

TECHNICAL
FIELD GUIDANCE

CLOSING-OUT A SPILL

NOTES

Closing-Out a Spill

GUIDANCE SUMMARY-AT-A-GLANCE

- # Deciding when to close-out a spill, that is, when to terminate clean-up activity, can be a very difficult decision. There is no one decision rule that fits all types of situations. You must rely ultimately upon your professional judgment and spill response experience.
- # There are two basic situations in which a spill close-out decision is contemplated:
 - (1) A cleanup has achieved the established clean-up level, target, or standard for the contaminated medium or media (e.g., air, soil, surface water, or ground water);
 - (2) A cleanup has not achieved the established clean-up level, target, or standard, and there are indications that the chosen remedial strategy will not achieve the established clean-up level, target, or standard even if the operation is continued for a long period of time (e.g., one or more years).
- # Our program objective is to minimize the risk that spill responders make incorrect spill close-out decisions. We have developed a decision-making process for spill close-out, through which you will exercise your professional judgment in evaluating site conditions after clean-up activity has been underway for some time.
- # Overall, your objectives for each spill cleanup are to ensure adequate protection of human health and the environment and to mitigate environmental damage, to the extent it has occurred. If, in your judgment, these criteria have not been met, you should continue the clean-up effort regardless of the cost involved. The cost, or, more precisely, the cost-effectiveness, of the spill clean-up effort may only be considered after you are satisfied that all feasible and reasonable steps have been taken to meet the program objectives. Adequate protection of human health and the environment and mitigation of environmental damage always take precedence over cost considerations.
- # DO NOT terminate a clean-up effort at the first indication that a clean-up standard has been achieved. Site conditions could change, thus causing contaminant concentrations to rise again. To ensure that the clean-up standards have indeed

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**GUIDANCE SUMMARY-AT-A-GLANCE
(continued)**

been met and will be maintained, monitor site conditions for one year, especially for ground-water cleanups. A one-year monitoring period should be sufficient to establish confidence in the monitoring results (i.e., that the site will continue to comply with the clean-up standard).

- # Complex site conditions and technological limitations can often slow a cleanup to the point where progress can no longer be measured. We have developed guidance pertaining to this type of situation to help you decide whether close-out is appropriate. This "remediation strategy" was developed to govern ground-water cleanups (see Appendix F for Technical Operating Guidances (TOG) 2.1.1). This remediation strategy, illustrated in the flow charts in Exhibit 1.7-1 consists of three steps: (1) Source Control: a program consisting of one or more measures to remove or immobilize a continuing source of ground-water contamination; (2) Plume Management: a program consisting of one or more measures to eliminate, reduce, or immobilize a plume of contaminated ground water; and (3) Termination of Cleanup. If you follow this strategy in formulating your spill close-out decision and properly document same, your decision will be judged acceptable per the policies of the Spill Response Program.

- # Source control is required for all on-going sources of contamination (Remember, contaminated soil can represent as much of a source as a leaking tank). If your first corrective action technology option does not work, reevaluate the situation and implement another option that you judge will be more effective. If the violation cannot be eliminated, your objective is to accomplish as much source control as is feasible with current technology.

- # Plume management is required if you determine that the existing or potential use of a water resource is threatened, or if there are or will be other adverse public health or environmental impacts (i.e., resource impairment). The minimum requirement for plume management is that all reasonable and technologically feasible measures must be taken to eliminate resource impairment.

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GUIDANCE SUMMARY-AT-A-GLANCE (continued)

- # If a plume management program reaches a "dead end," that is, monitoring indicates that little further progress is being made (or is proceeding at a very slow pace) towards improving ground-water quality, you may consider terminating the cleanup.

- # To summarize, before deciding to close-out a spill, take the following steps, in their proper order:
 1. Determine that the spill has resulted in resource impairment.
 2. Continue plume management activities as long as you consider the impairment situation to be unacceptable.
 3. If monitoring data indicate a "dead-end" situation has been reached, evaluate whether contaminant concentrations have been lowered to a "tolerable" level.
 4. If a "tolerable" contamination level has been reached, evaluate the costs and benefits of continuing with the plume management program.
 5. Continue the plume management program if doing so is, in your judgment, cost-effective.
 6. Terminate the plume management program if continuing with it is, in your judgment, no longer cost-effective.

We do not require further monitoring of site conditions if you have followed the above procedures before terminating clean-up activity.

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1.7.1 Closing-Out a Spill

Deciding when to close-out a spill, that is, when to terminate clean-up activity, can be a very difficult decision. Currently, there is no one decision rule that fits all types of situations. In some cases, for example, if the spill was small, quickly contained, and removed, the close-out decision is a fairly simple one. In other cases, the decision may be more complicated; for example, a ground-water pump-and-treat operation has been underway for a year and yet benzene concentrations remain above acceptable levels. You must rely ultimately upon your professional judgment and spill response experience.

