



Getting To Restoration

Companies are liable for restoring natural resource injuries beyond normal cleanups under Superfund and the Oil Pollution Act. But they can cause their financial exposure to skyrocket by instinctively using legal and scientific defenses to avoid this liability. Instead, industry can reduce costs and government trustees can achieve restoration more quickly by joining together in a cooperative natural resource damage assessment

BILL CONNER and RON GOUGUET

The judge in the Federal District Court in Los Angeles interrupted the defense attorney in the middle of his opening statement. There is “no malaria on the White’s Point Outfall” along the coast of Southern California, the jurist said. The industry lawyer, somewhat taken aback, had been describing how the now-banned pesticide DDT had saved millions of lives around the world by controlling the dreaded disease.

In a suit brought by the United States and the State of California, the trial was held four years ago to determine the amount of natural resource damages that might have to be paid by Montrose Chemical and other companies for the release of nearly 2,000 metric tons of the insecticide into the Pacific Ocean off Los Angeles between 1953 and 1971. The DDT spread throughout the entire coastal ecosystem and was found at elevated levels in sediments, fish, sea lions, and birds. Although other parties had settled prior to trial, the remaining claim to be resolved was in excess of \$100 million. Judge Manuel L. Real was sending a clear signal that the attorney’s statement, though correct, was irrelevant, and that he would have little patience for off-topic presentations in the coming trial.

A courtroom like this is the ultimate fate of natural resource damage claims if they cannot be settled by agreement between the parties responsible for the pollution and the trustee agencies who represent the public interest in preserving our natural resources for future generations. Litigation costs, encom-

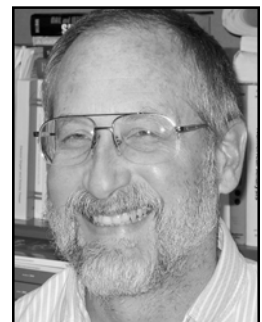
passing dueling damage assessment studies and often brigades of lawyers and consultants, can run into the tens of millions of dollars or even higher — money that in a more perfect world would be better spent on environmental restoration. When both parties are unable to cooperate, they are unable to find and exploit obvious efficiencies that would otherwise come to light through sharing of information and replacing endless studies with reasonable assumptions. In an era when market mechanisms are in the fore, a concept that would stress economic efficiency through strategic collaboration to generate better information and thereby reduce costs to business deserves its day in court. That’s cooperative natural resource damage assessment, or cooperative NRDA.



Liability for natural resource damages from pollution came into law when Congress passed the Superfund hazardous waste cleanup statute in 1980, although for the first several years EPA concentrated solely on mitigating the risks from sites. Natural resource liability and the resulting restoration are in addition to — and different from — liability for cleaning up the pollution from sites. After the *Exxon Valdez* highlighted the danger of waterborne oil pollution and the vulnerability of marine and coastal ecosystems — and not incidentally brought to widespread public attention the threat of natural resource damage by industrial activities — the legislators passed the Oil Pollution Act in 1990, specifically addressing natural resource damages caused by oil released by ships and facilities.

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These laws direct natural resource trustees to assess damages from oil spills and releases of hazardous substances, and to restore, replace, or acquire the equivalent of injured natural resources. Natural resource trustees include designated federal and state agencies and certain Native American tribes. Owners, operators, and transporters connected to the pollution release — the potentially responsible parties, or PRPs — must



pay natural resource damages as well as cleanup costs. Under this legal framework, trustees collect damages from the PRPs and use the recovered moneys to restore the injured resources.

To look at the situation from the vantage of the National Oceanic and Atmospheric Administration, which is the designated lead federal trustee for oil spills and waste sites in the marine environment, the EPA National Priorities List for Superfund cleanups includes about 700 coastal waste sites. Perhaps a dozen new coastal sites are listed by EPA each year. In addition, NOAA receives notification of over 100 oil spills in coastal areas each year.

For more than 90 percent of these waste sites and spills, cleanup alone is sufficient to address natural resource concerns, there is little or no need for a natural resource damages claim, and the situation can be resolved by a single settlement that addresses all liability. But the remaining 10 percent represent the bigger, more complex waste sites and the more significant oil spills, and, more importantly, these sites and spills represent the bulk of the natural resource injury that should be restored. For a complex waste site, it takes at least five years to conduct a damage assessment, and an additional five to 10 years if litigation is required. The typical oil spill takes three to five years plus any litigation time. Anything that can be done to reduce the elapsed time needed for these actions will not only save process costs, but ultimately allows government programs to achieve more restoration with the resources that have been designated for implementing these authorities.

