Where the Guesswork Ends and the Accrual Begins:
Environmental Remediation Liabilities and Their Effects on the Managerial Decision-Making Process

Corie Sue Dumdie
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Where the Guesswork Ends and Accrual Begins: Environmental Remediation Liabilities and Their Effects on the Managerial Decision-Making Process

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Corie Dumdie
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I. An Introduction to Environmental Accounting and Environmental Remediation Liabilities

Corporations around the world are struggling to make socially responsible decisions as stewards of the earth's limited natural resources. They must make these decisions within the context of sound financial management, recognizing that the ongoing financial viability of the firm is also a social responsibility. As a society, we look to the owners of capital as the institutions with sufficient power, control and resources to provide leadership in improving our stewardship of the environment.

Stephanie Weidman, Carol Welsh and Lawrence Bonino

Around the world, the issues surrounding the quantification of natural resources and their degradation have become a very heated subject. As cultures begin to use up and degrade their sources of “free goods” (to which no one has a direct title, like the atmosphere and the oceans), it is becoming more and more apparent that these goods need to be taken into consideration much sooner than the point at which they cease to exist.

Each year, to generate five billion tons of salable commodities, the U.S. economy uses more than ten billion tons of crude materials, and at least eight billion tons of materials are discharged to the environment each year (Repetto 47). The U.S. General Accounting Office estimates that there are 378,000 sites that will require corrective action of some sort in the future (Buchholz 297), and the U.S. Environmental Protection Agency (EPA) estimates it will cost $675 billion to clean up only those sites that have been identified to have hazardous waste problems (Weidman 147).

The magnitude of these problems creates an intricate relationship between the environment and the accounting and managerial professions. Although the new policy of accrual for environmental remediation liabilities (ERLs) is a timid first step into the realm of environmental accounting, it is still altering managerial policies. The aim of this thesis is to explain the new accrual methods for ERLs and show their importance as they have
influenced many managerial philosophies. The thesis will also examine some of the weaknesses of ERLs and illustrate possible changes for the future.

Natural resource accounting is one of the proposals on a level that makes an attempt to value some “free goods” on a more quantitative basis. The gross domestic product (GDP), which measures the sum of market values of goods and services produced in a country per year, is grossly understated when it comes to the use and misuse of the environment. The United Nations (UN) has recommended countries start using natural resource accounting by initially setting up supplementary statistics or satellite accounts to the GDP (Siwolop 14). These satellite accounts are aimed to supplement rather than replace existing accounts and add detail and explanations regarding differing concepts and definitions (Carson 37). These macroeconomic observations are trickling down to businesses, as well.

On a smaller, more microeconomic level, members of the accounting profession are reeling in the wake of similar charges that the profession needs to take into account more environmental problems of the business sector. The SEC led the rampage when, in 1993, they called on the AICPA to increase the accounting measures for environmental liabilities. Although the policies the SEC asked for only directly affect certain companies, the whole profession is starting to see slow but sure change. As M.R. Mathews says,

The manner in which accounting terms have been defined and the technicist nature of accounting means that the effects of business decisions on individuals and communities cannot be recognized, and environmental impact through externalities is defined out of existence. Short term gains for the entity (and therefore the shareholders) are placed ahead of impacts on individuals, communities and the environment (664).
Social responsibility is beginning to delve into the business sector, but progress is slow. Part of the problem is the difficulty of representing environmental problems on financial statements using present accounting methods. The major issue in compliance with Generally Accepted Accounting Principles (GAAP) lies in the inherent nature of the unpredictability of the magnitude and timing of cash flows. The other aspect of this slow progress, according to M.R. Mathews, is that society has become more tolerant of environmental degradation, in part, because current accounting methods have so devalued the land (666). The accounting profession, then, finds itself in a kind of catch-22 situation: the valuation of environmental degradation is extremely difficult, and when current accounting methods are used, people devalue the land even more.

The impetus for change is certainly inherent in this catch-22 situation. Although the accounting profession itself may not see the problem from within, outside forces (including stakeholders in the firm and environmental forces outside of it) are beginning to verbalize the need for change. Government appointed environmental costs often make up a significant portion of the total charges against revenues. For a facility other than a boat or vehicle, the liability for cleanup of a Superfund site (which will be explained in greater detail in Section III) includes the total of all response costs (which usually runs in the tens of millions of dollars) plus up to $50 million in damages (Buchholz 294). In addition, outside stakeholders (all people who have a vested interest in the firm) are starting to question more deeply the extent to which a firm is participating in environmentally unsound practices. In the Ann Thayer article “Full Accounting for Environmental Costs Offers Benefits to Companies” she says, “…what is evident, says WRI [the World Resources Institute], is that the push for environmental accounting is on,
with outside stakeholders driving firms to account for environmental costs” (10). The task now turns to putting existing environmental information into a more appropriate framework.

The American Institute of Certified Public Accountants’ (AICPA) Statement of Position (SOP) 96-1, Environmental Remediation Liabilities (ERLs), is one of the first steps toward reflecting environmental costs in the financial statements. The SOP addresses recognition, measurement, display and disclosure of liabilities related to those instances in which a company will be forced to participate in the clean-up of environmental destruction (Gill 83). It also provides some of the specific guidelines that are going to be necessary in the future of environmental litigation. The main function of the SOP, however, is its ability to, “...help accountants better understand what environmental remediation liabilities are all about and help them become better versed in the issues” (Ripepi 10).

Even more important is the fact that accounting practices such as ERLs have the ability to alter entire management philosophies and methodologies. Even though it is just an initial step, the SOP on environmental remediation liabilities has changed the way that some companies do business, and, as such, it illustrates the importance of quantifiable environmental measures in the world of business.
II. The Basis of Accounting for Business

Financial reporting is concerned mainly with the objectives outlined in Appendix D. "Accounting as a discipline is primarily concerned with reporting to shareholders and creditors on the results of the use of their resources by management of private enterprises" (Mathews 663). Understanding these aims is vital to the comprehension of not only SOP 96-1, but also of the need for changes in the future of environmental accounting.

To create a financial picture, the preparers of financial statements must also comply with the qualitative characteristics of accounting that aim to present more useful information to outside stakeholders. According to the Financial Accounting Standards Board (FASB) Statements of Financial Accounting Concepts, the material must be both relevant and reliable. Relevancy is information that will make a difference in a decision by helping users to form predictions based on past, present and even future events. This information must be timely, have predictive value, and have feedback value in that it allows users to "confirm or correct prior expectations" (CON2: 26-45). Information is reliable if it represents what it purports to represent; if it meets the objectives stated in Appendix D. Reliable information must be verifiable, neutral and unbiased, and it must have representational faithfulness (CON2: 46-71). All information should also be comparable and consistent in nature, material in amount, and the benefits should outweigh the costs of presenting the information.

