address EPA's argument that the statutes are, at a minimum, constitutional in emergency situations, or to consider a defendant's likely retort that EPA does not actually issue orders only in emergencies. However, the Supreme Court *has* historically recognized in other contexts that, in emergency situations, rapid administrative action is justified by the need to protect the public health and safety, and therefore an exception to pre-enforcement review may be available. Under this reasoning unilateral administrative orders under CERCLA might survive a broad adverse ruling in *Sackett*, because CERCLA more directly confines the issuance of administrative orders to emergency situations.

The CWA has specific "Emergency Powers" sections, which are *not* the sections challenged by the Sacketts providing for the use of unilateral administrative orders. The provisions challenged by the Sacketts allow for the use of administrative orders without any requirement that EPA determine that an emergency exists. In contrast, section 106 of CERCLA, which authorizes the use of unilateral administrative orders, does so only if the administrator makes a finding of an "imminent and substantial endangerment to the public health or welfare or the environment." Because CERCLA more strictly limits the use of unilateral administrative orders, it is conceivable that CERCLA's unilateral order authority could survive, even if the Court were to hold that EPA's analogous unilateral order authority under the CWA is unconstitutional.

VI. Conclusion

If the Supreme Court affirms the Ninth Circuit decision in *Sackett*, EPA's authority under CERCLA would not be at risk. In fact, if the Supreme Court reaches the constitutional question in *Sackett*, and still affirms, then the question regarding EPA's authority under CERCLA will once and for all be put to bed. Even if the Supreme Court reverses the Ninth Circuit, in two of the three scenarios presented, EPA's order authority under CERCLA still would not be in jeopardy. However, if the Supreme Court in Sackett holds that EPA's order authority under the CWA violates the Due Process Clause, then EPA's order authority under CERCLA would be at serious risk; it would survive only if the courts distinguished CERCLA from the CWA on the ground that, because section 106 of CERCLA requires an imminent hazard as a prerequisite to issuance of an order, such exigent circumstances warrant the provision of less process than is required under the CWA. Although that is certainly possible, if I were in EPA's shoes, I would be very concerned across the board if the Supreme Court finds a Due Process problem with unilateral administrative orders under the CWA.

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INCREASING THE EMPHASIS TO INVOLVE COMMUNITIES IN DECISION MAKING

Randall Wentsel

The remediation of contaminated sites and the management of hazardous substances directly affect communities during the cleanup and long after the site is delisted. Various issues affect the community such as how health and safety issues are addressed in site assessments; what limits are put on the future use of the site; what agreements are being made with the responsible parties; and long-term management issues. In late 2009, the EPA Office of Solid Waste and Emergency Response (OSWER) started a Community Engagement Initiative (CEI), with the goal to strengthen community engagement practices in local site assessments and decision making, www.epa.gov/oswer/CEI.

The CEI discusses several goals and actions that EPA will take. The first goal is to develop transparent and accessible decision-making processes to enhance meaningful community stakeholder participation. Actions include revising current practices, pilot studies on new methods for engaging communities, and reviewing enforcement activities to further involve communities. This goal should involve the review and revision of decision-making processes and guidance to identify where communities should be involved. Pilot studies using different approaches will provide useful information on effective processes. For example, the possibility of enhanced public review during the remedial investigation / feasibility study (RI/FS)process is an area under review to identify where in the process increased community involvement can occur.

EPA's second goal under the CEI is to present information and provide technical assistance effectively to community stakeholders so that they better understand environmental issues and are informed participants in decision making. Technical assistance is a key area to enable communities to adequately be involved in the decision-making process. Actions for this goal include: improving technical assistance procedures and involving greater community representation in decision making, increasing support for the EPA Community Action for a Renewed Environment (CARE) program, conducting Brownfields pilot programs, increasing risk communication activities, and improving the delivery of information to community stakeholders. Risk communication has been an active area in EPA for years. However, with Indian tribes having a perspective that needs to be understood and considered and environmental justice issues and organizations becoming more involved in remediation sites, effective communication of the likelihood and consequences from chemical exposures needs to be carefully planned. Development of consistent processes and seeking input from stakeholders will be an important part of this action.

The third CEI goal addresses actions to produce outcomes that are responsive to community concerns, needs, and long-term goals. Activities include developing measures of the effectiveness on community engagement activities, conducting training for OSWER and regional staff, and initiating, for community residents, an environmental workforce development and job training program. The goal of the job training program is to build a skilled workforce that could be hired during the remediation and management phases of the cleanup and provide an economic benefit to the community instead of using contractor staff from outside of the community. Trying to measure the successful outcomes from community engagement activities is another challenging new activity that will require unique ideas and partnering with staff with a variety of expertise.

The CARE program is stressed as important in the CEI; however, the CARE program was previously established by EPA to assist communities to form collaborative partnerships; develop an understanding of local sources of toxic pollutants and risks; decide on community priorities to address local environmental pollution issues; and conduct projects to reduce risks, using collaborative processes at the local level. Each EPA region has a CARE coordinator and they each have many collaborative projects under way in cities across the United States, www.epa.gov/CARE.

CARE coordinators initiate a program by involving local community leaders, associations, non-governmental organizations (NGOs), businesses, and academic institutions. EPA Brownfields program provides funds to collaborative CARE partnerships. The purpose of a Level 1 cooperative agreement is to enable the community partnership to evaluate and rank community exposure to toxic pollutants from various sources, e.g., air pollution, drinking water, and lead paint in homes. Often CARE partnerships utilize a C-FERST (Community-Focused Exposure and Risk Screening Tool) model to assist the group to estimate exposure and risks of chemical and nonchemical stressors, www.epa.gov/heasd/c-ferst. The results from the model and other activities produced from the partnership are a risk prioritization of the stressors put forward as concerns by the group. The collaborative partnership may then apply for a Level 2 cooperative agreement to implement activities to reduce exposure and risk to the chemical or nonchemical stressors of most concern to the community partnership.

So what do these programs mean for principal responsible parties, NGOs, or communities that are interested in site remediation? Greater stakeholder involvement in the decision-making process will likely support consideration of alternative technologies. Where EPA or state managers may favor a given technology, community representatives may want more discussion on other options and have unique perspectives that could lead to use of an alternative approach to remediation. Community representatives may push for speedier solutions than those planned by site managers. Reutilization of the property and redevelopment partnerships will be of increased importance; local leaders will not be satisfied with a fence around the site. Reuse of the site to provide a benefit to the community will continue to be an important issue where a variety of ideas and discussion will be needed. There are many successful examples of redevelopment of land in the Brownfields program (www.epa.gov/brownfields), which may have increased application at CERLCA and RCRA sites. The CARE program offers an opportunity for businesses (even law offices) to join a collaborative community partnership with the means to improve the health and well-being of its citizens. With funding being provided to move these community groups forward to address chemical and nonchemical stressors, the long-term benefits of these organizations to improve the environmental health of the local community are likely to be impressive.