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damage assessment actions were conducted with the expectation that their final venue would be a courtroom. In anticipation of litigation, parties on both sides were



justifiably reluctant to share data or even discuss what they were doing. This mindset created a playing field on which there had to be winners and losers. A good deal was at stake, and process costs were high. For the *Exxon Valdez* oil spill, the trustees and the PRP both invested in damage assessment studies, and withheld the findings for litigation. Trustee assessment costs for the *Exxon Valdez* exceeded \$100 million for studies. We expect that Exxon's investment in studies was of a similar magnitude. It is important to emphasize that, in the end, the PRP becomes liable for the trustee's expenses for the damage assessment. When the trustee must conduct what is called a "litigation quality" NRDA, the cost skyrockets. The same is true for the company's expenses on its studies, of course.

Industry concern about natural resource liability is still high. "Natural resource damages are an awakening 'sleeping giant' of environmental liability that poses serious threats for U.S. businesses," wrote law professor Richard B. Stewart in a 2001 paper published by the Federalist Society. Some



think that this sleeping giant could overshadow liability for cleanups. In written testimony submitted to the Senate Environment and Public Works Committee on a 1997 bill to modify Superfund, George J. Mannina Jr. of the Coalition for Natural Resource Damage Reform said,

"Unless the NRD program is reformed, not only will the problems with this program dwarf the well recognized problems of the cleanup program, but any progress made on remedy reform in S. 8 will be undone." Stewart, who is the director of New York University's Center on Environmental and Land Use Law, directly addressed natural resource damage assessment in his 2001 paper, arguing that it should be reformed because

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A N O T H E R V I E W

Shared Vision. Sounds Obvious. Can We Make It Happen?

In the movie *City Slickers*, Jack Palance plays a cowboy whose job is to turn a bunch of businessmen into experienced hands. The greenhorns come to revere the outdoorsman as a wilderness sage who promises to share the secret of life, but dies before he has the chance. Imagine if instead Palance had taken out a group of NRDA professionals. What would he say is the secret to initiating and maintaining a cooperative NRDA? My guess: "Shared vision, pah'dner."

Seldom is an NRDA initiated by participants being asked to share their vision of a successful assessment, then using that information as the foundation for development of a shared vision. We need to change that.

The goal of an NRDA is restoration of injured natural resources and their services. It's never too early to begin developing a shared vision of what the restoration project might look like. Even as we work on identifying and quantifying potential injuries to natural resources, discarding some and advancing others, we should ask ourselves: "What restoration alternatives might compensate the public for these injuries?"

Why is developing the shared vision so important? Because when people have an idea of where they're going, it's easier to identify the routes that will get them to their destination efficiently. Developing and focusing on the shared vision makes people more committed to the effort. And it helps to keep hidden agendas in check. As a result, restoration is achieved faster and transaction costs are better managed and allocated.

Establishing a shared vision may be especially challenging when we're working on remediation sites where determining causation, the threat of litigation, and the involvement of multiple stakeholders raise the stakes. Some may argue that these factors preclude development of a shared vision. But it is at these kinds of challenging sites where development of

a shared vision is especially important because it may help participants find a path forward.

What promotes development of a shared vision? First, it helps if the participants already know each other. Knowing the person on the other side of the table goes a long way toward dispelling myths and maintaining a positive working relationship. The West Coast Joint Assessment Team and the newly formed Mid-Atlantic Joint Assessment Team are examples of steps that industry and trustee NRDA practitioners have taken toward these ends. We may not always agree with each other, but we know we can work to-



Michael Ammann

gether, and we'll find creative ways to resolve disputes.

Over the last couple of years the Interior Department, NOAA, and industry have worked together on initiatives aimed at improving communications and getting to know each other. These efforts need to continue and need to include practitioners and representatives from the diverse NRDA stakeholder community.

Second, at the beginning of the assessment, we need to establish a work process that allows us to make sure we're making good decisions about the scope and direction of the assessment, as well as asking the right questions that will help us with restoration planning. Only studies that contribute to restoration planning and implementation should be conducted. We need to understand that an NRDA isn't a research project.

Third, we need to find creative ways to manage uncertainty. NASA engineers manage uncertainty by over-designing critical portions of their systems. We can do likewise, by including additional restoration to offset inherent uncertainty rather than spending money for a marginal increase in certainty.

Fourth, at the beginning of an assessment we should develop a shared concept of the general classes of injury that may have occurred so that

conceptual restoration alternatives can be identified. For example, if hazardous materials are present in the water or sediment, it's not a stretch to suspect that wetland or riparian restoration may be needed.