By establishing these standards, the FASB hopes to limit the variability in financial reports and reporting standards. The primary aims are to: 1) create a firm basis on which to record, compare and analyze data and performance; 2) minimize ambiguity;
and 3) separate fact from “non-qualified ideas” (Yakhou 2). As the issue of ERLs arose, accountants realized accrual was necessary to comply with the primary aims of financial reporting, the difficulty of timing and valuation notwithstanding. Because they are so significant, it was obvious that leaving out environmental costs would also meet none of the objectives listed in Appendix D. The cash flows associated with ERLs have a significant impact on a firm’s performance, and to ignore them based on the difficulty of measurement was no longer an option.

However, compliance with financial objectives was not the only argument in favor of the accrual of ERLs. Many authors believe that because accountants have an ethical responsibility to accurately portray the firm’s financial health, they also have a responsibility to portray the environmental health of the firm as a measure of performance and future avoidance (Weidman 150). This is true, to an extent. If the liability will probably have an influence on the continuing operations of a business entity, then there is ethical justification enough to accrue the liabilities. The AICPA has accepted this belief, to a very limited extent, through the implementation of ERLs. However, GAAP has some serious shortcomings making the policies far less than socially responsible. According to M.R. Mathews, three of the main reasons GAAP are not more socially responsible include the fact that a market mechanism is the main means of determining values and allocating resources, private ownership is placed at the center of all its definitions, and it is more concerned with short-term results (663). The main problem, however, lies in the established ethical guidelines of the accounting community.

As far as ethical codes go, those encouraged in accounting education and practice are few and far between. Some of this may have to do with the common educational
practices for accounting students. Education of accountants, as a general rule, has cut out the “why” and stuck with the “how to,” thereby turning accounting into a bureaucratic process rather than the constantly changing and adapting profession it needs to be (Mathews 662). Students are left without the context of the objectives and reasons behind financial reporting and have more trouble making decisions regarding conflicting options (hence the reason for giving some background here). It would also appear that part of the problem stems from the nature of ethics in accounting. As Mathews states, “These codes are designed for a particular purpose, which is to regulate the conduct of professional and professional, and professional and client, and no other relationship. Professional codes are not designed or intended to relate to the wider world” (663). Again, accountants are not encouraged to consider ethical responsibilities on a wider level than interpersonal contact.

These objectives and standards illustrated the immediate need for written accrual methods for environmental costs that are already relevant and reliable; those that have been addressed by the EPA and are termed remediation. It is important, then, to understand both the strengths and weaknesses of the ERL standards for financial accounting. To see what the standards do not accomplish is as vital as seeing what they do. Their weaknesses may be used later, as they were in the case of ERLs, to make future accounting practices more credible.
III. Environmental Government Regulations

The initial step toward true understanding of the SOP on environmental remediation is comprehending the governmental policies and regulations that are the impetus for the accrual of ERLs. The AICPA realized this and gave comprehensive coverage of the laws in the SOP. What follows is, for the most part, adapted from the SOP guidance on the issue, unless otherwise stated.

There are two basic types of governmental laws that deal with the environment: 1) those that impose liabilities for remediation of environmental pollution arising from a past act and 2) pollution control and prevention laws (Stevens 47). The SOP guidance on ERLs focuses on the first type of regulatory actions, which include the Comprehensive Environmental Response, Compensations, and Liability Act (CERCLA) with the addition of the Superfund Amendments and Reauthorization Act (SARA) and the corrective action provisions of the Resource Conservation and Recovery Act (RCRA), as well as other state and foreign laws.

Superfund

CERCLA was established in 1980 to “facilitate the remediation of abandoned waste sites” (2: A.10). It was initially funded with a $1.6 billion trust fund to pay for remediation at unclaimed sites (orphans) and to reimburse the EPA for those sites cleaned by the EPA on behalf of the offending businesses. In 1986, SARA was enacted. It increased the trust to $8.5 billion and made some of the provisions of the law even more stringent. The plan became known as Superfund, and, under it, the EPA has the duty to,

Identify sites where hazardous substances have been, or might be, released into the environment; to insure that they are remediated by responsible parties or the government; to compensate the U.S., states, and
municipalities for damages to natural resources; and to create a procedure for claims against responsible parties by parties who have cleaned up sites or spent money to restore natural resources (2: A.10).

Responsible parties include: 1) current owners of hazardous waste sites; 2) previous owners at the time of hazardous waste disposal; 3) parties who “arranged for disposal” of hazardous substances on site; and 4) anyone that transported hazardous waste to the site as a treatment and disposal site. In the case of Superfund, hazardous waste includes the release of any amount of hazardous substances, whether or not the substances were classified as hazardous at the time of disposal.

Superfund enacts both strict and joint and several liability. In the case of strict liability, the liability is imposed without regard to the liable party’s fault. For example, even if the company used “due care” at the time of the hazardous disposal they are still liable. Joint and several liability occurs when any party deemed liable is potentially responsible for all of the costs associated with the site. For example, even if the company is only associated with a small portion of the damage, they could be ordered to pay the full amount (2:A,15). As a result, any of the above responsible parties can be named partially responsible parties (PRP), and the remediation liability may or may not be spread as a cost to each. In order to name other PRPs, a court case is usually involved. If the EPA does not name them, one PRP may prosecute other parties the PRP feels are responsible and attempt to force them to participate in the clean-up. A named PRP may also go to court against the EPA in order to defend themselves against being named a PRP. However, there are very few defenses to CERCLA litigation, should a company be named a PRP. They include: 1) an act of God, 2) an act of war, 3) an act of omission by a third party, or (in some cases) 4) innocent landowner status (2: A.16). Extensive meetings
and courtroom rulings are also often necessary to establish the amount of the liability split between the PRPs.

The stages of the Superfund remediation process are illustrated in Appendix A. Each company goes through all stages unless they are not named to the National Priorities List (NPL), in which case, they are immediately dismissed. The costs associated with this process are definitely not minimal. The Congressional Budget Office estimates that future Superfund costs (excluding natural resource damages) for nonfederal facilities are $228 billion undiscounted (Gill 82), and as of 1992, there were 1,275 sites on the NPL, with that number increasing at a rate of 100 more companies per year (Callan 563). The companies also incur substantial litigation and research costs associated with the clean-up effort, which are not factored into the above numbers. Such costs may be incurred whether or not the company is actually named a Superfund site.

RCRA

The corrective action amendments to the RCRA (1976), which were passed as the 1984 Hazardous and Solid Waste Amendments to RCRA, state the EPA may order facilities that treat, store or dispose of hazardous waste to clean up releases of hazardous waste constituents associated with a past or ongoing process (2: A.49). RCRA requires releases at these sites to be remedied, whether the business plans to continue operating or intends to close. These provisions apply only to firms that are operating under RCRA permits.

The RCRA Corrective Action Process is outlined in Appendix B. It is analogous in many ways to the Superfund stages. The costs associated with these sites are quite extensive, as well. In a University of Tennessee study, the estimated resources necessary
to remediate contamination from past activities residing on private sites covered by the corrective action provisions of RCRA are $234 billion undiscounted (Gill 84).

