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ENVIRONMENTAL ASSESSMENTS IN THE U. S. - A CASE STUDY

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Environmental Assessments in the U.S. - A Case Study

Introduction

The 1990's is the decade of international environmental activism. The concerns and issues that are the basis of this activism are now extremely important to business. Numerous environmental issues will affect business decisions, and a keen awareness of the implications of those issues may make the difference between financial success or ruin. Environmental assessments have become the tool to help business cope with an important environmental concern.

This talk is focused on environmental assessments as they are practiced in the United States. Environmental activism has been a factor in business decisions since the passage of the Clean Air Act in 1963. This paper will discuss the current standards of practice in the U.S., the needs for assessments at industrial facilities, and a case study from a U.S. industrial facility.

More than 750,000 commercial real estate transactions take place in the U.S. each year. Each of these transactions has a potential liability for the buyer and lender as a result of environmental impairment caused by hazardous materials located in buildings on sites, in the soil, or in the groundwater. Persons who knowingly or unknowingly acquire environmentally impaired property or who lend the money to purchase that property are liable for the cost of cleanup.

Regulatory Background

The U.S. regulations designed to protect the environment (which potentially affect business) were first enacted in 1963 with the passage of the Clean Air Act. Over the ensuing decades, other regulations were passed controlling waste disposal activities, toxic substances, pesticides, and a myriad of other specific concerns. Table 1 lists the more prominent regulations enacted in the U.S. in the past three decades.

Table 1.

Clean Air Act (1963)
Resource Recovery Act (1970)
Amendments to the Clean Air Act (1970, 1977, 1992??)
Federal Water Pollution Control Act (1972)
Resource Conservation and Recovery Act (1976)
Toxic Substances Control Act (1976)
Occupation Safety and Health Act (1976)
Clean Water Act Amendments (1977 - 1990)
Comprehensive Environmental Response, Compensation and Liability Act (CERCLA or SUPERFUND)(1980)
Hazardous and Solid Waste Amendments (1984)
National Emission Standards for Hazardous Air Pollutants (1970/1977)
Superfund Amendments and Reauthorization Act (SARA)(1986)

It is noteworthy that these regulatory requirements have been enacted over a 30-year period, regardless of the economic climate of the time. It is clear that there is a strong groundswell of sentiment to protect and cleanup the environment

purchased by the agency. These publications were written by the banking industry for the banking industry, but they closely follow the historical records search and site inspection procedures outlined in the 1987 EPA article.

These banking guidelines have been widely distributed in the lending industry, but have not been adopted by the mainstream U.S. commercial banks. Many lending institutions have developed their own environmental assessment guidelines, based on a variety of sources. However, many lending institutions, particularly regional and local banks, have not reacted to the well documented liability associated with environmental hazards in real estate. This is due in part to the very competitive nature of the banking industry where some lenders are willing to make real estate loans without requiring borrowers to conduct assessments.

Federal Home Loan Bank Board

In February, 1989, the Federal Home Loan Bank Board reacted to the confusion in the banking industry. The board, which regulates federally chartered savings and loan associations, issued Thrift Bulletin TB-16, entitled, "Environmental Risk and Liability." This guidance provides these associations with guidelines for conducting Phase I environmental assessments. TB-16 was developed because of the confusion in the industry and the need to tighten controls on savings and loan real estate transactions. TB-16, like the Fannie Mae and Freddie Mac guidance, provides a checklist for a three-step approach, as was first suggested in the 1987 EPA article.

Association of Soil and Foundation Engineers

Geotechnical engineers became interested in environmental assessments shortly after the pasage of SARA (1986). Their close ties to the construction industry lead to an early demand for environmental assessments to allow builders to obtain loans. Many geotechnical firms were eager to provide these services to their long-term clients, but found the lack of an industry standard very discomfiting. The Association of Soil and Foundation Engineers (ASFE), a geotechnical engineering standards and practices group, became one of the first engineering organizations to recognize the need for a standard. In 1988, the ASFE began working on a pamphlet eventually entitled "Preacquisition Site Assessments: Recommended Management Procedures for Consulting Engineering Firms." Numerous review drafts were circulated through working groups with the final result published in October 1989.