A few years ago, a Chevron Products Company pipeline ruptured, spilling gasoline into a slough near Bay Point, California. During the first NRDA meeting between Chevron Products Company and the trustees, a representative of the California Department of Fish and Game's Office of Spill Prevention and Response said: "I know a restoration project that we can use." The suggested project was a wetlands restoration that a local park district was conducting. That one statement set the tone for the rest of the assessment. From that moment on our actions were aimed at achieving the shared vision.

To facilitate reaching our goal, we agreed to stipulations regarding injuries; we managed uncertainty about the extent of oiling by agreeing to extend a measured area of wetland habitat into the assessment effort; and we made joint field measurements and observations. That we already knew each other and were able to agree on how to manage uncertainty played pivotal roles in getting us pointed in the right direction. Because we developed a shared vision at the first meeting, we were able to settle the NRDA claim after three meetings. By focusing on restoration, managing uncertainty, and avoiding unnecessary studies, restoration was achieved faster and all parties realized savings in transaction costs, especially consultant and legal fees.

It's time we start walking the talk about restoration being the goal of NRDA. There is no reason why we shouldn't begin an NRDA by creating a shared vision of what the end might look like. We ain't greenhorns, pah'dner.

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at present it lacks a connection between restoration projects and injured resources, shows a trustee preference for costly on-site restoration instead of cheaper off-site options, exhibits a lack of coordination between cleanup and damage assessment processes, and demonstrates overly broad trustee discretion in planning restoration without congressional oversight.

We feel that these claims are, at best, based on early trustee practices to implement damage assessment authorities, and fail to recognize changes that have occurred since natural resource trustees started to ramp up efforts to implement their authorities after the *Exxon*



Valdez oil spill 15 years ago. Unfortunately, failure to see these changes makes it impossible for PRPs to benefit from them and, even worse, prevents the timely and cost-effective restoration of natural resources that is within our grasp under the

existing regulatory framework. These benefits may be realized when a cooperative assessment process that involves PRPs and trustees replaces the litigation process.

Two fundamental developments open the door to the successful partnerships between PRPs and trustees that constitute cooperative NRDA: the advent of restoration-based assessments and the integration of natural resource damage assessments with the remedial (i.e., cleanup) information gathering and decisionmaking process.

The first change, the restoration-based approaches to natural resource damage assessment, developed between 1990 and 1995. The change can be clearly seen by comparing the damage assessment regulations promulgated by the Department of the Interior under Superfund in 1986 with the later Oil Pollution Act rule, issued by NOAA, in 1996. The regulatory process described by DOI starts with the documentation of natural resource injuries. Trustees determine what has been harmed, how badly, and for how long. Then the trustees quantify the value of the lost resources. The trustees' next step is to

develop a restoration plan that lays out the best way to spend an amount of money equal to the value of the injured natural resources.



Under this process, the logic flows from assessment of injury, to valuation in dollars, to a restoration plan for spending the dollars.

The use of economic methodologies required by this approach, especially those methods based on public survey techniques like contingent valuation, has been vigorously protested by industry representatives. Contingent valuation uses hypothetical scenarios to estimate the values held by the public for natural resources and the services they provide — such as fishing, swimming, and boating. The Coalition for Natural Resource Damage Reform's George Mannina provided the following testimony to the Senate Environment Committee in reference to trustee applications of such valuation methods, "In simple English what this means is that trustees are going to attempt to compute the value to the squirrel of having to eat acorns instead of walnuts while the restoration is occurring, or the value to the robin of eating bugs instead of worms — and to file claims for the robin's pain and suffering." Needless to say, the trustees have never intended to measure or claim "pain and suffering" for songbirds, but this statement illustrates both the strong level of concern in some industry sectors and the opportunity for misunderstanding these methods.

NOAA's promulgation of damage assessment regulations under the Oil Pollution Act outlined the new approach the agency developed in the early 1990s. The process in the OPA rule places primary focus on the restoration of the injured resources rather than on the valuation of the lost resources and services. Under the OPA rule, trustees still determine what has been harmed, how badly, and for how long, but then the trustees go immediately to restoration planning. Once a preferred restoration alternative is identified, trustees seek the *cost* of carrying out the restoration as the measure of dam-



Industry concern about natural resource liability is still high — the awakening "sleeping giant" of environmental liability that poses serious threats for U.S. businesses, as some fear.

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Good Restoration Projects Settle Tough Cases

In his well-known book *The Road Less Traveled*, M. Scott Peck opens with the simple sentence: "Life is difficult." As with daily life, expecting bumps in the road, and knowing what some of them might look like, can help environmental professionals navigate through a cooperative NRDA toward the goal of a successful settlement.