**Other State and International Provisions**

It is also important preparers and auditors of financial statements realize that states, in most cases, have the ability to enact environmental laws more stringent than those put in place by the federal government. Washington state, for example, requires a company to identify and evaluate environmental costs in disclosure as part of their mandated pollution prevention plans (Thayer 10). In addition, it would be wise to keep an eye on the laws in other countries, especially if there are continuing operations in a country other than the U.S. Some of their environmentally-oriented laws may be more stringent than those found in the U.S.
IV. The Accrual of Environmental Remediation Liabilities Based on the AICPA Statement of Position 96-1

A 1992 survey by Price Waterhouse noted the diversity in the timeliness of environmental liability recognition and in the practice of reducing environmental liabilities by potential recoveries (Price Waterhouse). It was obvious from these and other complaints that some definitive literature needed to be written on the topic of accruing ERLs. In 1993, the SEC wrote Staff Accounting Bulletin (SAB) 92, which was an interpretation of GAAP regarding contingent liabilities – specifically those of an environmental nature. The statement suggested companies disclose possible future payments mandated by upcoming legislation (Roberts). The SAB was also a call to the AICPA to release an exposure draft on the treatment of ERLs.

The result was the Exposure Draft for ERLs, which was released in 1995. It was written as an attempt to clarify FASB Statement of Financial Accounting Standards (SFAS) No. 5 relating to contingencies and narrow how they should be accounted for in cases of environmental remediation. The AICPA realized the extent to which creditors and other stakeholders have a vested interest in more complete and timely disclosure of environmental liabilities to assess credit and other risks (Yakhou 2). As Frederick Gill says, “The SOP would provide guidance on accounting for a now-common contingency involving strict joint and several liability and often immense costs, the amount of which may be uncertain for many years to come” (82). In it, the estimation process was explained and benchmarks were presented to illustrate conformity with FASB Statement No. 5.
In 1996, the final SOP was released with only a few changes from the Exposure Draft (which will be explained in detail as they arise). As a point of fact, the SOP was passed after lengthy debates on the merits of ERL accrual. Originally, the ERL had been planned for release in 1994, but years of controversy and rewriting prevented earlier presentation. It was clear from the start that environmental accounting would not be a proposition easily accepted by businesses or the accounting profession in general. Regardless of company position, however, compliance with the new SOP is mandatory and the guidelines need to be understood in detail.

Understanding the SOP on ERLs first requires understanding the nature of a contingent liability, which proves to be difficult and explains why there was so much confusion over the treatment of ERLs. As Jan Williams, Keith Stanga, and William Holder say, “In fact, the estimates involved in accounting for loss contingencies in accordance with SFAS No. 5 are among the most complex and pervasive in financial accounting” (167). A contingency, as defined by the FASB Current Text: Accounting Standards, is, “…an existing condition, situation, or set of circumstances involving uncertainty as to possible gain or loss to an enterprise that will ultimately be resolved when one or more future events occur or fail to occur” (C59.101). Gains are not recognized because to do so would recognize income before it is realized. In loss recognition, a firm may impair an asset or incur a liability. A liability should be accrued if:

1. It is probable that an asset has been impaired or a liability has been incurred at the date of the financial statements (where probable, reasonably possible and remote are the comparative situations).
2. The amount of the loss can be reasonably estimated (C59.105).

3. The period in which the underlying cause of the threatened litigation has occurred (in the case of accruals for litigation, claims and assessments) (C59.139).

A reasonable estimation may include a range of amounts, of which the best estimate or, when no best estimate is available, the lowest number is chosen as the most conservative amount. The loss is charged against income and the carrying amount of the loss is recognized as a liability (Williams 612). Disclosure is also required for contingencies that are probable and not reasonably estimable and for those that are reasonably possible. All disclosures should be made if they are necessary to ensure that the financial statements are not misleading.

The SOP was written to reflect these standards and will be the basis for the following interpretation. It affects all financial statements prepared in conformity with GAAP, and the effective date is December 15, 1996 (different from the proposed date of December 15, 1995). Here, as in the SOP, there are two major parts to the accrual of ERLs: recognition and measurement, and both are supplemented by the guidelines for display and disclosure.

**Recognition**

Like any contingency, the costs and amounts determinable become available over a continuum of events. Materiality, timing and monetary amounts could all change over the life of the liability (Lawrence 49). The initial step to accrual is caused by a specific event, namely the past or present ownership of a site at which remedial actions must take place, or the contribution or transportation of waste to such a site (5: B6).
In order to begin to recognize the ERL, the probability that a liability exists must first be determined. Remember, a contingency must be *probable* to be accrued. If both of the following criteria are met, a liability is probable and should be accrued: 1) litigation, a claim or other assessment has been asserted or it is probable (versus reasonably probable or remote) that such an action will take place, and 2) it is probable that there will be an unfavorable outcome for the firm (5:B7). Although these measures are subjective, they are audited and need to be carefully examined by management. If it is at all probable the event will occur, the costs should be accrued.

Second, the firm needs to establish if the liability can be reasonably estimated. This estimate should include the extent and type of hazardous substances at the site, the range of technologies used for remediation, the evolving standards of what constitutes remediation, and the number and financial condition of other PRPs. As with other contingencies, this standard is met when any range of the loss can be estimated. The best estimate in the range should be chosen, unless there is no best estimate, in which case the lowest number should be chosen. Even if the total amount is not reasonably estimable, the loss can still be accrued by using the minimum amounts known at the time. Any changes in the estimation of an ERL should be treated as a change in estimate in the financial statements (5:B16).

A number of recognition benchmarks have been established to help firms accrue ERLs. These benchmarks are listed and explained in Appendix C. They should be enacted to help the company as it progresses through the different stages of remediation, but these benchmarks are not set in stone. A company should accrue an ERL at the *earliest possible* stage any amounts can be reasonably estimated.
Measurement

When measuring the amount of the loss the firm should include their allocable portion, along with their portion of amounts related to the site that will not be paid by other PRPs or the government (5:B.19). Measurement should take into consideration the full costs involved, including the effects of expected future events and developments, other PRPs and their involvement and any possible recoveries.

The determination of the liability includes 1) incremental direct costs and 2) costs of compensation and benefits to employees directly involved in the remediation effort, to the extent they were involved. Incremental direct costs include, but are not limited to:

- fees to outside law firms for work related to the effort (not including those costs related to defending against assertions of a liability – they were taken out of the SOP even though they were included in the exposure draft)
- costs of completing the remedial investigation/feasibility study (RI/FS)
- fees to engineering and consulting firms for site investigations and development of remedial action plans and designs
- fees to contractors performing remediation
- government oversight and past costs
- cost of machinery and equipment related solely to the remediation effort with no alternative use
- PRP group costs in dealing with a specific site
- costs of operation and maintenance of the remedial action, including postremediation monitoring (5:B22-23)

Compensation costs also include internal legal staff (carefully considering the extent, type and allocation of such costs) and the technical employees involved in the effort.

Estimates of these amounts are made at the initial recording of the liability and are constantly adjusted as information becomes available based on participation.