It is possible to make what, in retrospect, was an incorrect spill close-out decision. In this context, an incorrect decision could mean continuing a cleanup when no further progress is feasible, or terminating a cleanup only to return to the site later to resume clean-up activities. Our program objective is to minimize the risk that spill responders will make incorrect spill close-out decisions. In the process, we want to increase your comfort level with regard to deciding whether to terminate a state- or PRP/RP-managed spill cleanup.

We have developed a decision-making process for spill close-out, through which you will exercise your professional judgment in evaluating site conditions after clean-up activity has been underway for some time. This section discusses that decision-making process within the context of policies developed by the Bureau of Spill Prevention and Response (BSPR) concerning spill close-out. Also in this section, we cover the administrative procedures for closing out a state-managed spill cleanup, which must be followed in order for recovery of the state's costs from the responsible party (or parties) to proceed.

Other sections of this manual containing guidance relevant to this topic include:

- # **Part 1, Section 4, Site Investigation Procedures.** This section discusses procedures for conducting site investigations and monitoring site conditions, information from which you will form the basis for spill close-out decision.
- # **Part 1, Section 6.1, Exposure and Risk Assessment.** This section discusses the application of exposure and risk assessment methods to spill responses.
- # **Part 1, Section 6.8, Alternative Water Supplies.** This section covers BSPR policy and procedures governing the installation of alternative water supplies as a corrective action measure.
- # **Part 2, Section 4, Quality Assurance/Quality Control Procedures.** This section discusses quality assurance and quality control procedures to ensure that the data collected are representative and accurate.
- # **Part 4, Section 1, Case Documentation.** This section provides guidance on proper documentation of spill cases. Properly documented cases will withstand legal scrutiny and support cost-recovery action.

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- # **Part 4, Section 3, Preparation of Payment Packages.** This section describes how to complete payment packages for state-managed spill cleanups and thereby support the cost-recovery process.

1. Context of Spill Close-Out Decisions and BSPR Policy

There are two basic situations in which a spill close-out decision is contemplated:

- (1) A cleanup has achieved the established clean-up level, target, or standard for the contaminated medium or media (e.g., air, soil, surface water, or ground water);
- (2) A cleanup has not achieved the established clean-up level, target, or standard, and there are indications that the chosen remedial strategy will not achieve the established clean-up level, target, or standard even if the operation is continued for a long period of time (e.g., one or more years).

BSPR has developed specific policy to guide your decision-making process in each of these instances. Overall, your objective for each spill cleanup is to ensure adequate protection of human health and the environment and to mitigate environmental damage, to the extent it has occurred. If, in your judgment, these criteria have not been met, you should continue the clean-up effort (either a state- or PRP/RP-managed cleanup) regardless of the cost involved. The cost, or, more precisely, the cost-effectiveness, of the spill clean-up effort may only be considered after you are satisfied that all feasible and reasonable steps have been taken to meet the program objectives. Adequate protection of human health and the environment and mitigation of environmental damage always take precedence over cost considerations. Costs may be considered, however, during the process of choosing between technology options that are judged to be equally effective.

a. Spill Close-Out Decisions When Clean-Up Levels Are Met

When ground water has been impacted or potentially impacted, caution must be exercised to make sure contaminant concentrations remain below acceptable levels over a period of time. **Do not** terminate a clean-up effort at the first indication that a clean-up standard has been achieved. Site conditions could change, thus causing contaminant concentrations to rise again. For instance, residual petroleum contamination in the soil can still contribute additional free product and/or dissolved contaminants to ground water over a seasonal water table cycle.

To ensure that the clean-up levels have been met site conditions should be monitored for one year for ground-water cleanups. A one-year monitoring period should be sufficient to establish confidence in the monitoring results (i.e., that the site will continue to comply with the clean-up standard). Our policy to monitor for one year reflects our preference for continued monitoring over a longer period of time rather than earlier termination of

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a cleanup, which might result in our having to go back to the site later to resume the clean-up effort.

b. Spill Close-Out Decisions When Clean-Up Levels Are Not Met

Situations in which it appears that a spill cleanup will not result in attainment of the established clean-up standards are not uncommon, especially when ground water is contaminated. Complex site conditions and technological limitations can often slow a cleanup of ground-water contamination to the point where progress can no longer be measured. For these types of situations, the "remediation strategy," illustrated in the flow charts in Exhibit 1.7-1 is to be followed. This strategy consists of three steps: (1) Source Control: a program consisting of one or more measures to remove or immobilize a continuing source of ground-water contamination; (2) Plume Management: a program consisting of one or more measures to eliminate, reduce, or immobilize a plume of contaminated ground water; and (3) Termination of Cleanup. If you follow this strategy in formulating your spill close-out decision and properly document same, your decision will be judged acceptable per the policies of the Spill Response Program.