During the course of 20 large NRDA cases, we at the California Department of Fish and Game's Office of Spill Prevention and Response have discovered that the way to navigate those bumps is to realize that *good restoration projects settle tough cases*. A good project satisfies both the

trustees and the responsible party. It has bang for the buck and is likely to produce benefits that will compensate for even the highest estimates of injury. Such a project can negate the need to refine uncertainties associated with the injuries, thus reducing assessment costs.

Such projects may be hard to find. For example, with endangered species, restoration options are typically limited and often expensive or in conflict with other human activities. However, a good restoration project that makes all parties happy can bridge a number of difficult issues and help substantially in navigating through some of the obstacles associated with cooperative assessments.

In most of our cases, the Office of Spill Prevention and Response has worked closely with other state, federal, and tribal trustees to develop a unified and cost-effective approach to resolution of the case. In addition, it is standard practice among natural resource trustees in California to enter into cooperative assessments with RPs. In the course of these cooperative experiences, we have identified some key factors for bringing about a satisfactory process for all parties involved.

There are three essential elements to a successful cooperative process,

we have found: The people involved have experience in NRDA; the process includes the right people at the right times; and those involved trust the process (and refrain from deliberately trying to abuse it).

It is not unusual for a case to include people or organizations that are NRDA novices. These may include new government employees, consulting firms or their new staff members, attorneys, and local trustees and RPs that have never been involved in a major pollution incident. Lack of familiarity with the NRDA process may lead to unrealistic expectations and frustration, or result in counterproductive decisionmaking.

On the one hand, it is important for novices to be prepared for the duration of the assessment, and not anticipate a rapid settlement. Those involved in the NRDA should be familiar with the time required to collect and analyze data, and understand that significant amounts of time will be necessary in order to accommodate meetings, planning, and negotiating agreements.

On the other hand, those new to the NRDA process may have images of Prince William Sound dancing in their heads. They may envision — or fear — a long process that includes expensive studies. With limited knowledge of the goal (compensatory restoration projects) and the methods used to scale the size of these projects, some may propose a plethora of studies, which may not directly inform the parameters needed to quantify injury or scale restoration projects. At other times, both sides may shortsightedly agree to forego a rather inexpensive study, even though it would resolve a highly significant variable around which there is considerable uncertainty. Experience with the process and knowledge of restoration scaling can enable the joint team to choose the appropriate studies to fund.



Steve Hampton

When working in a team environment, with representatives from a variety of organizations, the process can be as important as the goal. Representatives with decisionmaking authority are a must for moving the process forward during meetings. The ability to progress in a timely fashion requires agreement on many baby steps, consensus on the methods used, and an understanding of how various data will be obtained and used in the assessment. If individuals at the table must return to their respective clients or agencies with such decisions for review and approval, what may have taken ten minutes at the cooperative table may now take several meetings and several months. Thus, it is critical to have a member of the RP company and appropriate trustee representatives, all empowered to approve agreements, at the table at every meeting. Open lines of communication (e.g. for a quick phone call), among both technical staff and attorneys, is likewise beneficial.

Finally, there is the issue of trust in, and respect for, the cooperative assessment process. Although natural resource restoration is, arguably, an objective and scientific process, a cooperative NRDA is inevitably influenced by the motivations and responsibilities of trustees, RPs, and their insurers, and outside consultants and attorneys. Any party may fear they are being manipulated. To set an assertive tone, they may argue each and every point, regardless of the relative importance to the overall assessment. Attorneys or insurance companies may balk at decisions made and not honor the joint conclusions of the cooperative technical team. Beginning the cooperative process with a clear plan, common goals, and ground rules to guide the process will help to avoid the pitfalls of mistrust and minimize the degree to which the process can be abused.

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Some critics have questioned early damage assessment methods based on the value of injured resources. NOAA's approach is based instead on the cost of restoration itself.

ages rather than the *value* of the injured resources and lost services. In many cases, this approach allows the trustees to determine damages without using methods that some may view as controversial.

Let's look at how this difference affects the damage assessment process and the claim in the Blackbird Mine case. Blackbird is an abandoned cobalt and copper mine located in Idaho in the Panther Creek drainage basin, which flows into the Salmon River. The trustee mandate for Panther Creek is to restore the run of Chinook salmon after the EPA cleanup resolves the water quality problems. Following a value-based approach, the trustees would have used an economic method such as contingent valuation to determine the value of the lost run of Chinook salmon. The value of this salmon run is probably quite high because this is a highly used, valued, and sought-after fish. In addition, the Salmon River Chinook is a listed species under the Endangered Species Act,



and every run is considered precious. Although the results of a contingent valuation study cannot be known with certainty, a value of \$10 million or more is the likely result if such a study were done.