The SOP (unlike the exposure draft) allows for a certain amount of anticipation for advances in technology. However, only enacted laws, regulations and policies may be considered for accrual. An inflation consideration may also be used, but current cost is
acceptable, as well. Dollar amounts may be discounted to reflect the time value of money if the aggregate amount of the obligation and the amount and timing of the cash payments for the cash flows are fixed and reasonably determinable (5:B.30). Applicable discount rates are outlined in the SEC SAB 92, but they should not exceed a low risk investment rate.

Allocation among PRPs is established through the process of identifying other PRPs, assessing the likelihood they will pay, and determining the percent of liability that is allocable to the firm. This may be allocated through 1) elements of fair share, 2) the classification of the PRP, 3) any limitations on payments, and 4) the degree of care each PRP exercised in choosing the site (5:B.34). The allocation process is not an easy one and may not be reached through an amicable agreement. An allocation consultant may be hired (which may or may not be binding), or the companies can request a nonbinding allocation from the EPA. These allocation percentages will most likely change throughout the life of the liability and the company should use the best estimate available based on objective, verifiable information.

Any and all potential recoveries should be determined separately from the liability, and an asset should be recognized only when realization of the recovery is deemed probable. Fair value should be used to value the asset. However, in certain circumstances, the SOP allows the use of undiscounted amounts for probable recoveries.

**Display and Disclosure**

The balance sheet will reflect the liability and possibly an asset account for the recovery of any funds related to the remediation project. The income statement will require an expense to be charged against operations, as the remediation effort is now a
regular cost of conducting economic activity. Any credits received should be shown on the same line as the expense.

The disclosure of whether or not the accrual is measured on a discounted basis is required by accounting principles already in place. Disclosures for the nature of the event, the situation that triggered recognition and the policy concerning timing of the recognition are also encouraged. ERLs themselves require additional disclosures. If a liability is accrued, the nature of the accrual and the total amount accrued (if they are necessary to ensure the financial statements are not misleading), any present value determination, the amount of the recovery (if any) recognized, and an indication that a possible change in estimates could occur should be disclosed (5:B52). The SOP, however, encourages any and all extra disclosure about the nature and effects of loss contingencies.

If a reasonably possible loss contingency occurs (versus a probable one requiring accrual), the nature of the loss, an estimate of the loss (or a reason no estimate was made), and an indication that a possible change in estimates could occur must to be disclosed. The SOP also encourages disclosure for:

- the time frame of disbursements and recoveries
- what could cause the time frame to change
- why an estimate cannot be made.

If relevant to the financial information, then also disclose:

- the total accrual
- the nature of any additional loss and an estimate
• any other PRPs involved
• the status of regulatory proceedings
• an estimated time frame to resolution (5:B.56-60).

For any event that is probable but not reasonably estimable, disclosure is still required, as the company may be able to tell that the amount will be material in the future. The nature of the probable contingency, including a description and reasons why no estimate could be made should be disclosed. The SOP also encourages disclosure of the time frame to the resolution of uncertainty.

Additional recognition on the income statement, including the amount recognized for environmental remediation loss contingencies in each period, the recovery credited, and a caption in which costs and credits are included, is encouraged but not mandatory. Companies may also want to describe the impact of environmental laws and regulations on their operations.

Materiality, timing, and the amount and uncertainty of cash flows are all necessary for the accrual of ERLs and are also numbers found on a continuum of answers (Lawrence 49). All may vary many times in the life of the liability and the accountant needs to take care to constantly be evaluating the costs and time frames associated with ERLs. It is vital that they are as up-to-date as possible, thus providing more accurate information for all stakeholders of the firm.

An example of accrual of an ERL is given in Appendix E to give a graphic illustration of the information presented in this section. The SOP on ERLs is informative and helpful in clearing up the confusion surrounding ERLs and their place as a contingency. However, their accrual requires considerable judgment on behalf of the
preparer regarding many aspects of financial accounting. As such, there are ranges of ERL interpretations. What the company needs to remember is that their statements will be audited for this information and the statements may be found incomplete without the accrual of any probable future damages.
V. Effects Environmental Remediation Liabilities Have Had on Managerial Decision-Making

According to Stephanie Weidman, “The guidelines and principles for recording and reporting financial information have a tremendous impact on decision-making within a firm” (148). Environmental remediation liabilities are no exception to that rule, and therein lies their importance. Although they are a meek first step, ERLs are starting to shift managerial philosophies toward the quantification of environmental degradation. The idea of their existence was the impetus for many managerial considerations even before the method of their recognition was finalized. As Richard Roberts, commissioner of the SEC, says, “I suspect that SAB 92 [The SEC statement regarding ERLs] has caused the most dramatic shift in the manner in which companies view environmental matters since CERCLA was enacted in 1980.” Already the impact of ERLs was being felt, even though the AICPA had yet to release SOP 96-1.

There are many reasons companies have chosen to incorporate ERLs into their decision-making processes, and there are equally as many motivations for doing so. First, some companies have begun to change because they have seen the advantage of saving money by finding and measuring the liabilities earlier in the process. However, companies have also recognized the disclosure of ERLs for many other reasons such as the ones presented by M.R. Mathews in his article “Social and Environmental Accounting: A Practical Demonstration of Ethical Concern?” Some see disclosure of ERLs as a method of increasing the information presented to shareholders, enhancing company legitimacy and fulfilling the social contract many citizens feel a company has with society. All of these reasons have caused change on many levels.
Saving Money

The major aim of corporations is to increase shareholder wealth. At a glance, it would appear the recognition and recording of environmental liabilities would in no way help in this matter. However, many companies had taken to recording them even before the inception of SOP 96-1 as a way to save costs. By addressing the problem through proactive management, many companies can change how they view the costs of such damage. A report, funded in part by the EPA says, “...uncovering these hidden costs can provide significant opportunities for decision-making in production, environmental performance, and business planning” (10). These opportunities, in turn can lead to varied discoveries. “Early and thorough identification of potential remediation sites or immediate corrective action to prevent the need for future cleanup can lead to quantifiable cost savings” (Lawrence 4). Those companies that took the initiative to investigate and accrue these costs found many ways to eliminate expenses that would have been incurred had they waited and tried to litigate their way out of the problem.

Part of the issue is that companies are supposed to accrue liabilities even if it is probable they will be forced to remediate an area. Very few companies want to do this, as it may make them look even guiltier than they are. However, many of those companies that searched out their own remediation sites found ways to cut down the costs that would be incurred waiting. In addition, “It has been reported that since the inception of Superfund, more money has been spent on lawyers than on remediation” (Buchholz 150). This is significant, especially considering almost all companies targeted and put on the NPL are forced to remediate at some time, in spite of any litigation and avoidance techniques. These costs are in addition to the millions of dollars spent in the remediation
process. The inception of ERLs, then, has given companies even more reason to take care of the problem early, as it is a number (even if it only includes the costs that are reasonably determinable at that time, like litigation) that is carried in their financial statement until the problem is paid for and solved, which can take many years.

Shareholder Information

There is evidence that environmental performance is starting to be viewed as a competitive advantage by consumers (Bonifant 40). This means that firms can increase their shareholder wealth simply by learning how to better disclose environmental problems in their financial statements. Mathews feels there is evidence enough to say that companies can raise their stock price simply by being honest with the public.