The ASFE pamphlet was the first attempt at producing an industry standard for conducting site assessments. It primarily focusses on liability and general policy issues affecting engineers who conduct environmental site assessments. It includes a detailed checklist which calls for:

- a review of title and tax records
- review of federal, state, and local records
- review of historical aerial photographs
- review of the EPA CERCLIS (a list of candidate sites for the Superfund National Priorities List)
- a review of the RCRA generator list
- a detailed site inspection checklist.

Due Diligence

The Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA) has been primarily responsible for creating the need to perform audits prior to purchasing real property. The basic premise under CERCLA is that buyers of contaminated real estate are liable for the cost of cleanup whether or not they contributed to the contamination or were cognizant of the problems. The concept of joint and several liability has been used by regulators to cast a broad net when looking for parties to remediate real estate. This doctrine has been extended to include circumstances where lenders can become liable for cleanup if they had a substantial involvement in the management of property.

CERCLA was enacted in 1980 and amended in 1986 by Superfund Amendments and Reauthorization Act (SARA). The innocent landowner defense provision in SARA was the impetus for the real estate business to become concerned with developing due diligence standards as a defense from liability in property transactions. Under SARA, a purchaser must prove that he has "conducted all appropriate inquiry" into the previous ownership and uses of the property consistent with good commercial or customary practice in an effort to minimize liability. While their intentions were good, unfortunately, no "commercial or customary practice" has been established in the U.S. Thus, SARA defined a standard by reference to a non-existent standard. The original vision of the authors of this legislation, a standard of practice for the industry to follow, has yet to be put into practice.

EPA Approach 1987

In 1987 two EPA employees, Edward Reich and Steven Leifer, published an article entitled "The Import of Environmental Regulations on Business Transactions." They recommended that a prospective buyer take three precautionary steps in purchasing property:

- Conduct a thorough review of the history of the site;
- Review federal, state and local records on the site;
- Conduct an environmental investigation based on the results of these reviews.

The concept appears to be simple, but the need for multiple disciplines hampered efforts to implement the three steps. Many engineering firms were well equipped to perform site investigations, but the potential liability for conducting environmental assessments discouraged them from pursuing the business. Those firms well equipped to perform record reviews and to consult with regulatory agencies, often lacked the experienced engineering staff to conduct the site investigations. The overall lack of a defined standard discouraged many from taking the plunge as well.

The Federal National Mortgage Association (Fannie Mae) and Federal Home Loan Mortgage Corporation (Freddie Mac)

Shortly after the EPA article was published, other U.S. government agencies responsible for lending practices began to take an interest in the lack of clearly defined standards. The Federal National Mortgage Assoication (Fannie Mae) published its Multi-Family Environmental Hazards Management Procedures in August 1988. These procedures were quickly followed in November, 1988, with the Federal Home Loan Mortgage Corporation (Freddie Mac) proposed guidelines for underwriting environmental hazards associated with loans

The Phased Assessment Approach

Real estate can be grouped into types that have greater or lesser susceptibility for environmental impairment. In the U.S., current property classes include industrial, commercial, residential, agricultural, timber, and pristine (unaffected by man). Currently, industrial and commercial properties are most likely to present hazards to buyers. Residential properties typically do not pose great risks with the exception of those where businesses have been run out of the home. Timbered sites can present problems, especially where mining has taken place and there is limited access or visibility from the air. Pristine land is usually unaffected unless there is an off-site source of contamination that has migrated to the property. Agricultural property poses special threats depending on the pesticide/herbicide practices of the farmers.

The current practice in the U.S. is to group assessments into three phases. The Phase I assessment is designed to determine whether or not the potential for contamination exists. If during the course of a Phase I assessment it is determined that the potential for contamination exists, a Phase II assessment is performed to confirm the presence of contamination. This assessment usually consists of sampling around suspected sources of contamination. A Phase II assessment is not necessarily designed to collect the information necessary to remediate a site, but is used for a "go, no-go" decision for the property transaction. A Phase III assessment is conducted to determine the extent of contamination and to gather information about remediation.