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INCORPORATING ECOSYSTEM SERVICE VALUATION INTO REMEDIAL DECISION MAKING: NET ECOSYSTEM SERVICE ANALYSIS

Joseph Nicolette, Derek Pelletier, and Mark Rockel

Introduction

Within current regulatory cleanup frameworks (e.g., the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. 103), the selection of remedial alternatives to address the presence of a contaminant in the environment is typically based upon the potential for the contaminant to pose a human health and/or ecological risk, the cost of the alternative, and/or the site specific criterion. In this framework, the effect that a remedial action may have on the ecosystem is rarely formally quantified when considering among remedial alternatives. In this paper we discuss the use of a site management strategy that incorporates ecosystem service valuation (i.e., social, environmental, and economic values) to balance the risks, benefits and trade-offs associated with competing alternatives (e.g., remedial alternatives). We refer to this approach as a net ecosystem service analysis (NESA). Prior to discussing ecosystem services, it is important to understand the distinction between risk and injury and the ramifications that this distinction has on remedial alternative selection.

Risk Assessment

In the 1998 U.S. Environmental Protection Agency (EPA) Guidelines for Ecological Risk Assessment (EPA/630/R-95/002F) risk assessment is defined as "a process that evaluates the *likelihood* that adverse ecological effects *may* occur or are occurring as a result of exposure to one or more stressors." "Risks" result from the existence of a hazard and uncertainty about its expression. Uncertainty is defined (Suter 1993, Lewis Publishers, Boca Raton, Fla.) as "[i]mperfect knowledge concerning the present or future state of the system under consideration; a component of risk resulting from imperfect knowledge of the degree of hazard or of its spatial and temporal pattern of expression." Since a "risk" evaluation typically looks at the "likelihood" of an adverse effect, it thus includes an implied level of uncertainty in the risk. Thus, simply put, a "risk" represents the "potential" that adverse effects may occur (with some level of uncertainty), not a definitive measure of observable effects.

Injury

The meaning of an "injury" to a natural resource is very different than a "risk" to a natural resource. This distinction is important when it comes to understanding those effects that have been documented or quantified through actual field studies versus those effects that "may have" or "potentially have" occurred, or those effects that "may" or "potentially" be occurring now and/or into the future. The differentiation between risk and injury has been made prominent based upon the Natural Resource Damage Assessment (NRDA) regulations in CERCLA (43 C.F.R. 11), where the public is to be compensated for natural resource injury that has occurred as a result of a release. Under NRDA, the lost natural resource services (injury) are quantified so that an appropriately scaled restoration program can be developed ("service-to-service" equivalency approach). In this approach, injury must be measured (with some level of certainty) and used to develop the scale of the restoration program. Thus, there is some certainty that there is indeed injury and, therefore, that restoration is required and adequate. "Potential" injury implies a level of uncertainty. The importance of this differentiation is that site remediation that is geared toward addressing risk (i.e., "potential" injury) can lead to actions that can either:

1. Cause more injury through the destruction of habitat than the injury projected by the risk assessment. This has the potential to increase the liability of the responsible party by creating additional natural resource injury, or;
2. Provide a marginal benefit or no net increase in ecosystem service value for the effort expended. This is especially true when remedial actions are selected to address marginal contamination (e.g., residual levels or

levels just above a criterion). A criterion may be based upon risk assessment information. In many cases uncertainty in risk assessment is handled through the use of conservative assumptions which may predict a risk when, in fact, no injury is occurring. As such, there may be no adverse effects in an area where contaminant concentrations are above a criterion and remediation is being required.

The NESA approach incorporates ecosystem service valuation into the remedial decision-making process to bridge this gap between risk and injury. Prior to discussing the NESA approach, we provide a brief overview of ecosystem services.

Ecosystem Services

The NESA approach uses the recent emphasis (e.g., National Oceanic and Atmospheric Administration, Department of the Interior, U.S. Fish and Wildlife Service, the United Nations Millennium Assessment, and the European Union Environmental Liabilities Directive (ELD)) in the ecological sciences to consider ecosystem services within a landscape context. In developing a remedial action plan, stakeholders and decision makers must understand the potential benefits (i.e., gains in ecosystem service value) and costs (i.e., losses in ecosystem service value) associated with the implementation of various remedial alternatives and their relationship to predicted ecosystem service injury that is suggested by a risk assessment.

Ecosystem services are the benefits that humans or other organisms receive from the natural environment. They are often classified as public goods and include both ecological and human use functions. Examples of ecological services include, but are not limited to, the provision of habitat for food, shelter, and reproduction, organic carbon and nutrient transfer through the food web, water filtration, habitat stabilization, and energy transfer through the food web, biodiversity, food web and community structure, prevention of the spread of exotic or disruptive species, and natural succession processes. Examples of human use services include, but are not limited to, bird watching, fishing, hunting, hiking, boating, flood control, shoreline storm protection, and water quality improvements and filtration.

Because many ecosystem services do not have a direct monetary value, alternative economic models must be used to quantify their value. The service-to-service equivalency approach balances service losses and gains based on nonmonetary metrics. In this approach, ecological service losses and gains can be measured in units of habitat rather than money (for example, services provided per acre per year (SAY) via the habitat equivalency analysis (HEA) framework), while human use services can be measured in units of user-days or visitor-days. Human use service losses and gains can eventually be translated into monetary units; however, the ecological service analysis is typically conducted using nonmonetary metrics.

Resource-to-resource equivalency analysis (REA) is fundamentally the same concept as service-to-service but uses specific resource metrics. As an example, in cases where the damage can be more appropriately measured in numbers of individuals lost, such as the loss of fish, rather than in habitat units, then REA uses the number of individuals lost or gained as the specific metric. As such, the remediation can be balanced to provide equivalent numbers of replacement individuals, on the theory that by restoring the same number of individuals as was lost would compensate for the full suite of ecological and human use services provided by the lost organisms.

NESA Approach

The NESA framework to address the remediation or restoration of contaminated sites has evolved from what was originally referred to as a net environmental benefit analysis (NEBA) as outlined in the 2004 paper by Efroymson et al. (ENVTL. MGMT. 34(3): 315–31). The NEBA framework considered the likelihood that identified risks are associated with an injury and the potential magnitude of that injury. As such, a NEBA could be used to help risk managers develop remedial solutions that provide the greatest net benefit while managing site risks. As stated in Efroymson et al., this approach can be particularly useful when the balance

of risks and benefits from remediation of a site is ambiguous.

Proposed actions will affect the quality and quantity of ecological services produced at the site or parcel differently. Some services may be improved, some may not be affected, and some may be harmed. A systematic evaluation of these changes in service flows is needed to make consistent comparisons across alternatives and to optimize the achievement of environmental objectives at least cost. As such, a NESA evaluates not only the effect of remedial actions on human and ecological risk scenarios, but also evaluates how they may impact ecological, social, and economic services. NESA is a method comprised of a set of agency-approved and litigation-tested techniques and tools for quantifying the ecosystem service costs and benefits of alternative actions that affect the environment. A NESA, in the context of site remediation, provides for the formal quantification of the change in ecosystem service values (e.g., ecological and/or human use) that would be associated with the implementation of a remedial action and allows for a comparison of those changes to costs and predicted changes in risk. The goals of a NESA are to enable cost- and time-effective management of environmental liabilities, maximize benefits to the public, and demonstrate environmental stewardship.