Maureen McNichols and Mary Barth, both associate professors of accounting at Stanford Business School, used data from the EPA and environmental consulting firms on 1,100 firms over a 10-year period. They compared clean-up costs as stated by the companies to those costs the EPA and other consulting groups estimated would be incurred. They found that firms with greater liabilities, whether they were illustrated on the statements or not, had much lower share prices (Reese 1). However, those companies that had complete disclosure had a better value than those that had no disclosure. As management begins to put remedial costs into the statements, shareholders can see where the problems lie and use more informed judgment, which leads gives each company a chance to enhance their own legitimacy.

Management also takes some of this same shareholder information with them as they make decisions. Many of the popular performance ratios used to evaluate operations are based on profit, which is directly tied to the recognition of ERLs. The profit margin
on sales, return on total assets, and return on equity ratios are all commonly used by managers to evaluate performance, and they take into account expense levels. ERLs will have a quantifiable negative effect on these ratios and will force managerial action.

Enhancing Legitimacy

As companies start to address ERLs on the statements, they suddenly have the ability to demonstrate their accountability to anyone. This allows a firm the opportunity to advance the reputation of the business on behalf of the investors involved (Mathews 666). This is the area where management can become most involved in the process of recognizing ERLs. As James Lawrence says, “For companies to be confident that their reporting decisions represent their environmental responsibility fairly, they need a process that allows them to use informed and consistent judgment” (2). Innumerable decisions are affected by environmental recognition. As one manager says, “This includes complete systems for identifying, monitoring, and reporting corporate environmental impacts, and for integrating those impacts into corporate decisions on product costing, product pricing, capital budgeting, product design and performance evaluation” (Yakhou 1). Because true and proper disclosure requires such an in-depth analysis of the issues (as illustrated in Section IV), there are many parts of the managerial process that are affected by the proper accrual of ERLs. “Product design or mix; choice of manufacturing process, technology, and raw materials; pollution prevention and investment; and even pricing may be among the business decisions affected, says WRI” (Thayer 11). As a result, many companies have been forced to develop a process that will deal with the accrual of such liabilities.
Chevron is an excellent example of a company that has developed a process to find and record ERLs. They have created a program on both a formal and an informal level to incorporate significant events into their business as they become known to the company. As James Lawrence says, they have developed a system that is, “…used to ensure early identification and assessment of a full set of potential remediation sites” (49). It is also used for timely disclosure and recognition of the future financial liability, if any, related to the sites. Chevron feels they have found an effective management tool for lowering remediation costs and improving their financial disclosure and recognition (Lawrence 49).

There are four steps in the program that almost perfectly reflect the progression of the steps the EPA uses to go through the remediation process (see Appendix A). They include:

1. Identification and Assessment
2. Evaluation and Measurement
3. Disclosure and Recognition
4. Remediation and Monitoring (50).

The interesting thing about the system is the way Chevron has gone about setting it up. As Chevron management sees it, “Such judgment can be achieved through a cross-functional process that integrates the experience of managers in numerous cross-functional areas” (Lawrence 50). Instead of relying solely on financial accounting to find and value the damage, they depend on a team of departments to dig out and assess the needs of the company. Finance, as with all other areas, is involved at the earliest steps to be sure they miss nothing throughout the process, but involvement never falls to zero.
during any of the steps for any of the functional departments (Lawrence 54). They use a proactive screening of potential sites as a way to enhance their legitimacy with both the public and the government. Chevron feels that a company trying to skirt the problem will not come up with creative, and less expensive, ways of solving it (Lawrence 54). In this way, they have found a managerial method to address what used to be only a financial problem.

**Social Contract of Business With Society**

As M.R. Mathews sees it, the ethical responsibility of business is a legitimate and relevant concern in the mind of the public. Many people feel corporations are not immune to the principles of morality and justice, as they sometimes see themselves (667). Corporations, too, understand this fact and are beginning to incorporate its use in their managerial decision-making process. It is a fact that companies have access to much better information to make decisions than the average investor does (Reese 1). As a result, firms are starting to see the importance of making sure the average consumer understands the position of corporate America. Specific WRI case studies have stated that environmental costs can be as much as 20% of total production costs (Thayer 10). In response to such information, management has begun to present more information about operations as a way to fulfill their part of a social contract with society. This is not to say companies somehow have had this big revelation that they owe it to consumers to tell them all the little dirty, dark secrets that go on behind the scenes. But it is to say recognition of ERLs is one of the first steps corporate America must take to perform their part of the bargain. Traditional accounting methods rarely had the capacity to illuminate environmental costs concealed in overhead and seemingly unrelated areas. The creation
of the SOP on ERLs has given companies some incentive to stop this practice and go on with business in a more ethical manner, whether it is a personal decision or not.

Some companies, such as DOW Chemical, have even made the claim that ethical responsibility was their prime motivation for change. It is important to note that such claims come from within the company, however, and must be examined with care. At DOW, the environmental program is fully supported from top management downward, which is another key to make sure the whole company is taking into account the possible risks involved with behavior that is not environmentally sound. When management truly makes a firm commitment on environmental practices, the rest of the company will follow. And when accounting makes a commitment regarding these issues, the business world must follow.

Stephanie Weidman and many other writers of her background feel if we can capture environmental costs, corporations will have the incentive and the information to avoid pollution (160). There are many ways companies have begun to use this incentive to incorporate new and different managerial processes into their daily operations. If this trend continues (which it most likely will as the EPA plans to release a new report entitled “An Introduction to Environmental Accounting as a Business Management Tool: Key Concepts and Terms” very soon), the self-interest of business may begin to help the best interests of society.
VI. Changes for the Future

All of this talk about managerial change is not to say the picture is all peaches and cream. There are many problems still left in the environment, and there are not many ways implicit in present accounting measures to account for these problems. It is important to note that ERLs barely scratch the surface of accounting for the environment. There are many policies proposed to account for more of the social and future costs involved with environmental degradation that are not taken into account with ERLs. However, before we can delve into even more sweeping measures of reform, it is important to take a close look at the deficiencies of policies already enforced, namely ERLs. No one can propose to know all of the solutions, and they are far beyond the scope of this paper. However, there are some ways, large and small, that ERL accounting can be changed to help management continue to make strides in changing their behavior.