In the real world, the trustees chose to apply the restoration-based approach. They devised a plan to restore the salmon run in Panther Creek and to compensate for the loss of the run until the original could be restored. The expected cost is \$3 million for hatchery operations to restore the salmon run plus \$2 million to compensate for the loss of the run by excluding cattle from salmon habitat in nearby watersheds. Restoration-based assessment claims will not always be lower than value-based claims. But with a restoration-based claim, the PRP, the trustees, and the public know how the money will be spent and there will be a logical connection between the type and scale of the injury and the type and scale of the restoration.

The second fundamental change involves integrating the damage assessment process

with the cleanup process. Initially it was assumed that the cleanup had to be designed — if not implemented — before it would be possible to conduct the damage assessment and restoration planning. The response agency, or sometimes PRPs under the supervision of the response agency, spent large sums of money and time to investigate the nature and extent of the contamination, evaluate risks to human health and the environment, and select a preferred cleanup alternative. But it makes more sense, saves time and money, and is consistent with the regulatory framework for trustees and response agencies to conduct simultaneous assessments and coordinate remedial and restoration planning. Through timely trustee notification and open coordination, it is possible to share data collection and promote combined settlements for both cleanup and natural resource liability. Although natural resource damage assessment may have data needs that are not completely covered by the remedial process, much of the information needed for damage assessment can be developed under the remedial process. The trustees and the PRPs have the opportunity to save money through fine-tuning of investigations to satisfy both types of data needs.

The term cooperative NRDA refers to a process that natural resource trustees and PRPs voluntarily undertake to resolve natural resource liability. In a cooperative assessment, trustees and the PRPs are not required to adopt the same motives. In fact, it is healthy for the parties to maintain a professional, arms-length relationship to avoid the appearance or reality of compromising the responsibilities of the trustee agencies to the public, or the PRP's responsibilities to the company's shareholders. There must, however, be a shared commitment to identifying a fair and appropriate amount of restoration for the oil spill or waste site under consideration. And the parties must also share a commitment to do this in an expeditious and cost-effective manner. Here are some of the basic factors that pro-



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Community Organizations Can Make The Process Work

My job — my obsession — is the restoration of coastal Louisiana, the vast but disappearing wetland and estuarine complex built by the Mississippi River that nurtures and protects some of the world's greatest fish and wildlife habitat, as well as some important human habitats, like my home in New Orleans. Since 1900 more than one quarter of the wetlands in south Louisiana have vanished due to a combination of levees, canals, and mineral extraction, threatening the viability of this region. Unless this system is reengineered to restore its vitality, while still providing flood protection, navigation, and other economic activity, it will continue to disappear at the rate of nearly 25 square miles each year, taking our futures with it.

For me and the Coalition to Restore Coastal Louisiana, protecting and restoring this treasure is a serious business, which is why the future of Bayou Trepagnier matters so much. The coalition is part of a state-federal partnership that is developing comprehensive plans to restore the region on a scale comparable to the Everglades effort. Getting the maximum value out of natural resource damage assessments and settlements is important to us. Now that I have been part of a cooperative NRDA, I am convinced that it is the way to make real progress, especially when the issues are complex and contentious.

Bayou Trepagnier is part of a 20,000-acre wetland that abuts New Orleans' airport. It lies between the Mississippi River and Lake Pontchartrain. Years of discharges from a Shell Oil Company refinery have left the bayou and its banks heavily contaminated by metals, PAHs, and oil and grease. The contaminants have also frustrated efforts by coastal restoration planners and advocates for fear that any efforts to reintroduce much needed fresh water to the bayou and the wetlands would mo-

bilize the pollution. This all produced a maddening loop in which restoration planners avoided the bayou because of its contamination, while the Louisiana Department of Environmental Quality and Shell cited the lack of restoration plans as a reason to take a passive approach to remediation.

Enter the coalition. At the time, 1996, natural resource damage was not even part of the discussion, much less a comprehensive approach to restoring the natural functioning of the bayou. DEQ saw the cleanup primarily as an issue of water quality under relevant federal and state law. After three frustrating years of reviewing draft remediation plans, threatening lawsuits, and demanding a comprehensive approach to dealing with the contamination, it had become clear that stewardship of the resource was taking a back seat to a desire by DEQ to close the case and limit Shell's liability. That is why we decided to contact NOAA to push the issue.

It had become clear that any hope of a more comprehensive and inclusive approach to dealing with the contamination depended on combining the NRDA process with the remediation planning, and then overlaying this result on the ongoing coastal restoration plans that NOAA, DEQ, and a host of other state and federal agencies had conceived for the area around Bayou Trepagnier. Fortunately a cooperative NRDA provided a vehicle for doing just that.