In addition to understanding how potential remedial alternatives affect both ecological and human use values, a NESA can also incorporate the consideration of restoration actions that augment ecosystem service values within the remedial alternative selection process. For example, once high risk/source areas are addressed, marginal risk areas may have the potential to be offset using a restoration project that creates ecological and/or human use value, especially given projected fate and transport mechanisms associated with the marginal risk areas. A NESA, incorporating quantified ecosystem service metrics, provides a scientific basis to balance between remediation effort and benefit gained. A NESA can help identify the "breakpoint" where remedial costs become disproportionate to benefits gained and facilitate the design of remedial alternatives that maximize value to the public. The overall package of remedial and restoration alternatives is evaluated to assess the combined impact on the total ecological and human use services provided by a site.

In some cases, the potential responsible party will be faced with a formal claim for lost natural resource services through a regulatory-driven NRDA/ELD. Although a NESA is completely separable from a NRDA, it can play a primary role within the overall strategy regarding a NRDA. When properly planned and implemented, the NESA approach provides a systematic, consistent, and defensible process that can significantly enhance stakeholder support for selected remedial alternatives. This process also promotes the selection of decisions that demonstrate a balanced win for the environment and the stakeholders.

The NESA approach is consistent with EPA risk management objectives and guidance. Regulatory agencies are obligated to assess and understand the potential natural resource injury that may be incurred by remedial actions and to consider the relationship between how these alternatives affect risk reduction and cost. For example, EPA ecological risk assessment guidance (step 8) states that "the risk manager must balance: (1) residual risks posed by site contaminants before and after implementation of the selected remedy with (2) the potential impacts of the selected remedy on the environment independent of contaminant effects."

As such, a NESA approach can be used to support decisions regarding the selection of an appropriate remedy within the remedial action selection (e.g., feasibility study) process.

In the following section we provide a conceptual case example as to how the NESA approach, incorporating ecosystem service values, can be used to address sediment remediation.

Theoretical Case Example

The remediation of contaminated sediments within industrialized coastal embayments is a useful case study for evaluating the benefits of the NESA approach. Most sediment sites retain some ecological value as indicated by the presence of fish and aquatic birds, and typical remedial alternatives such as dredging are

complex, expensive, and have documented impacts on the biological resources within the site. The following theoretical case study incorporates many of the factors influencing the selection of a remedial alternative at real contaminated sediment sites and, thus, demonstrates the value of incorporating the NESA approach in order to select the most beneficial alternative.

In this example, it is assumed that focused source removal has been implemented as part of an early action. Residual contamination, however, is still present in parts of the embayment. The remedial alternatives typically considered for such systems are monitored natural recovery (MNR), capping, and dredging. The NESA process is used to compare the net benefit that is associated with each of the three alternatives.

The NESA for comparing these alternatives at this site consists of an evaluation of the following metrics: (1) evaluating the ecological and human health risk profiles as characterized by the site risk assessments for pre- and post-remedy conditions, (2) quantifying the projected level of ecosystem services (both ecological and human use) provided by the site for pre- and post-remedy conditions, and (3) determining the economic implementation cost of each remedial alternative.

Remedial Alternative Analysis

In many cases, dredging causes significant initial injury to the ecosystem as this alternative physically removes the biologically active zone in the area dredged. In addition, as has been demonstrated at many sites across the United States, dredging re-suspends contamination back into the environment which can potentially lead to ecosystem injury. Similarly, capping of sediments can cause ecosystem injury by covering the biologically active zone and resuspending contaminants. It has also been demonstrated that dredging and capping may not actually influence long-term recovery of the environment when compared to MNR. However, for the purposes of our example, we assumed that focused dredging was conducted at the source area(s) and that the remaining issue is residual and marginal contamination in sediments. Therefore, ecosystem services under the MNR alternative would slowly recover to baseline levels at a rate dependent upon conditions within the broader landscape. The question then becomes, is dredging or capping of residual contamination providing a net benefit to the public and ecosystem since the risks in the areas of residual contamination are uncertain and small and dredging or capping of these areas has the potential to exacerbate injury? How do we balance when it makes sense to expend the effort to dredge or cap residual contamination in sediments?

A NESA focuses on the key ecosystem service parameters for a given site and the analysis centers on the net change in the parameters from one remedy alternative to another. Within the NESA, we can quantify the losses and potential gains in ecological services over time using a HEA or REA framework. Ecological services can be quantified based on the area of habitat affected and the percentage of service losses and gains accrued over time relative to pre-remedy conditions. This ecological metric can be quantified using a service-acre-year metric (as used within a HEA application). Estimation of this metric for all potential remedies allows for a consistent comparison. Changes in the ecological risk profiles can be estimated based on data from similar sites and by modeling chemical uptake and accumulation in the local food web. The risk profile can be represented by the results of the risk assessment, frequently presented as hazard quotients. Showing how these quotients change over time for each remedy allows for a consistent comparison. Similarly, human use services, where potentially affected, can be quantified for each potential remedy based on changes to the number of visits to the site by anglers, bird-watchers, and other tourists associated with that remedy. Economic models such as random utility maximization (RUM) models, other travel cost models, and benefits transfer methods can be used. The direct cost of designing and implementing the cap remedy can be quantified directly based on construction costs.

Once each metric has been quantified for each remedial alternative, any alternative with unacceptable human health risk is dropped from consideration. The remaining remedies can be consistently compared across the different metrics. In many cases, costly invasive remedial alternatives designed for residual and marginal contamination will result in a greater net loss of ecological services due to intrusive remediation and

resuspension when compared to a remedy that is less invasive and provides a similar level of protection of both ecological resources and human health. It may be determined that marginal contamination can be allowed to remain in place especially given chemical fate and transport processes that demonstrate that risks are likely to decrease over time. In this case, any potential ecosystem service losses associated with allowing the marginal contamination to remain in place could be offset through the provision of an equivalent amount of services as provided by a restoration project.

Summary and Conclusions

The NESA approach has demonstrated that in many cases, with the completion of focused source removal, additional work to remove residual contamination through dredging or capping may not be beneficial. The alternative providing the maximum net environmental benefit is based upon the quantification as to how each remedy affects ecological services, human use services, and the risk scenario. In many cases, if potential risks are small and uncertain, the public may be better off with an alternative that couples MNR with restoration that creates "certain" benefits to the public in lieu of "uncertain" losses. The authors have used this approach to address contamination associated with sediments, soils, and groundwater at multiple sites across the United States. Not only has this approach been used to demonstrate and maximize the net ecosystem service values of selected remedies to the public, it has also significantly reduced (i.e., in millions of dollars) remedial costs associated with these sites.

Making remedial action decisions based upon risk assessment and cost may not necessarily provide the greatest net benefit to the public. The focus of remediation should be on the net ecosystem service benefit of the alternatives. The formal quantification of the effects that remedial and/or restoration alternatives have on the environment, i.e., ecosystem services, should be considered. These considerations should be directed at sites that have the following characteristics:

- The contaminated site retains ecological value;
- The remedial actions are themselves potentially environmentally damaging;
- The ecological risks from the contaminants are relatively small, uncertain, or limited to a component of the ecosystem;
- Remediation may fail or create additional injury; and
- A change in the risk scenario (benefit) appears to be disproportionate to costs.