Phase I assessments are typically commissioned by the prospective buyer since the burden of due diligence falls on the purchaser of a property. Often, the buyer and seller will jointly contribute to the costs of Phase II and Phase III assessments.

Phase I Assessment

A Phase I assessment includes a records search, interviews, and a site inspection. Samples of on-site materials, soil, or surface water or groundwater are not usually taken.

The records search includes a title search for the past owners of the property. Where practicable, aerial photographs, historical societies, museums, fire stations, land use maps, and permitting agency records are reviewed. This work can be conducted by a junior engineer or any other person trained in environmental hazards. Specialty firms have sprung up that perform record searches at a fixed fee. These firms are often less expensive than having an engineer perform the work, and their records searches should be reviewed by an in-house engineer.

Interviews of current tenants and neighbors are often good sources of information. Typically, a prepared questionnaire is used to guide the interview. Anecdotal information can be used to focus later information-gathering activities.

Site inspection is typically conducted by an experienced engineer. Sites are examined for evidence of underground storage tanks or associated plumbing, signs of debris dumping, stained soil, stressed vegetation, waste containers, and off-site activities that may either affect the property or provide some indication of the land use. The site inspection is typically conducted at the same time as the interviews.

The Phase I assessment findings should be compiled in a written report. A written record not only provides the prospective buyer with a document that can be used to help obtain a loan, it provides the engineering firm with documentation of the work performed. If the Phase I assessment reveals that there is no or limited potential for contamination on a site, then the requirements for all appropriate inquiry should be met. Again, a standard of care is clearly required.

Phase II Assessment

Once the potential for contamination has been established, many real estate transactions are canceled due to the potentially enormous costs for remediation. In those instances where either or both parties to a transaction feel that the cost for further investigation is warranted, a Phase II assessment can be performed. The Phase II investigation is based on the findings of the Phase I assessment. A sampling and analysis plan is prepared, keeping in mind the objectives of the investigation. In some instances, a Phase II assessment can be a quick survey to fill in a data gap or to confirm a finding. For example, if a former machine shop was to be sold and the Phase I assessment indicated that the stained soils near the shop were a potential environmental liability, the Phase II sampling plan could simply be to take soil samples in the appropriate areas. Where potential groundwater contamination is suspected, wells may have to be drilled and samples collected. The scope of the Phase II assessment is clearly linked to the nature of the site.

Phase III Assessment

The Phase III assessment is more closely linked to site remediation, and often is not considered part of the environmental assessment. There are instances where contamination is confirmed, but the suspected scale of contamination and the potential cost for remediation make a further investigation reasonable. Phase III assessments are clearly site-specific.

ASTM Guidance - Transaction Screening

The American Society for Testing of Materials (ASTM) is one of the oldest and most respected standards and practice groups in the U.S. The ASTM Subcommittee of Commercial Real Estate Transactions was established in 1990 with the mission of developing a standard of care for environmental assessments. A draft ASTM standard was published in October, 1991??. While the standard that is finally produced by the ASTM does not have the power of law, this standard may be adopted by many lending institutions as well as engineering firms, as a standard which will establish due diligence for the industry.

The draft standard is a multi-phased process with a significant change from other procedures. The legal task group of the Subcommittee recognized that "all appropriate inquiry" depends on the type of transaction. They concluded that the law does <u>not</u> require a Phase I environmental assessment in every case. Instead, the group developed a preliminary due diligence screening (transaction screening) that will help those conducting real estate transactions determine what level of inquiry is appropriate. Transaction

screening is a three-step process which includes:

- an environmental questionnaire
- a government records review
- a property inspection.

The questionnaire seeks information about the prior and current use of a property. The records review provides information held by the government agencies charged with collecting that information about the property in question as well as adjacent property. The site inspection guide is linked to the questionnaire. The transaction screening is designed to be followed by a bank official or loan officer. The questionnaire and site inspection list can be filled out with "yes", "no," or "do not know" answers. "Do not know" and "yes" answers require additional inquiry, usually a Phase I environmental assessment.