NOAA looked into the situation and began just the comprehensive approach that we had hoped for — and we found ourselves officially with a seat at the table, as a representative of the community, along with NOAA as the lead trustee, as well as DEQ, Shell, and several other trustee agencies.

The cooperative approach to damage assessments and response planning is still a dispute resolution pro-

cess, one in which the authorities and goals of the parties are often pretty narrowly drawn and where common vision and mutual trust are not the order of the day. In this case, however, what the NRDA did was provide a forum and enough compulsion to begin to work issues through.

Which brings us to the topic of outside public interest involvement. I am undoubtedly biased, but I don't think the Bayou Trepagnier NRDA would have a chance of succeeding without the goals, and resources, that we and the group of local interests we represent brought to the table. Traditionally NRDA and remediation actions were fairly localized and could easily be handled on a case by case basis without regard to lots of other plans and programs. But as comprehensive development and ecosystem management plans become more common, there is an increased need to view resource damage and remediation actions in a broader context — a context that most trustee agencies are still struggling to deal with.

Bayou Trepagnier is an example. DEQ didn't ignore the implications of their proposed remedial actions (or lack thereof) on coastal restoration efforts because they were uncaring; there were simply no crosslinks within DEQ to allow its compliance people to know who in that agency was working on coastal planning or how to engage them. We were often in a far better position to kick issues upstairs or between agency offices, or even at Shell, than were the folks who had the task of settling the case.

The ability to look at the big policy picture, to take a comprehensive approach over a long time horizon, and to engage multiple agencies, companies, and other interests without undue concern for bureaucracy is an ability that community organizations can bring to the difficult environmental problems our country faces. The ongoing resolution of the Bayou Trepagnier settlement is proof.

Mark Davis is Executive Director of the Coalition to Restore Coastal Louisiana in Baton Rouge, Louisiana.



Mark Davis

Two fundamental developments open the door to the partnerships between PRPs and trustees that constitute cooperative NRDA: Restoration-based assessments and integration of damage assessments with remedial information gathering and decisionmaking.



mote an effective cooperative damage assessment.

Sharing information. Everyone should have access to the same data. Often there will be joint studies that both sides agree should be done to

fill information gaps. Sometimes one side will want to conduct a study, but the other will not. In these cases, one side may conduct an independent study, but only with the knowledge of the other side. Results will be shared at the end of the independent study, as well as methods, checks on data quality, and split samples when appropriate. In the Texas Lavaca Bay settlement, involving Alcoa's aluminum plant that had released mercury into the environment at that site. NOAA and Alcoa worked together to develop a geo-referenced database, then used it together as a basis for discussing the damage assessment.

Guiding the process with science. The parties go through a logical and comprehensive assessment based first on information that has already been published combined with site-specific information that is available from the remedial investigation or other reliable sources. Topics such as extent and nature of contamination, injury definition, injury quantification, causation, and the nature and extent of restoration required should all be considered. The parties identify information gaps and consider alternative approaches to filling the gaps. Strategic thinking is important to optimize the process, as discussed later in this article.

Involving the principals. We have found that it's best to speak directly to company representatives rather than operate through outside consultants or legal counsel. In attempts to vigorously represent the interest of their clients, hired attorneys and consultants sometimes miss the forest for the trees. For example, at another site in Texas, the trustees presented an offer based on reasonable worst case assumptions using remedial investigation data. The PRP consultant reflexively started to challenge the analysis that



the trustees had performed. Fortunately, a company official was in the room. He quickly realized that it would be better for the company to accept the deal on the table than to pay for many hours of his consultant's time to fight it. The company agreed to acquire 140 acres of habitat and deed it over to the Big Thicket National Preserve near Beaumont, Texas, as compensation for the harm that had been caused by creosote releases from its facility.

Conducting an open process. There are many stakeholders in any damage assessment. Not only does the local community have a lively interest, but also interest groups, trade associations, other trustees, and nearby PRPs typically want to know what is going on. It is critical to conduct an open process so that



all stakeholders can be assured that it is fair. Sharing information on the Internet, or by list serves, setting up an administrative record, holding public meetings, and speaking individually with inter-

ested groups can help establish an open process. In the Lavaca Bay example, public input revealed an unexpected preference for fishing piers over boat launching ramps as compensation for lost fishing opportunities. Informed of this, Alcoa agreed to include a fishing pier, as well as a boat ramp, despite some added cost.

Dealing with disagreement. There is likely to be disagreement during the cooperative process. So preparation should be made in advance for dealing with situations where agreement cannot be reached. There are numerous alternative dispute resolution approaches that may be identified in advance to provide a clear process for dealing with disagreement. The parties must be able to get beyond disagreements or the process will stall and fail.