The NESA approach has been implemented at multiple sites (U.S. and European locations), to balance the risks, benefits, and trade-offs associated with competing remedial alternatives.

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THE "RESTORATION UP-FRONT" APPROACH TO SATISFYING NATURAL RESOURCE DAMAGE CLAIMS: AN ANALYSIS OF THE ELLIOTT BAY TRUSTEE COUNCIL'S UP-FRONT PROTOCOL

Nate Stenstrom

The Elliott Bay Trustee Council oversees the Lower Duwamish Waterway, Harbor Island, and Lockheed West Superfund sites (Elliott Bay site), which are located in and around Seattle, Washington. In May of 2009, the council took the unprecedented step of approving a "protocol" that allows for "up-front restoration" projects to satisfy the trustees' natural resource damages (NRD) claims. The protocol allows Bluefield Holdings, Inc. (Bluefield), a private third-party "eco-credit developer," to lease land in and around the Elliott Bay site from the city of Seattle—which is a potentially responsible party (PRP)—and construct habitat restoration and enhancement projects on that land. It allows PRPs to purchase NRD "credits" from Bluefield which can count toward satisfying their NRD liability. This article will analyze the Elliott Bay Trustee Council's Natural Resource Restoration and Enhancement Credit Protocol and evaluate its strengths and weaknesses.

I. The Restoration Up-Front Approach to Natural Resource Restoration

The Elliott Bay site's geographic area is co-extensive with the Elliott Bay environment and includes areas of Puget Sound, the Duwamish River, and Duwamish River's tributaries. The Elliott Bay Trustee Council has also reserved the right to act outside of that area where appropriate. This geographical area encompasses the Lower Duwamish Waterway National Priorities List (NPL) site, the Harbor Island NPL site, and the Pacific Sound Resources NPL site. Harm to natural resources has occurred "through various avenues, including, but not limited to direct discharge, surface water runoff, groundwater and seeps." Natural Resource Trustee Memorandum of Agreement, 1 (July 22, 2005), *available at* http://restoration.doi.gov/Case_Docs/Agreements/WA_Elliott_Bay_TA.pdf.

The Elliott Bay Trustee Council was formed in 1995 and is comprised of the National Oceanic and Atmospheric Administration (NOAA), Department of the Interior (DOI), the State of Washington Department of Ecology (Ecology), the State of Washington Department of Natural Resources, the State of Washington Department of Fish and Wildlife, the Muckleshoot Indian Tribe, and the Susquamish Tribe. NOAA serves as the lead administrative trustee, and Ecology serves as the lead state trustee.

Important events in the evolution of the Elliott Bay site management are as follows: On June 30, 2008, the city of Seattle passed an ordinance authorizing the city to enter into a master lease agreement with Bluefield for the purpose of developing habitat restoration and enhancement projects on property owned by the city of Seattle along the Duwamish River. The restoration projects undertaken pursuant to the up-front protocol will likely be exclusively on this leased land, although the protocol does not limit projects to this land, and it allows private entities other than Bluefield to undertake projects.

On May 20, 2009, the trustees authorized NOAA to sign the Natural Resource Restoration and Enhancement Credit Protocol, and stated that it was not obligated to use Bluefield projects to resolve NRD liability with settling parties. A few days later, NOAA signed the protocol.

The protocol is a fairly short document, only 12 pages long, and can be divided into six main parts: (1) a recital containing a brief background of the Elliott Bay site, the council, and the applicable laws; (2) an enumeration of definitions to be used throughout the body of the protocol; (3) the portion of the agreement governing the collaborative process regarding habitat project design and construction assessment; (4) a portion of the agreement governing the establishment and use of NRD credits; (5) a portion of the agreement governing the financial and other assurances that Bluefield must provide as conditions for the council approving any projects and corresponding NRD credits; and (6) a portion of the agreement governing miscellaneous concerns.

The protocol sets forth the practical and temporal guidelines for the design, construction, and approval of the restoration projects that Bluefield may generate

NRD credits with. It encourages the trustees to work collaboratively with Bluefield when choosing potential sites for restoration projects, and allows projects to be located both within and proximate to the Elliott Bay site. To begin with, the trustees and Bluefield must collaboratively identify and propose, for the council's approval, at least one "conditional project," then determine that project's design, location, construction, performance criteria, maintenance concerns, corrective actions to be taken if certain contingencies should arise, and also the interim NRD credit that the proposed project will receive (interim NRD credit and "as-built" NRD credit are discussed below). After the trustees and Bluefield collaboratively select at least one such proposed conditional project, Bluefield will have 60 days to submit to the council "a scope of work delineating the actual work to be undertaken, schedule to be followed, and specifics relating to the Project," which will include details on "the operation, maintenance, performance monitoring, and, if applicable, the corrective action strategy of the Project." Natural Resource Restoration and Enhancement Credit Protocol, Elliott Bay Trustee Council, 5 (May 24, 2009), *available at* http://www.darrp.noaa.gov/northwest/lowerduwamishriver/pdf/Bluefield%20Protocol.Executed%20052409.pdf. Once the council approves Bluefield's scope of work in writing, it may assign the conditional project an interim NRD credit.

In the event that there is "significant problem that would prevent a Conditional Project from being constructed as designed," the council and Bluefield may form a corrective management strategy to ensure the success of the conditional project. If a corrective management strategy is adopted, the trustees have reserved their right to adjust the interim NRD credit that the conditional project receives.

After the trustees approve Bluefield's scope of work and determine the conditional project's interim NRD credit, Bluefield will have 90 days to begin construction of the conditional project. After Bluefield completes construction of a conditional project, it will have 60 days to notify the trustees, at which time the trustees can choose to approve the conditional project and assign it "as-built" NRD credit. Once it is assigned as-built NRD credit, the conditional project will be deemed a "constructed project." If Bluefield does not construct its conditional project as agreed, the trustees may withdraw recognition of and NRD credit for the conditional project. If the trustees withdraw recognition of a project, they are not obligated to refund any money that Bluefield has spent pursuant to the protocol.

After completed, constructed projects are to be reviewed by the trustees and Bluefield every three years for up to nine years. If the constructed project is not performing as expected, the trustees and Bluefield will try to form an adaptive management strategy and Bluefield will have 60 days to draft an adaptive management plan and present it to the council for approval. The trustees can make approval of an adaptive management plan contingent on adjusting the constructed project's as-built NRD credit, and the trustees can also choose to not approve an adaptive management plan and withdraw their approval of a constructed project; moreover, they can do this with no obligation to refund any money that Bluefield has spent pursuant to the protocol.

Next, the protocol sets forth the guidelines for establishing both interim NRD credit and as-built NRD credit, as well as how those credit amounts are to be adjusted and how they are to be sold to PRPs. Additionally, it sets forth guidelines regarding how NRD credits will apply in NRD settlements with PRPs, and reserves the trustees' right and obligation to seek public comment on its actions. Additionally, it sets forth how the protocol will be treated if subsequent litigation should arise.