The transaction screening process serves two needs. First the process can satisfy the due diligence requirement of SARA with less expense and effort. Second, as more properties are screened using this lower cost procedure, more properties will be examined for environmental hazards. Of the 750,000 commercial real estate transactions that place in the U.S. each year, only 25% now have a Phase I assessment performed as part of the transaction. However, this less expensive process will likely be used in the future in most "smaller" transactions, thereby increasing this percentage.

EPA Lender Liability Rule

EPA proposed a "lender liability rule" in June 1991, based on the results of a number of legal decisions in the previous three years. This rule specifies a range of actions, including foreclosure. That lenders can take to manage and protect their collateral without being held liable under Superfund.

Congressional Legislation

In recent years, the U.S. Congress has tried to pass legislation that would clarify the "due diligence" requirements. Various bills sponsored in both the House of Representatives and the Senate have been introduced. It appears likely however, that these bills will be delayed for several years until debate begins again on the Superfund reauthorization bill.

A Case Study - Foundry Site in Tacoma, Washington

As an example of a site going through all three phases of an environmental assessment, there are probably few clearer examples than that of a foundry in Tacoma, Washington. (The name of the site and the sponsor of the work have been omitted due to ongoing litigation.)

The Tacoma tideflats is a large area in downtown Tacoma, Washington. This area is industrialized, centered primarily along a series of waterways. One of the industries in this area was a foundry whose primary product was parts for the oil industry. The business was quite successful for many years, but when the oil bust of the 1980's occurred, the foundry was no longer able to stay in business. The bank holding the mortgage on the property foreclosed in 1988, without first considering that the site may prove to be an environmental liability.

A Phase I assessment was conducted early in 1989. It was clear that the site was potentially contaminated not only from the foundry operations, but also from three underground storage tanks on the facility. There was evidence that the properties adjacent to the foundry, a machining facility and a large petroleum transfer facility, could potentially affect the property. These facts and the location of the property on fill material prompted the bank to sponsor a Phase II assessment.

The Phase II assessment was conducted under an accelerated schedule, due to the bank's desire to liquidate the property as soon as possible. As consultants, we decided to move a gas chromatograph and a thin layer chromatography laboratory to the site in order to get immediate turn-around on the samples. This approach saved the client money in two ways: the field lab analyses were actually less expensive than the commercial laboratory, and we were able to reduce down-time with the drill rigs and personnel on site.

The underground storage tanks posed the most probable source for contamination. In this instance, knowing that the tanks posed a liability, we decided to remove the tanks and investigate at the same time. This saved money that would have been spent on drilling and gave us the best chance to quickly remediate any problems.

Two of the tanks were pulled early in the investigation. The largest tank, a 19,000-gallon fuel oil tank located within one of the buildings, proved to be sound, with minimal contamination around the fill spout and around some of the joints. A smaller heating oil tank located in an alley also proved to be sound. Both of these potential liabilities were removed quickly at a minimal cost.

The third tank, which contained diesel fuel, was located adjacent to one of the out-buildings on the site. This tank was so close to the building that we investigated using hand-held augers to collect soil samples. We quickly found that this tank had leaked, and moreover, that the leak from the tank had mixed with contamination coming from an off-site source.

We sampled all of the pits in the foundry buildings, drilled wells up and down gradient of the property, and investigated a number of unidentified drums found in one of the buildings.

The results of the Phase II assessment were presented to the client. The drums were the most pressing issue and we urged the bank to move quickly to identify the contents and remove them from the site.

Although metals contamination was widespread at the site, the actual volume of contamination was unknown since the Phase II assessment was designed only to confirm the presence of contamination. The amount of petroleum-contaminated soil was also unknown. The likelihood of an off-site source for contamination was confirmed when we learned that the petroleum facility had an active free product recovery system installed immediately adjacent to the foundry.