Disclosures

Although disclosure of environmental problems has significantly increased since 1989 (Gamble 45), it is still inadequate. Disclosures are seen as living representations of the current environmental status of the company, and accounting regulations have an obvious impact on what is disclosed by companies in general. As a point of fact, “An analysis of total ER [environmental remediation] disclosures has revealed that they have significantly increased since 1989. The significant increase was most likely aided by the FASB issuance of Issues No. 89-13 (1989) and 90-8 (1990)...” (Gamble 45). Jennifer Reese, too, talks about the rapid increase in disclosure from 1991-93 after the SEC substantially increased its enforcement of environmental disclosures.
Part of the problem was the need for an accepted framework regarding ERLs, which is given now by SOP 96-1. However, even that framework is limited, although further disclosures are “encouraged.” The objective of environmental disclosures should be to, “Provide stakeholders with information that will allow them to evaluate the long- and short-term environmental concerns of an entity in terms of risk, current and prospective cash flow requirements, and consistency with social environmental concerns” (Gamble 50). At this time, ERL disclosure does very few of these things. The AICPA needs to take a tougher stance on disclosure of ERLs in financial statements. Disclosure for all ERLs should consist of statements for remediations, legal compliance and environmental improvements, as well as the dollar amount committed to each of the above. They should include the amount spent to date, the amount to be spent in each of the next five years (the same time period used for other long term obligations such as leases), and the results of an environmental audit. It would be beneficial to see a company statement on how they are taking care of the goods released back to the earth, and it would be interesting to have a statement on the types of environmentally-oriented assets the company has and the dollar amount related to them. When McNichols and Barth tested companies on their compliance to these and other disclosures, they found that the liability was often much larger than what was written, and there was limited disclosure of any kind (Reese 1). Most often, this is because companies do not want to give away their position regarding their treatment of the environment, and they do not want to point fingers at themselves. However, if the AICPA makes it clear that these disclosures will be required in order to comply with GAAP, companies will change their
methods. There is evidence to support this fact in the past (as mentioned previously), and there will continue to be changes in the future.

**Early Recognition**

Companies should be forced to accrue a liability if it is even *possible* they will incur significant costs in the future due to remediation. At this time, the position of the SOP holds ERLs should be accrued if it is probable the company will be forced to perform some type of remediation and the company can reasonably estimate the amount to be funded. This definition gives companies quite a bit of leeway to escape the responsibility for the situation, which they will do at all costs to avoid placing blame on themselves. This part of the SOP accounting guidance needs to be enforced with a vengeance. If it means the EPA needs to begin to use environmental auditors to assess the degree of probability that a company will have to remediate, so be it. At this time, there are 32,506 potentially contaminated sites that may pose a threat to human health and well-being. Only 1,246 are found on the National Priorities List (Buchholz 296). There are quite a few companies that will be in line for remediation in the near future. Although accountants and auditors alike would like to believe that companies are complying to this part of the law, it is not the case. “While auditors and the SEC continually call for earlier and more complete disclosure of environmental costs, a survey of current industry practices by Price Waterhouse indicates that firms are generally disclosing as little as possible as late as possible” (Weidman 148).

Most of the argument against early disclosure revolves around a firm’s lack of concrete information regarding future ERLs. Application is difficult because management’s disclosure may depend on its experience and expertise in dealing with
these matters, as well as its financial reporting tendencies (Lawrence 50). However, what is important is the resources available to help with the recognition and measurement of such costs. The criteria taken into consideration when naming a Superfund site are available to the public and include:

1. the population put at risk
2. the hazard potential of the substances at the site
3. the potential for the contamination of drinking water
4. the possibility of direct human contact
5. the potential for destruction of sensitive ecosystems (Buchholz 294).

There are many environmental consulting firms which specialize in these matters. They are available to any interested company, and a stroll down the Internet gives thousands of helpful names. The resources are there to determine the possibility that a site will have to be remediated, and companies should be required to present evidence they have researched these matters deeply.

As far as measurement goes, it will have to be an ongoing process, as it is in the SOP. At this time, some companies are using the Contingent Valuation Method (CVM), which is a direct questionnaire handed out to value a commodity (Weidman 161). This method can also be used to get an idea of how much a certain destroyed area was valued at or the funds necessary to clean it up again. It could be appropriate here to use the knowledge of a company whose business it is to clean up these sites for reference. There are many companies starting to accept Environmental Liability Risk Transfers (ELRT). This means they take on the site to be cleaned up in exchange for a good deal of money. They would have useful information relating to a particular site. The largest problem
relating to the valuation of these accounts is that, “By most accounts, Superfund’s remedial program has moved at a snail’s pace” (Calan 289). The accounting practices that value it should not move so slowly.

**Accounting Framework**

The same framework that established ERLs has some problems that are deeply ingrained. The most important problem is the fact that short-term gains are placed ahead of impacts on society. This is readily illustrated by the growth and, at the same time, desolation of the first half of the 20th century. Still, accounting is not valuing the cost of the damage involved with environmental degradation but is valuing the cost of clean-up instead. Proposing a solution to this is far beyond the scope and time of this paper, but an addition to the financial statements may be the first step in a new and better direction.

BSO, a Dutch information-technology and consulting group, developed their 1990 Annual Report with the concept of “net value added.” All costs of environmental damage were deducted from the profit margin in this case (Weidman 148). No country seems ready to take such a large step (the idea did not take off for the Dutch), but other like measures could be added.

Separate “Environmental Reports” are being released by some companies, and should be required by the FASB in the near future. They identify environmental issues the company is facing and the company’s response to these issues (Roberts). In this way, companies are presenting a clearer picture to all stakeholders involved. It is obvious, however, that all companies will not take this step on their own. In order to make it work effectively, either the FASB or the AICPA will need to step in and require their use, as
well as give benchmarks for their creation. This requirement may be one of the first honest steps toward fair environmental representation in financial reports.

All of the above methods would require more involvement by management, at a progressively greater and greater level. As management becomes more involved, the hope is that they will see the potential monetary damages involved with environmental degradation (if not the ethical ones) and change their ways of production. At the least, they will offer outside stakeholders a much clearer picture of the company's financial and environmental health.
VI. Conclusion

The clarification of the accounting treatment of ERLs has offered the business world a unique opportunity to see the importance of accounting and auditing. ERLs have changed many managerial perceptions and duties, and they have illustrated that there are many other areas that still need improvement. They have become one of the first steps in a long process of visualizing and quantifying the value of environmental damage by showing the world a subset of environmental costs, giving a method to value environmental damage, and turning a small portion of the social costs involved into a measurable private cost.

First, if the total of all environmental costs is the cost of all environmental degradation, then ERLs are the expenditures made on specific, identifiable projects to reverse some of the damage (Weidman 161). These costs are some of the first measures of environmental degradation around the world, and the future does not look good. The estimated environmental cleanup costs in the U.S. run as high as $750 billion and the Superfund costs are equal to $150 billion (Reese 1). If this is a subset of all the costs that are being incurred daily, it gives everyone an idea of the pure magnitude of a problem we will be facing in the future. If, as John Hicks says, “The purpose of income calculation in practical affairs is to give people an indication of the amount which they can consume without impoverishing themselves” (172), then ERLs are the first step in what will surely be a realization of how much we have left to take.

Second, ERLs give the U.S. a method for evaluating environmental damage if we consider that the value of what is lost is what it costs to restore it (Weidman 161). Although it is obvious that remediation costs can never possibly take into account the
species that may be extinct due to toxic dumping and other extreme costs, they do begin
to quantify those damages that have already taken place on the Earth. As Ernst Lutz says,
“…current national accounting systems do not capture the value of natural resources
adequately and, therefore, development strategies that rely on standard income accounting
techniques may not result in sustainable development” (19). Change on the
macroeconomic level will most likely begin with change on the microeconomic level, and
ERLs are representative of some of the first valuation of the cost of nature’s resources,
even if it is only the cost incurred to try to clean up the mess that has already been made.