Once the council approves Bluefield's scope of work in writing, it may assign the conditional project an interim NRD credit. As soon as the council assigns interim NRD credit to a conditional project, Bluefield becomes able to sell those interim credits to any PRP. Although Bluefield can sell 100 percent of this interim credit to a PRP at this point, "[t]he Trustees will not recognize more than 50 percent of any Interim NRD Credit until the project is established as a Constructed Project with its associated As-Built Credit" and if "a Conditional Project is not constructed, the Trustees will not recognize *any* Interim Credit associated with that Conditional Project irrespective of whether a PRP

purchased such Interim NRD Credit." Protocol, at 7. As outlined above, once a conditional project is approved, the trustees can choose to assign it as-built NRD credit, which may be different from the interim credit, and at that point the conditional project will become a constructed project.

The protocol also sets forth the requirements regarding financial and other assurances that Bluefield must meet in order for any project to be approved. The provisions dealing with these issues are extremely flexible. They simply state that, "absent special circumstances," before Bluefield sells any interim NRD credits, Bluefield will be required to

> provide financial assurance for construction completion, performance monitoring, corrective action and adaptive management (if applicable), operation and maintenance in perpetuity, by funding a trust fund, providing a letter of credit, purchasing an insurance policy, or providing a similar financial assurance mechanism covering the cost of completing construction, performance monitoring, corrective action, and adaptive management and performing the operation and maintenance in perpetuity.

Protocol, at 9. Whatever form it may take, this financial assurance must provide the trustees with direct rights of enforcement of the obligations, and it must be maintained through all phases of the project, including monitoring. In addition, Bluefield will be required to establish "one or more trust funds or other financial assurance to guarantee maintenance in perpetuity for all Projects, naming the trustees as beneficiary, and having terms and conditions acceptable in all respects to the Trustees." Protocol, at 9. Bluefield must also give the trustees reasonable access to its documents and give the trustees the same leasehold rights that Bluefield has to any land on which Projects are constructed.

A. Strengths of the Protocol

As discussed above, in recent years, trustees have chosen to not undertake restoration projects themselves; rather, they have chosen to enter into settlement agreements with PRPs in which the PRPs agree to conduct their own restoration projects. While it is true that this method allows PRPs to take advantage of market forces in ways that public trustees might not be able to, it also places a set of unique responsibilities on entities that usually have no expertise in such areas. The protocol allows one entity (Bluefield) to gain expertise regarding these unique responsibilities, taking the burden off PRPs, and almost certainly achieving economies of scale.

One specific example of this lies in the fact that many PRPs do not own land, or much land, on which they could construct restoration projects within the highly urbanized Elliott Bay site. Under the old method of restoration, PRPs would be required to find their own land on which to construct projects. To do so, PRPs would probably have to compete with other existing and potential users of that land—often users, such as real estate developers, who have the ability to pay much more for the land because they will be using it as a profit center. By giving PRPs access to NRD credits generated on land that Bluefield controls, the protocol speeds up what is one of the simplest but also most time-consuming aspects of conducting a restoration project: finding land on which to do it.

Another very important advantage the protocol provides to PRPs is the possibility of a shortened and more-predictable timeline by which the NRD liability settlement process can proceed. Every step of the way, the protocol sets relatively short deadlines for Bluefield to meet—in theory, other than the time spent actually constructing the restoration project, there should be no more than 210 days between selection of a conditional project and receipt of as-built NRD credit for a constructed project. Protocol, at 6. Even on the off-chance the protocol does not speed up the overall time to settlement, it will at least provide a more predictable timeline upon which the settlement process can proceed. This predictability provides an unprecedented degree of certainty with which PRPs can quantify their future risks and costs associated with their involvement in the site.

Additionally, the protocol simply provides an incentive for PRPs to buy in to an already-existing settlement structure, rather than spending time and transaction costs negotiating one out of whole cloth.

The protocol also provides advantages for the trustees. Trustees view the protocol as a means by which to

dispose of NRD cases faster and more efficiently. A faster and more efficient process would be good for the public's resources because it would allow trustees to deal with a larger number of NRD cases than they otherwise would. For example, as of September 2009, NOAA's Damage Assessment, Remediation, and Restoration Program had been involved in around 500 CERCLA or Oil Pollution Act sites, but as of April 2011, there were 1290 sites on the National Priority List alone. Allowing the trustees to dispose of NRD cases faster and more efficiently would allow them to become involved at more sites.

The protocol also benefits the trustees' trust resources in that, by completing restoration projects sooner, ecological services begin to flow from the projects sooner. Furthermore, by allowing one entity (Bluefield) to control large amounts of land throughout the Elliott Bay site, there is the potential for fewer larger projects to be constructed, and this could provide benefits to the larger watershed and environment.

B. Weaknesses of the Protocol

Only certain PRPs own land in the Ecological Service Area Boundary, so there is a potential for greatly disparate bargaining power among PRPs when approaching a settlement for contribution. Furthermore, because the city of Seattle, from whom Bluefield is leasing its land, is also a PRP, this could create the potential for practical conflicts of interest.

Even the most cursory reading of the protocol reveals that the trustees have reserved almost all of their rights and placed almost all of the risk of implementing this new protocol on Bluefield. At almost no point throughout the process is the council ever obligated to approve one of Bluefield's projects, and the council is never obligated to reimburse Bluefield for any money spent pursuant to the protocol.

One of the more striking aspects of the protocol is the flexibility it affords Bluefield in achieving and maintaining financial assurances. Furthermore, even within this flexible scheme, a potential loophole for Bluefield exists in the statement that "*[a]bsent special circumstances . . .* Bluefield will provide any such financial assurance after a Project has become a Conditional Project but prior to the sale of any Interim NRD Credit to a PRP." Protocol, at 9 (emphasis added). If such special circumstances should arise, there exists the potential for Bluefield to sell NRD credits to a PRP without being financially stable. This would be detrimental to that PRP, and it would also slow the process by which the public's natural resources are restored.

Also, the protocol is as-yet untested, and the council's approval and implementation of it could have implications regarding how its members are upholding the public's trust.

Finally, because the protocol is a novel method by which federal trustees seek restoration of the public's natural resources, and most similar actions require National Environmental Policy Act (NEPA) compliance, it poses novel difficulties regarding NEPA's public participation requirements. How will Bluefield comport with the protocol's very strict deadlines if public-comment periods far exceed those deadlines? Likely, along every step of the way, the trustees and Bluefield will have to negotiate longer deadlines than the protocol lists in order to satisfy NEPA.

II. Conclusion

The Elliott Bay Trustee Council's Natural Resource Restoration and Enhancement Credit Protocol creates a novel system for satisfying natural resource damage liability under CERCLA. Although there are certainly drawbacks to implementing such a novel system, on balance, it seems that its strengths outweigh its weaknesses. By allowing a private for-profit entity to exist solely for the purpose of implementing one portion of a federal environmental statute, the trustees have introduced the potential for the benefits that often come with specialization of labor. These benefits will be realized by the PRPs in the form of efficiencies in time, money, and labor. These benefits will be realized by the public in the form of a natural environment that has been restored to its original condition faster and, potentially, more completely

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RESTRICTING THE REACH OF RCRA: THE NINTH CIRCUIT ADOPTS THE ACTIVE INVOLVEMENT TEST

Christopher W. Smith and Joshua N. Levine

I. Introduction

The Resource Conservation and Recovery Act (RCRA) does not explicitly state whether it imposes liability only on those who "actively" participate in waste handling activities, or whether it also imposes liability on those who "passively" contribute to such activities. In 2008, the Seventh Circuit held that RCRA only applies to those who have had "active involvement" in waste handling activities. Recently, the Ninth Circuit became the second circuit court to explicitly adopt the active involvement standard.