At first blush, it may not be obvious why any company would voluntarily enter into a process that is going to cost it money. The first reaction of a PRP might understandably be to take a defensive posture, arguing against any liabil-

ity, delaying, and hoping that the trustees will lose interest and eventually go away. After a little more thought it might occur to the PRP that there could be some advantages to working with the trustees to resolve liability. These advantages might include gaining knowledge about the damage assessment and the trustees, having some influence on the process, and getting positive media attention for doing the right thing — as well as reducing the threat of litigation. In certain cases, a company may want to control the timing of when its liability is resolved for business reasons, such as clearing liability in anticipation of a property sale, or just to get the liability off the company books.

In any case, the hard-line defensive strategy will be expensive to sustain. Under Superfund and the OPA, the PRP is responsible for paying reasonable trustee costs of assessment, as well as for any costs incurred in its own defense. A typical two-day trustee planning session for four trustees (10 participants) costs about \$20,000 for labor and travel. Litigation-quality damage assessment studies cost hundreds of thousands to millions of dollars for each individual study, and most damage assessments will require five, ten, or more site-specific studies if litigation is anticipated. If the PRP chooses to conduct its own studies, then it may well end up bearing the cost of the trustee studies *plus*

the defensive studies that address the same issues.

During the litigation process, which typically lasts for a number of years, if not decades, costs will continue to grow. For example, an average three-day deposition for a testifying expert can easily cost on the order of \$70,000 total for plaintiff and defendant, including preparation on both sides. When you think in terms of multiple depositions for 20 or more witnesses on each side, the numbers quickly grow into the millions. And that's just for depositions. Considering scientific studies, experts, lawyers, and the 10-year litigation process, it must have cost several tens of millions of dollars for

Montrose Chemical to get to the courtroom where the claim would be resolved on its DDT case off of White's Point Outfall in California. For the hard-line defensive strategy to make sense, the PRP must believe that each dollar spent on defense will reduce by more than a dollar the ultimate claim negotiated or awarded by a judge. But this assumption becomes less and less plausible as costs escalate.

Is there a better way for the PRP to manage the company's risk? We believe that cooperative damage assessment integrated with the remedial process is worth taking a hard look at. By integrating damage assessment with the remedial process, especially at waste sites, there is a higher likelihood that any data gaps will be filled in a cost-effective way. In the most basic cooperative assessment, the PRP can save millions of dollars by simply agreeing to share scientific studies with the trustees and use the same data from which to draw conclusions.

But the real payoff offered by cooperative NRDA comes when the trustees and the PRPs deal with incomplete information and scientific uncertainty. At trial, trustees must make arguments based on the preponderance of the scientific evidence. And, in the courtroom, the PRPs do their best to show why the trustee work is flawed, irrelevant, or for some other reason fails to provide an adequate basis upon which the judge or jury should award damages.

In contrast, the cooperative assessment is constructive rather than destructive. It starts with a joint evaluation of existing information. Uncertainties and information needs are identified within the context of injury assessment and restoration planning. Where there are information needs, reasonable assumptions can often be formulated and used — rather than investing time and money to conduct scientific or economic



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How much restoration can be purchased by savings assessment costs? This table uses typical costs to show the break-even point for some damage assessment studies. For example, if the trustees and the potentially responsible party were working on an assessment of fish injury, using a reasonably protective assumption about the occurrence of the injury might obviate the need for a \$2,000,000 study to prove the injury (third row). The PRP might be better served spending the money on 10 acres of artificial reef or 15.9 acres of marsh, to pick just two cells on that row.

studies to answer the questions in a way that would stand up to litigation. These assumptions should be protective of the environment (i.e., tend to overestimate injury) so that the trustees are certain that their mandate has been addressed and it can be clearly demonstrated to third parties that sufficient restoration is being achieved. Although protective assumptions are needed by the trustees to address scientific uncertainty, they can also clearly benefit the PRP by avoiding process costs.

To inject some reality into this discussion, we have assembled a table comparing typical costs for damage assessment studies with representative restoration costs. (See below.) If, for example, a question exists about the precise extent of contamina-

tion emanating from a site, it might cost about \$1.1 million to conduct a comprehensive site-wide sediment survey to answer that question. If, however, there is enough information to make a reasonable and protective assumption about the extent of contamination, conducting the study is unnecessary. Instead, that \$1.1 million could contribute to the ultimate resolution of the PRP's liability by purchasing restoration projects like 5.5 acres of artificial reef, 8.7 acres of coastal wetland, or eliminating cattle grazing from 5.5 miles of salmon habitat. So, from the PRP's perspective, it might make good business sense