Third, ERLs begin to turn what is most often regarded as a social cost into a
private cost (Weidman 161). William Temple, the Archbishop of Canterbury, once said,
“Governing is the art of ordering life so that self-interest prompts what justice demands”
(Weidman 158). If this is the case, then ERLs play an intimate role in environmental
justice by forcing companies to consider what they are doing and how it will affect their
economic future. ERLs begin to take costs no one entity wanted to touch and call them
their own. This reflects a complete shift in the thought-process of businesses of the 20th
century. Suddenly these costs will need to be claimed by someone, and the businesses are
beginning to see that it very well could be them. At worst, they will continue to ignore
these facts, choosing short term profits over long term solutions. At best, management
will be required to take a close look at their environmental practices and make changes
like the ones that have come about due, in part, to the accounting policies regarding
ERLs.

As government regulations change, so do accounting measures (which may also
be part of the reason change has been so slow in coming) to better reflect actual costs
(Yakhou 2). If that is truly the case, then changes will continue in the near future.

“...according to WRI, a recent agreement between the EPA and the SEC promises a greater exchange of environmental and financial data in the future” (Thayer 11). If communication between these groups truly does improve into the future, it could mean a host of changes in the spheres of accounting and management. Corporations need to make more careful decisions as “stewards of the earth’s limited natural resources,” especially if society continues to look upon them as the only institutions capable of environmental change on a large scale.
Appendix A: Stages of the Superfund Remediation Process

1. Site Identification and Screening
Sites in danger become part of the Comprehensive Environmental Response, Compensation, and Liability Information System database (CERCLIS). Each site has undergone or will undergo a preliminary assessment and either will be found unaccountable or an inspection may be performed. If sites do not pass inspection, they are included on the National Priorities List (NPL) for remedial action.

2. Removal Action
An immediate action may be ordered by the EPA if the public is in possible danger. Either the EPA will perform it or they will require the PRPs to take action.

3. Remedial Investigation*
A comprehensive study, usually performed by environmental engineers, will assesses the dangers involved with the site.

4. Risk Assessment
Identification of the hazards involved and a quantification of their dangers is initiated.

5. Feasibility Study*
The information generated by the remedial is used to evaluate alternatives and recommend one.
*Steps 3 and 5 usually take a minimum of two years to complete and may take more than five years. It is not unusual that the costs from these steps will greatly exceed $1 million.

6. Remedial Action Plan
A remedial program is chosen that meets the standards of the Applicable or Relevant and Appropriate Requirements (ARARs) set by the EPA for that site.

7. Public Comment and Record of Decision
The program that is chosen is written into a Proposed Remedial Action Plan (PRAP), which is made available for public use and comment. After looking over the comments, the EPA makes any changes to the remediation method and issues a Record of Decision (ROD) to become part of an administrative record. The EPA may change the ROD at any time due to review of the progress of the remediation effort based on periodical visits to the site.

8. Remedial Design
A complete remediation design plan is developed.

9. Remedial Action
The actual construction and implementation of the remedial design occurs. This may change due to changes in technology contingent on EPA approval.

10. Operation and Maintenance (Including Postremediation Monitoring)
Actions are taken to ensure the remedy is working properly. This stage may take up to thirty years or more.

11. Government Oversight
The EPA has been given the authority to oversee all parts of the remediation process. As such, they have continual oversight in regards to all action taken by PRPs (steps 1-10).

Information adapted from AICPA SOP 96-1, Chapter 2: A.20-36
Appendix B: Stages of the RCRA Corrective Action Process

1. RCRA Facility Assessment
It identifies areas at the facility where there was release of hazardous waste or other hazardous material and collects all available information about them. This may be performed by the EPA, EPA contractors, or the firm that is doing the damage.

2. RCRA Facility Investigation
An attempt to characterize the release of waste through, “identifying the environmental setting, characterizing the sources of hazardous substances releases, identifying potential receptors, determining if remediation is necessary, and if so, collecting data to support the evaluation of remediation alternatives,” is made.

3. Interim Corrective Measures
Included are any measures to stop the hazardous waste release that are used before the actual remediation process begins.

4. Corrective Measures Study
The EPA requires the firm to recommend measures to stop the release. The measures are assessed based on their feasibility, protective value, and any possible adverse effects they may have.

5. Corrective Measures Implementation
Put into place the corrective measures approved by the EPA. This includes design, action, operation and maintenance.

6. Owner/Operator Reporting and Government Oversight
Owners and operators are required to report to the EPA throughout this process, and the EPA looks over the entire process at all times.

Information adapted from AICPA SOP 96-1, Chapter 2: A53-58
Appendix C: Recognition Benchmarks for Accrual of Environmental Remediation Liabilities

1. Identification and Verification of Entity as a Partially Responsible Party (PRP)
   The receipt of a notice that the firm may be a PRP will force the firm to look for any and all information relating to the site. If such research determines that the firm has been associated with the site and all or a portion of the liability is reasonably estimable, a liability should be accrued. If the firm does not have enough information to make an estimate of any kind (including a range of estimates), no accrual is made.

2. Receipt of Unilateral Administrative Order (or the RCRA Interim Corrective Measures)
   When these actions are taken, there usually is no reason to put off recognition any longer, as it indicates the EPA has found substantive evidence of the firm’s wrongdoing. The amount should be estimated to the best of the ability of the participating firm, even if it only includes the amount necessary to perform the order. Again, a range of estimates is appropriate for accrual.

3. Participation, as a PRP, in the Remedial Investigation/Feasibility Study (or the RCRA Facility Investigation)
   The firm and possibly others have been identified as PRPs, and they have agreed to pay the costs involved with the studies. The costs of such studies are also generally estimable within a given range, as well as the amounts to be paid by other PRPs. At a minimum, the firm should recognize the amount it will probably spend on the study, including an estimation of the amount of the entire liability if possible. As this stage moves along, the firm will probably have a better idea of the costs involved in the remediation process. Therefore, the accrued amount will probably change many times throughout this stage.

4. Completion of Feasibility Study (or the RCRA Corrective Measures Study)
   As this stage is mostly completed both, “…a minimum remediation liability and the entity’s allocable share will be reasonably estimable” (5: B18). It is substantially complete no later than when a remediation technique is proposed to the EPA by the PRPs. Recognition of the liability should not be delayed beyond this point, even if some uncertainty still exists.

5. Issuance of Record of Decision (ROD) (or the RCRA Approval of Corrective Measures Study)
   At this point, the liability estimate can usually be refined based on the remedy chosen and the allocable shares of the cost for each PRP is usually known.

6. Remedial Design Through Operation and Maintenance, Including Postremediation Monitoring (or RCRA Corrective Measures Implementation)
   All parties involved will gain a clearer understanding of the costs of remediation at this stage. Estimates should continue to be refined throughout the last stages of remediation as soon as the information becomes available.