The Ninth Circuit decision suggests that the active involvement standard is now becoming settled law under RCRA. This has important implications for defendants, such as property owners and equipment manufacturers, who are arguably only passive contributors to waste handling activities.

II. Private Citizen Suits Under RCRA § 6972(a)(1)(B)

In order to establish a private citizen suit for injunctive relief pursuant to RCRA § 6972(a)(1)(B), the plaintiff must demonstrate "that the defendant has contributed to or is contributing to the handling, storage, treatment, transportation, or disposal of solid or hazardous waste." RCRA § 6972(a)(1)(B). *See, e.g., Cox v. City of Dallas, Tex.*, 256 F.3d 281, 292 (5th Cir. 2001). Notably, RCRA has been recognized as requiring further evidence than is otherwise required by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) in order to demonstrate liability. *See, e.g., Foster v. U.S.*, 922 F. Supp. 642, 661 (D.D.C. 1996) ("In contrast to CERCLA, which requires only a showing that a release of hazardous substance has occurred, 42 U.S.C. § 6972(a)(1)(B) requires more than a mere showing that solid or hazardous wastes are present at the Site.") (citing *U.S. v. Conservation Chem. Co.*, 619 F. Supp. 162, 184 (W.D. Mo. 1985). "RCRA does not define the term 'contribute' or any variation thereof." *Cox*, 256 F.3d at 294. In light of this fact, a significant amount of litigation has blossomed around who is a contributor and what does it mean to contribute for purposes of RCRA. Many courts held that mere real property ownership, by itself, is insufficient to qualify as "contributing to" waste handling activities. *See, e.g., ABB Industrial Sys., Inc. v. Prime Technology, Inc.*, 120 F.3d 351, 359 (2d Cir. 1997) (mere ownership of property that is contaminated without further evidence of contribution by spills or other evidence is insufficient to demonstrate contribution for purposes of RCRA); *Aurora Nat. Bank v. Tri Star Mktg. Inc.*, 990 F. Supp. 1020, 1034 (N.D. Ill. 1998) (owner of contaminated property, who simply leased land on which gasoline service station was operated, was not a "contributor" to disposal of hazardous waste under RCRA); *First San Diego Properties v. Exxon Co.*, 859 F. Supp. 1313, 1316 (S.D. Cal. 1994) ("the term 'contributing' infers something more than ownership of site"); *Delaney v. Town of Carmel*, 55 F. Supp. 2d 237, 255–57 (S.D.N.Y. 1999) (contribution "has been universally held to infer something more than mere ownership of a site") (citing *U.S. v. Hardage*, 116 F.R.D. 460, 466 (W.D. Okla. 1987)); *Marriott Corp. v. Simkins Industries, Inc.*, 929 F. Supp. 396, 398 n.2 (S.D. Fla. 1996) (dismissing RCRA claim against property owner on basis that a "delay in taking remedial action upon discovery of contamination caused by a previous owner does not constitute wrongful handling or storage of hazardous waste").

Some district courts specifically discussed what level of involvement was needed to be shown in order to establish RCRA liability. In *Interfaith Community Org. v. Honeywell Int'l, Inc.*, 263 F. Supp. 2d 796, *aff'd*, 399 F.3d 248 (3d Cir. 2005), the New Jersey district court reasoned that:

> The ordinary meaning of "contribute" is "to act as a determining factor." *Webster's II New Riverside University Dictionary* (1998). Thus, Congress intended to impose liability only where a person is shown to have affirmatively acted as a determining factor in RCRA 7002(a)(1)(B). No other reading is possible as the phrase "has contributed or is

> contributing to" in § 7002(a)(1)(B) modifies the specified waste management activities of "handling," "treatment," "transportation," "storage," and "disposal" in that provision.

Id. at 844.

Additionally, the district court in *Interfaith* also discussed the fact that the legislative history confirmed that affirmative action was required under the statute. *Id.* Specifically, Congress stated: "The amendment reflects the long-standing view that generators and other persons *involved* in the handling and. . . disposal of hazardous wastes must share in the responsibility for abatement of hazards arising from *their activities*." *Id.* (citing H.R. Conf. Rep. No. 98-1133, at 119 (emphasis in original)).

Prior to *Interfaith*, the U.S. District Court for the District of New Jersey, in *U.S. v. Price*, 523 F. Supp. 1055 (D.N.J. 1981), *aff'd on other grounds*, 688 F.2d 2004 (3rd Cir. 1982), had held that a landowner who had allowed contamination to spread through "studied indifference" by failing to abate hazardous chemicals that it knew had been dumped on its property could be held liable as a contributor. *Id.* at 845. The district court in *Interfaith* specifically overruled its prior ruling in *Price* as "not in accordance with the plain language of RCRA, controlling Third Circuit precedent, and all other post-*Price* federal court decisions that have addressed the liability of land owners under RCRA." *Interfaith*, 263 F. Supp. 2d at 844 n.7. Accordingly, the district court in *Interfaith* rejected the "passive indifference" standard utilized in *Price*. *Id.* at 831. Subsequent to the abrogation of *Price*, no other circuit or district court has found that "passive indifference" is a basis for liability under RCRA § 6972(a)(1)(B).

III. In 2008, the Seventh Circuit Adopted the Active Involvement Standard

While several courts had, either explicitly or implicitly, read RCRA to require active involvement, no circuit court had explicitly held that active involvement in waste handling activities needed to be shown in order to pursue RCRA remedies. This changed in 2008, when the Seventh Circuit discussed this standard in *Sycamore Indus. Park Assoc. v. Ericsson, Inc.*, 546 F.3d 847, 853–54 (7th Cir. 2008). In *Sycamore*, the defendant was the former owner of a manufacturer facility. After the property was sold, the subsequent owner discovered asbestos in the insulation that covered the steam boiler system and associated piping on the property. The subsequent purchaser brought an action in RCRA against the former property owner for the cost of remediating the asbestos.

In reviewing this action, the Seventh Circuit held that RCRA only applies to parties who were actively involved in waste handling activities. As stated:

> A plain reading of the "has contributed or is contributing" language of § 6972(a)(1)(B) compels us to find that RCRA requires *active involvement* in handling or storing of materials for liability. The ordinary meaning of "contribute" is "to act as a determining factor" Webster's *II New College Dictionary* (2005). By definition, the phrase "has contributed or is contributing" requires *affirmative action*.

Id. at 853–54 (emphasis supplied).

The Seventh Circuit further noted that such an interpretation was consistent with the interpretation of the vast majority of courts that have considered this issue:

> The vast majority of courts that have considered this issue read RCRA to require *affirmative action rather than merely passive conduct* . . . for handling or storage liability. *See ABB Indus. Sys., Inc. v. Prime Tech, Inc.*, 120 F.3d 351, 359 (2d Cir. 1997); *Interfaith Cmty. Org. v. Honeywell Int'l, Inc.*, 263 F. Supp. 2d 796, 844–46 (D. N.J. 2003); *Delaney v. Town of Carmel*, 55 F. Supp. 2d 237, 255–57 (S.D.N.Y. 1999); *Marriott Corp. v. Simkins Indus., Inc.*, 929 F. Supp. 396, 398 n.2 (S.D. Fla. 1996)."