Representative Assessment Costs	Representative Restoration Costs					
	Mid-water Artificial Reef Construction (\$200,000 per acre)	Marsh Creation (\$75,000–\$126,000K per acre)	Oyster Reef Creation (\$154,000 per acre)	Acquisition of Migratory Waterfowl Habitat in Midwest U.S. (\$320 per acre)	Exclusion of Cattle from Salmon Habitat for 75 Years in Western U.S. (\$200,000 per mile)	Boat Ramp Construction (\$100,000 ea.)
Site-wide Sediment Contamination Survey (\$1,100,000) 590 samples, full suite of contaminant analysis, estuarine depths	5.5 acres	8.7–14.7 acres	7.1 acres	3,478 acres	5.5 miles	11 ramps
Sediment Toxicity Testing (\$750,000) 3 toxicity end points assessed using field collected sediments plus spiked sediment assays for 2 contaminants at 3 doses, including chemistry.	3.8 acres	6–10 acres	4.9 acres	2,344 acres	3.8 miles	7.5 ramps
Fish Reproduction Testing (\$2,000,000) Field collections and lab feeding exposures, one species, 2 contaminants, multiple exposure levels, multiple reproductive indicators.	10 acres	15.9–26.7 acres	13 acres	6,250 acres	10 miles	20 ramps
Fish Health Scan (\$600,000) Preliminary field scan of injury/exposure indicators in 2 species at 4 sites (2 contaminated, 2 reference). No chemistry.	3 acres	4.8–8 acres	3.9 acres	1,875 acres	3 miles	6 ramps
Bird Egg Gradient Analysis (\$460,000) 200 eggs, 10 species, 60-mile spatial gradient, includes chemical analysis.	2.3 acres	3.7–6.1 acres	3 acres	1,438 acres	2.3 miles	4.6 ramps

to accept a protective assumption if the PRP believes that the information that will be gained from a study will not reduce the ultimate restoration requirement by an amount at least equivalent to the cost of the study. Once you add the cost of extending the process to conduct more studies and consider the cost of possible litigation, it becomes apparent that avoiding these transactional expenses can purchase a significant amount of restoration.

There is one more layer of opportunity afforded by the cooperative assessment approach. The last benefit has to do with finding cost-effective restoration projects. The best money that a PRP can spend in a cooperative assessment is money invested in first understanding what the trustees are looking for in terms of restoration, and then finding creative and cost-effective projects that meet the

trustees' criteria. We have already explained how PRPs can save money by investing in restoration rather than paying for studies and process. And we have demonstrated in the table that the ratios for converting studies into restora-

tion projects can provide a protective buffer to ensure the trustees meet their mandates and still save money for the PRPs. But think about how much more favorable these ratios would be if we could find good restoration projects that cost less. If a project can be done for 75 percent or 50 percent of the "average" cost, then these ratios become much more favorable and introduce more flexibility into the development of assumptions and elimination of studies. The ingenuity and creativity of corporate America can be applied to this area of the assessment with extraordinary results to cut elapsed time and processes costs, and get more restoration faster for the American public. This is truly a positive outcome for all involved in, or affected by, the pollution incident.

Given all the positive aspects of cooperative and integrated damage assessments, one might ask why this approach is not applied universally. Why, for example, does

one PRP adopt an adversarial approach while another pursues a cooperative assessment? One limiting factor is difficulty associated with the remedial design. If the PRP cannot accept the cleanup required by the lead response agency, then a cooperative damage assessment is very unlikely. Another limiting factor is the history of relationships between the parties. If one of the trustee agencies has a longstanding difficult relationship with the PRP, it will be difficult to build the necessary trust. To

start a cooperative process, both the trustees and the PRP must be willing to take some risk, if only to deal with the public relations and fiscal consequences of a failed process.

For the last several years, NOAA has been working with stakeholder groups to develop methods and spread information about cooperative damage assessments (www.darp.noaa.gov/cap.htm). Representatives from several companies including ChevronTexaco, DuPont Specialty Chemicals, GM Worldwide Facilities, Shell Global Solutions, Alcoa, and AIG have joined representatives from the Department of the Interior, Department of Justice, EPA, state and tribal trustees, and interest groups to explore, develop and share cooperative assessment techniques. These companies deserve recognition for their willingness to explore and test the benefits of new approaches to resolving natural resource liability.

The ultimate success of cooperative assessments will depend on improving interpersonal skills, building trust, and truly sharing the belief that objective science gives us the best path from pollution release to natural resource restoration. Powerful benefits are offered to all stakeholders by the cooperative and integrated approach to resolving natural resource liability. The next five years of damage assessment work on waste sites and spills will tell us whether we can move forward into this new approach or whether we fall back into the old ways of process and litigation. •



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