Information adapted from AICPA SOP 96-1, Chapter 5: B18
Appendix D: Summary of the Objectives of Financial Reporting

1. Present information that is useful in making rational investment, credit and similar decisions, provided the user has a reasonable understanding of the statements and used “due diligence” in their reading

2. Present the amount, timing and uncertainty of cash inflows and outflows

3. Present a fair picture of the economic resources of the firm

4. Present a fair picture of the financial performance of the firm over a given period of time

5. Present an accurate illustration of firm earnings, which is the primary objective of reporting

6. Present a clear view of the discharge of stewardship responsibility to owners

7. Present information that is useful to managers and directors in making decisions

Information adapted from FASB CON2: 32-54
Appendix E: Example Case*

*The following case is adapted directly from Appendix B (67-71) of SOP 96-1. Although it has been shortened in some respects, it consists of much of the same information.

1986
Company XYZ received an information request from the EPA. This stated that the EPA believed there were hazardous substances generated by XYZ at a NPL site. XYZ was named a PRP and was required by law to extensively search its records for any information pertaining to the site. The EPA also investigated the site.

Although XYZ found it did contribute hazardous substances to the site, they were unable to tell to what extent. The minimum remediation costs at this point were not material to the financial statements. XYZ, however, felt it was reasonably possible the ultimate liability could be material.

Treatment: Even though the EPA was interested in the site, it was not established that XYZ was directly connected to the site. XYZ also did not have enough information to reasonably estimate a minimum liability that was material to the statements, and, therefore, nothing was accrued at this time. However, disclosure of the nature of the contingency and a statement that an estimate of the loss or range of loss cannot be made was required.

1987
All identified PRPs were invited to a meeting at which the EPA asked one of the PRPs to voluntarily do an RI/FS to evaluate existing site conditions and to develop an array of possible solutions. No consent decree was reached.

Treatment: There was little additional information and no change in accounting or disclosure.

1988
The EPA issued a unilateral administrative order to XYZ to undertake the RI/FS. XYZ demanded other PRPs assist in the effort and initially expected the RI/FS to cost between $1 and $2 million. Based on initial information about the other PRPs, XYZ felt it would be responsible for between 20 and 50 percent of the ultimate costs. XYZ also felt they would have legal costs of $200,000 to $2 million. No amounts within any of these ranges were considered to be better estimates than the others. The lack of information prevented an estimate of the over-all cost of the total remediation effort.

A PRP group was formed in late 1988 to perform the administrative order, raise money and allocate costs between willing PRPs and recover costs from any nonparticipating PRPs.
Treatment: A liability was recorded as follows,

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>XYZ share of the minimum amount in the range of</td>
<td>$200,000</td>
</tr>
<tr>
<td>estimated costs of the RI/FS (20% of $1,000,000)</td>
<td></td>
</tr>
<tr>
<td>XYZ minimum estimate of legal costs</td>
<td>$400,000</td>
</tr>
</tbody>
</table>

Because there were other participating PRPs, XYZ needed only to accrue the lowest amount that would be allocated to the company. It makes no difference that the EPA named XYZ exclusively for the administrative order.

1989
Outside arbitration used existing information to allocate costs between the PRPs as follows:

<table>
<thead>
<tr>
<th>PRP</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>XYZ</td>
<td>20%</td>
</tr>
<tr>
<td>PRP No. 2</td>
<td>20</td>
</tr>
<tr>
<td>PRP No. 3</td>
<td>15</td>
</tr>
<tr>
<td>PRP No. 4</td>
<td>10</td>
</tr>
<tr>
<td>Orphan Share</td>
<td>65%</td>
</tr>
<tr>
<td>Recalcitrant Share</td>
<td>25</td>
</tr>
</tbody>
</table>

XYZ believed the participating PRPs would pay their fair share of the RI/FS, but feared PRP No. 3 could have trouble paying the costs of the overall effort.

Based on the amount already spent and a probable estimate of the future expenditures, XYZ felt $350,000 was the best estimate of its separate legal costs. The estimate of the RI/FS costs, which now included group administrative costs, stood at $1.2 to $2.2 million.

Treatment: XYZ needed to refine the amount of the liability as soon as possible, even though no new recognition benchmarks were reached. The liability would stand at:

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>XYZ allocable share of the minimum amount of the cost of the RI/FS (20% of</td>
<td></td>
</tr>
<tr>
<td>of $1.2 million)</td>
<td>$240,000</td>
</tr>
<tr>
<td>XYZ pro rata share of amounts allocable to other parties but not expected</td>
<td>129,231</td>
</tr>
<tr>
<td>to be paid by other parties (20/65 of 35% of $1.2 million)</td>
<td></td>
</tr>
<tr>
<td>XYZ legal cost estimate</td>
<td>$350,000</td>
</tr>
<tr>
<td></td>
<td>$719,231</td>
</tr>
</tbody>
</table>
1991
The RI/FS was completed and there were no changes in the allocation percentages. The initial estimate of the cost of the remedy required by the EPA was $25 to $30 million. No amount in the range was a better estimate. This amount included substantially all costs of the remediation effort.

PRP No. 3 indicated it would be unable to pay more than two-thirds of its 15% share and none of its allocated amount of the orphan or recalcitrant shares. XYX agreed with this position and felt the other PRPs would be able to pay their shares.

*Treatment:* The liability again needed to be adjusted in accordance with the new information:

- 20% of $25 million
- 20/65 of 35% of $25 million
- 20/50 of amount allocable to PRP No. 3 that is not expected to be paid by PRP No. 3 (20/50 of 5% of $25 million plus 20/50 of 15/65 of 35% of $25 million)
- XYZ legal cost estimate

\[
\begin{align*}
20\% \text{ of } \$25 \text{ million} & \quad \$5,000,000 \\
20/65 \text{ of } 35\% \text{ of } \$25 \text{ million} & \quad 2,692,308 \\
20/50 \text{ of amount allocable to PRP No. 3 that is not expected to be paid by PRP No. 3 (20/50 of 5\% of } \$25 \text{ million plus 20/50 of } 15/65 \text{ of } 35\% \text{ of } \$25 \text{ million)} & \quad 1,307,692 \\
XYZ \text{ legal cost estimate} & \quad 350,000 \\
\hline
\text{Total} & \quad 9,350,000
\end{align*}
\]

1992
A record of decision was issued by the EPA in which a remedial action was selected. The PRPs chose to perform the remedial action selected (they would be forced to by another administrative order had they not chosen to voluntarily comply), and they entered into a consent judgment.

*Note:* The EPA reviews the ROD and remedy within five years and may make additional demands on the PRPs if the stated objectives are not being met. If one or more PRPs believe they have paid a larger share of the costs, they may also track down other PRPs and sue them for what they consider a fair amount.

*Treatment:* The liability should be further refined as information becomes available about the remedy and the supervision costs necessary to maintain the remedy into the future.

The measurement should not have been discounted at any time because the amount and timing of the cash payments was never fixed and determinable.
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