Id. (emphasis added).

As the property owner in *Sycamore* was not shown to have been actively involved in waste handling activities, the Seventh Circuit upheld the dismissal of the RCRA claim.

IV. The Ninth Circuit Adopts the Active Involvement Standard

For several years, *Sycamore* stood as the sole circuit court opinion recognizing the active involvement standard. Recently, however, the Ninth Circuit in *Hinds Investments, L.P. v. Angioli*, 2011 WL 3250461 (9th Cir. 2011) recognized the active involvement standard previously set forth in *Sycamore* as the standard in the Ninth Circuit. In *Hinds*, the owner of two shopping centers filed a RCRA action against manufacturers of dry cleaning equipment that had been used by dry cleaners at the centers. The owner claimed that the manufacturers had employed faulty machine design and distributed manuals that instructed users that they should dispose of contaminated waste water in drains or open sewers.

In its decision upholding the district court's determination that the dry cleaning equipment manufacturers were not actively involved in contributing to hazardous waste disposal, the Ninth Circuit specifically rejected the argument that a defendant may be liable under RCRA for merely "assisting" in the creation of waste, if they do not actually handle, store, treat, transport, or dispose of waste. Rather, the Ninth Circuit held that RCRA requires "a defendant be actively involved in or have some degree of control over the waste disposal process to be liable under RCRA. *Id.* at *3. In reaching its finding, the Ninth Circuit reasoned that:

> The statutory prohibition on "contributing to" speaks in active terms about "handling, storage, treatment, transportation, or disposal" of hazardous waste. Handling the waste, storing it, treating it, transporting it, and disposing of it are all active functions with a direct connection to the waste itself. …. "Contributing" requires a more active role with a more direct connection to the waste, such as by handling it, storing it, treating it, transporting it, or disposing of it.

Id.

Regardless of the plaintiff's claims of improper design, no showing could be made that equipment manufacturers had actively handled waste. The Ninth Circuit therefore dismissed the RCRA claim against the equipment manufacturers.

V. Conclusion

With the holding in *Hinds*, it appears that a consensus has emerged among circuit courts that RCRA actions require a showing of active involvement in waste handling activities. It is unlikely that this standard will be seriously challenged as it is consistent with both the statutory language of RCRA and the majority of case law. As such, this standard will likely significantly narrow the reach of RCRA actions for the foreseeable future.

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ITRC CONTAMINATED SEDIMENT TEAM: INCORPORATING BIOAVAILABILITY CONSIDERATIONS INTO THE EVALUATION OF CONTAMINATED SEDIMENT SITES

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The U.S. Environmental Protection Agency (EPA) estimates that approximately 10 percent of the sediment underlying our nation's surface water is sufficiently contaminated with toxic pollutants to pose potential risks to fish and to humans and wildlife that eat fish. This represents roughly 1.2 billion cubic yards of contaminated sediment (representing the upper five centimeters of sediment) where many bottom dwelling organisms live. (EPA 1998a)

According to current average costs for managing contaminated sediments, this volume of material could cost several trillions of dollars to dredge. In addition, state regulatory agencies are increasingly responsible for the identification, investigation, oversight, and management of contaminated sediment sites throughout the United States. More than 25 percent of the contaminated sediments sites addressed to date in the United States have had state drivers As activity accelerates, this percentage will likely grow.

Methods to assess the potential effect of sediment contamination on human or ecological health are historically based on total contaminant concentrations in the bulk sediment. Unfortunately, the relationship between contaminant concentration in sediments and risk from exposure is not linear. Research conducted over the past 15 years has shown that the bioavailable concentration of many of these contaminants causing a toxic response in the receptors is much less than the total concentration of these contaminants in the sediment.

What Is Bioavailability?

As defined by the National Research Council (NRC 2003), "bioavailability processes" are the "individual physical, chemical, and biological interactions that determine the exposure of plants and animals to chemicals associated with soils and sediments". Specifically, bioavailability addresses the fact that only a fraction of a contaminant present in the environment may be taken up and subsequently result in an effect on an organism. Exposure of a chemical in soil, sediment, or pore water requires that the chemical come in contact with a biological membrane. The chemical can migrate through the membrane and enter the bloodstream, or a particle can come into contact with the membrane and the chemical can move from within the particle into the aqueous phase and subsequently move though the membrane to the blood (NEPI 2000). Based on this principle, EPA has defined "bioavailability" as the "state of [a chemical] being capable of being absorbed and available to interact with the metabolic processes of an organism" (EPA 1992a), meaning that the chemical must (1) be released from the sediment (either in the natural environment [desorption] or after ingestion [bioaccessibility]), (2) come in contact with a membrane (e.g., stomach, intestine, lung, or skin), and (3) be distributed to an organ or cell.

Why Assess Bioavailability?

Bioavailability assessment tools aid in the assessment of human and ecological exposure and development of site-specific remedial action objectives (RAOs). An appropriate consideration of the degree of bioavailability supports risk assessment and risk management decision making. The current process used to assess sediment toxicity has included one or more elements of the Sediment Quality Triad approach (Long and Chapman 1985; Chapman, Dexter, and Long 1987; Chapman 1996; VonStackelberg, Thompson, and Patton 2008; Wenning et al. 2005). The sediment triad attempts to relate measures of bulk sediment chemistry, benthic community, and sediment bioassays to characterize contaminated sediments. Sediment quality guidelines (SQGs) are used in the effort to identify thresholds for individual sediment chemicals that, when exceeded, adversely affect benthic communities and/or bioassay endpoints (Barrick et al. 1988; Chapman 1989; Chapman and Mann 1999; Long and Morgan 1991; MacDonald et al. 2003; Persaud, Jaagumagi, and Hayton, 1993;). Currently, SQGs are frequently used to determine the

need for cleanup at many federal and state sites (VonStackelberg, Thompson, and Patton 2008).

While the existing SQGs offer simplicity and utility (Wenning et al. 2005), they are thresholds that focus only on benthic organisms. Unfortunately, SQGs generally do not address food-chain risks associated with bioaccumulation of sediment contaminants, often have low reliability or predictive value, and are generally set on the conservative side (WDOE 2003) to ensure environmental protection.

There is an increasing scientific and regulatory acknowledgment of the need to consider bioavailability processes of sediment contaminants in exposure assessments. Site-specific field measurements have clear scientific precedence over generic or literature-derived values. For example, at the Ashtabula Harbor site, sediment testing results found little site-specific evidence of PCB bioavailability or toxicity and much higher evidence of metals availability and toxicity. They dismissed the field-measured PCB and metals data and concluded that PCBs drove toxicity; therefore, management decisions were based on generic literature-based "expected effects" concentrations, which their own data contravened at the particular site (MacDonald et al. 2005). Such a procedure weakens—in fact, practically eliminates—the technical credibility of the methodology in application.