The bank was distressed at the findings of the assessment. One of their immediate concerns was to determine the extent of their liability in order to divest themselves of the property. At this point, we elected to approach the problem using existing data, professional judgement, and probabilistic risk assessment techniques. This approach minimized expense to the client and provided a range of costs that could be used to make management decisions.

Our analysis had to be augmented with a Phase III assessment, but it provided a preliminary estimate of liability that was essential to the bank's planning.

Our approach is based on @RISK, a software package that provides the user with a large number of statistical functions that can be attached to Lotus spreadsheets. The package was designed with the business community in mind, but it was easily adapted to our use in this environmental assessment.

The primary method of remediation considered for this site was excavation and disposal. Most of the metals contamination was indoors, precluding in-situ or ex-situ treatment options. The foundry is located in a busy industrial area where there is limited space available outside the building.

Petroleum hydrocarbon contamination associated with the diesel tank could logically be divided into two areas; the area immediately adjacent to the tank where the soils were heavily contaminated, and the area away from the tank that had been potentially contaminated by the off-site source. In-situ treatment was considered for these materials, but the bank's concern to rapidly clean-up the site eliminated these options. Excavation, within a reasonable cost, was their preferred option.

The drums presented a less tractable problem. The costs for disposal of the materials was naturally dependent on what those materials were. We were able to speculate on the contents of some of the drums based on the appearance of the material and the labels on them. It was clear that some would not have to be taken to a hazardous waste disposal facility.

A panel of remediation experts were convened to assess the cost of remediation given the bank's preferred remediation options. We set up base cleanup scenarios for the site for input into the @RISK program. The number of drums was known, and the experts were asked to develop a probability distribution function for the number of drums that would have to go to the hazardous waste facility, the number of drums that could go to the county landfill, and the number of drums that could be disposed of on site.

Next, a base scenario was developed for the metals-contaminated soils. The panel used the Phase II data to estimate the volume of each pit. Examining the chemical analyses, they estimated the minimum, most likely, and maximum volumes of soil that would have to be disposed of in a hazardous waste facility. Removed soil would be replaced with clean backfill.

The minimum, most likely, and maximum volume of soil around the diesel tank that would require treatment were also estimated. They considered the likely cost of treatment and assigned a correlation coefficient to the cost and volumes. As in the pits, costs were assigned to the necessary volume of backfill material.

Finally, they developed a scenario that included treating the groundwater that was contaminated near the diesel tank. This scenario was based on cost models developed by EPA.

The purpose of the analysis was to determine the range of costs that the bank would likely face in order to divest itself of the property. In order to perform this analysis, we identified the variables that affect the costs of

remediation. Variables that were considered included:

- the quantity of contaminated soil
- excavation and transportation costs
- replacement material costs (for landfill disposal options)
- hazardous waste landfill disposal costs
- groundwater remediation costs
- analytical costs
- engineering costs.

The analysis did not include estimated costs for legal fees, consulting fees for negotiations with regulators, additional site investigation, or site restoration.

Rather than simply using single, constant values for many of the variables affecting cost, we estimated likely ranges, assigning minimum, expected and maximum values for the variables. For example, the costs for backfill material may vary depending on the availability of suitable material. The range in costs for clean backfill may vary from as little as $5 per cubic yard to as much as $10 per cubic yard. We assigned a triangular distribution for the cost of clean backfill. Many of the other variables were assigned a distribution based on an estimate of the variables anticipated minimum, maximum and most likely value.

The @RISK simulation uses a sampling program to select values for each variable based on its distribution. The spreadsheet is then recalculated with new values selected for each iteration. Numerous iterations are run, and a resulting distribution curve is generated for total cost that incorporates the distributions assigned to the various cost factors. The distribution curve provides information on the potential range of costs and probabilities associated with this range.

The resulting estimate for the range of remediation costs was used by the bank to make their decision on the disposition of the property. A Phase III assessment was eventually performed to confirm the results of the @RISK analysis. The success of the probabilistic approach was evident when the results from the Phase III assessment were compared to the range of costs predicted using the @RISK approach.

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