An overwhelming body of scientific evidence points to the fact that physical, chemical, or biological properties can reduce the potential for sediment exposure and/or uptake of contaminants by living organisms. Ankley (1996), Di Toro et al. (2005a, 2005b), and Hawthorne et al. (2007) present evidence that identifies mechanisms that control contaminant bioavailability. The application of bioavailability in contaminated sediment management has lagged behind the still-growing body of evidence that confirms that at many sites sediment contaminants may be less "available" to cause harm to humans or ecological receptors than is suggested by extrapolating effects based on bulk (total) sediment concentration measurements (NRC 2003, SERDP and ESTCP 2008, EPA 1998c).

Basically, if contaminants are present but not bioavailable, they should not be included in the calculation of risk. Assessing bioavailability can optimize the extent of cleanup required to be protective and can be an important factor in balancing the risks caused by remedial action with the risks addressed by remedial action. This balance is particularly important for sediment sites where two of the primary remedial options, capping and dredging, can significantly alter physical, chemical, and biological conditions and disrupt or destroy existing habitat.

Sediment Assessment Approach

Incorporating bioavailability is an iterative process that is carried forward through each tier of a sediment assessment. For example, scoping activities are often revisited after completing a screening-level risk assessment as part of the planning for a remedial investigation and baseline risk assessment. Inclusion of bioavailability considerations as a project scoping activity allows for the evaluation of existing processes, available data, and the data needed for moving forward.

An example of incorporating bioavailability assessment using a tiered approach is in the assessment of sediment polycyclic-aromatic hydrocarbon (PAH) contamination. EPA recently indicated that PAH effects to benthic organisms should be evaluated in the following tiered approach (Burgess 2009):

1. Assess PAH bioavailability based on bulk sediment analysis (including comparisons to SQGs and the use of equilibrium partitioning theory (EqP) to estimate pore-water concentrations for comparison to final chronic values (FCVs)).
2. Assess PAH bioavailability based on the analysis of interstitial water (i.e., direct measure of pore-water PAHs) and compare to FCVs.
3. Assess PAH bioavailability based on aquatic toxicity testing (i.e., amphipod acute and chronic tests).

Successive tiers are evaluated only if the previous tier indicates a potential impact to benthos. In this case,

successive tiers provide a higher level of certainty in the bioavailability analysis.

Evaluation of Exposure and Remedial Decisions

Risks are identified during the risk assessment based on exposure and effects assumptions. It is in the risk management stage where the decision maker must determine whether the information presented is sufficient to warrant an immediate remedial action or the overall evidence suggests that conditions exist that ameliorate the immediate concerns about risks. A good risk characterization articulates major assumptions and uncertainties, identifies reasonable alternative interpretations, and reaches scientific conclusions (EPA 1998c). Bioavailability data can reduce uncertainty by providing more relevant information on exposure concentrations. This leads to a more realistic exposure assessment as compared to the conservative assumptions derived from bulk sediment chemistry alone.

An example of a case study that highlights the assessment of risk at a contaminated sediment site is the Indian River Power Plant, located in Delaware. Cleanup levels for intertidal sediments contaminated with non-aqueous phase liquid (NAPL) and dissolved-phase diesel-range organics that resulted from a diesel fuel spill from a leaking underground pipeline at this site were calculated based on the EqP-toxic unit (TU) value approach . The pipeline was taken out of service, and a sheet pile wall with sealed interlocks was installed to preclude the future migration of residual oil into the river sediments. Subsequent investigation work consisted of identifying the extent of impact, assessing risk to aquatic receptors, implementing a remedial action, and restoring the shoreline.

For each sample collected during the investigation of impact extent, bulk sediment chemical measures of PAH parent compounds and alkylated homologs were first normalized to the total organic carbon (TOC) concentrations at each corresponding sample point. Pore-water concentrations of these compounds were then predicted using EqP and were subsequently divided by analyte-specific acute and chronic values calculated from narcosis theory. For each sample, the TUs for individual compounds were summed to yield total acute and chronic TUs. TUs >1 indicated that pore-water exposure concentrations were potentially high enough to cause toxicity to benthic organisms. The state required excavation of all sediments with chronic TUs >1, which corresponded to a total PAH cleanup criterion of 2 mg/kg. In total, approximately 480 cubic yards of sediment were ultimately removed from the Indian River shoreline, and confirmatory samples indicated that the calculated cleanup criteria were met. Excavated sediments were replaced with clean material of similar grain size composition and were allowed to be naturally reworked and contoured over several tidal cycles prior to revegetation efforts.

A long-term monitoring program was subsequently established to ensure that the remedial efforts would remain protective of ecological receptors and included regular visual site inspections to monitor erosion and health of vegetation, photo-monitoring of vegetative growth and site development, vegetation sampling for various parameters, and sediment sampling for PAHs and TOC.

This is an example of how bioavailability considerations should be incorporated in the exposure assessment process to obtain a clearer understanding of contaminant toxicity and exposure pathways such that remedy selection decisions can be focused and resources efficiently used. Explicitly, assessing contaminant bioavailability can achieve more technically defensible cleanup goals and establish more accurate cleanup priorities while still ensuring protection of human health and the environment.

Summary

By incorporating bioavailability considerations into the early stages of site characterization, the risk assessment process, and remedy selection, a more effective remediation may be accomplished, which may well optimize overall cost. The recently published Interstate Technology and Regulatory Council (ITRC) web-based technical and regulatory guidance (http://www.itrcweb.org/contseds-bioavailability) describes the mechanisms affecting contaminant bioavailability,

the tools used to assess bioavailability, proper application of those tools relative to a specific end point (ecological or human), and how bioavailability information can be incorporated into risk management decisions at contaminated sediment sites. The tools described in the document aid in conducting a successful assessment of site-specific contaminant bioavailability with increased acceptance by regulators, practitioners, and public interests in your state or region. Numerous case studies are provided throughout the document to illustrate the application of bioavailability adjustments or considerations in the establishment of remedial goals/decisions. The ITRC Contaminated Sediments Team has seen that these tools and models have been used to set scientifically and technically defensible cleanup goals at contaminated sediment sites and also have helped to select appropriate remedial strategies to mitigate exposure. The ITRC Contaminated Sediments Team has also found that bioavailability processes are often not addressed when setting risk-based cleanup levels due to lack of scientific or technical understanding.

As NRC (2003) stated, "Explicit consideration of bioavailability processes and modeling in risk assessment would help to adjust cleanup goals by more accurately identifying that fraction of contaminant total mass that has the potential to enter a receptor." In general, an investigator or regulator should strive to gain the best possible understanding of the physical, chemical, and biological processes that "drive" the risk (i.e., bioavailability by the means of compounds of potential concern (COPC) transfer, uptake, and concentrations at which adverse effects to receptors occur). Bioavailability should be incorporated in the risk assessment process to obtain a clearer understanding of contaminant toxicity and exposure pathways, such that remedy selection decisions can be optimized and resources efficiently focused. By incorporating bioavailability considerations into the early stages of site characterization through the risk assessment process and up through the point of remedy selection, a more effective remediation may be accomplished, which may optimize overall cost.

Please note: Full references cited in this article can be obtained from the ITRC Guidance "Incorporating Bioavailability Considerations into the Assessment of Contaminated Sediment Sites" located at www.itrcweb.org/contseds-bioavailability.

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