Source control is required for all on-going sources of contamination (Remember, contaminated soil can represent as much of a source as a leaking tank) when there is a violation of the applicable standards or the potential to cause a violation (i.e, saturated soil, but no ground-water contamination). Our program objective is to eliminate the violation of a quality standard if technologically feasible. If your first corrective action technology option does not work, reevaluate the situation and implement another option that you judge will be more effective. If the violation cannot be eliminated, your objective is to accomplish as much source control as is feasible with current technology. Generally, the costs for source control are not to be considered; however, if one option is less costly than the others and all are equally effective, then the less-costly option may be selected.

Plume management is required if you determine that the existing or potential use of a water resource is threatened, or if there are or will be other adverse public health or environmental impacts (i.e., resource impairment). A violation of a ground-water quality standard is sufficient proof of resource impairment when the spill site overlays a primary or principal aquifer, or is within the recharge area of any public or institutional water supply. In other areas and with other contaminated media, you must determine (in consultation with other regional and BSPR Central Office staff, as necessary) that the violations or impacts are of sufficient extent and magnitude to constitute resource impairment. Remember that although the present circumstances

Exhibit 1.7-1
STRATEGY FOR SPILL CLOSE-OUT DECISIONS
Step I - Source Control

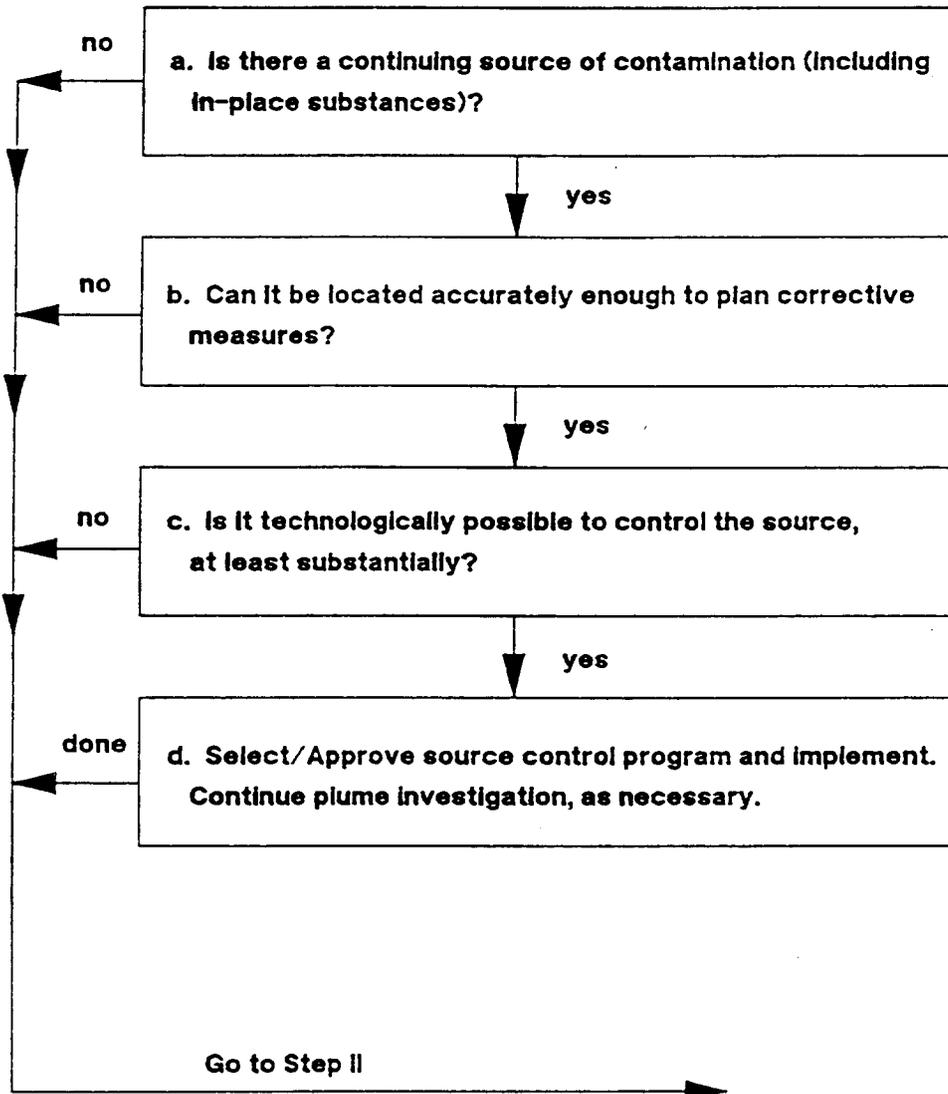


Exhibit 1.7-1
(continued)

STRATEGY FOR SPILL CLOSE-OUT DECISIONS
Step II - Plume Management

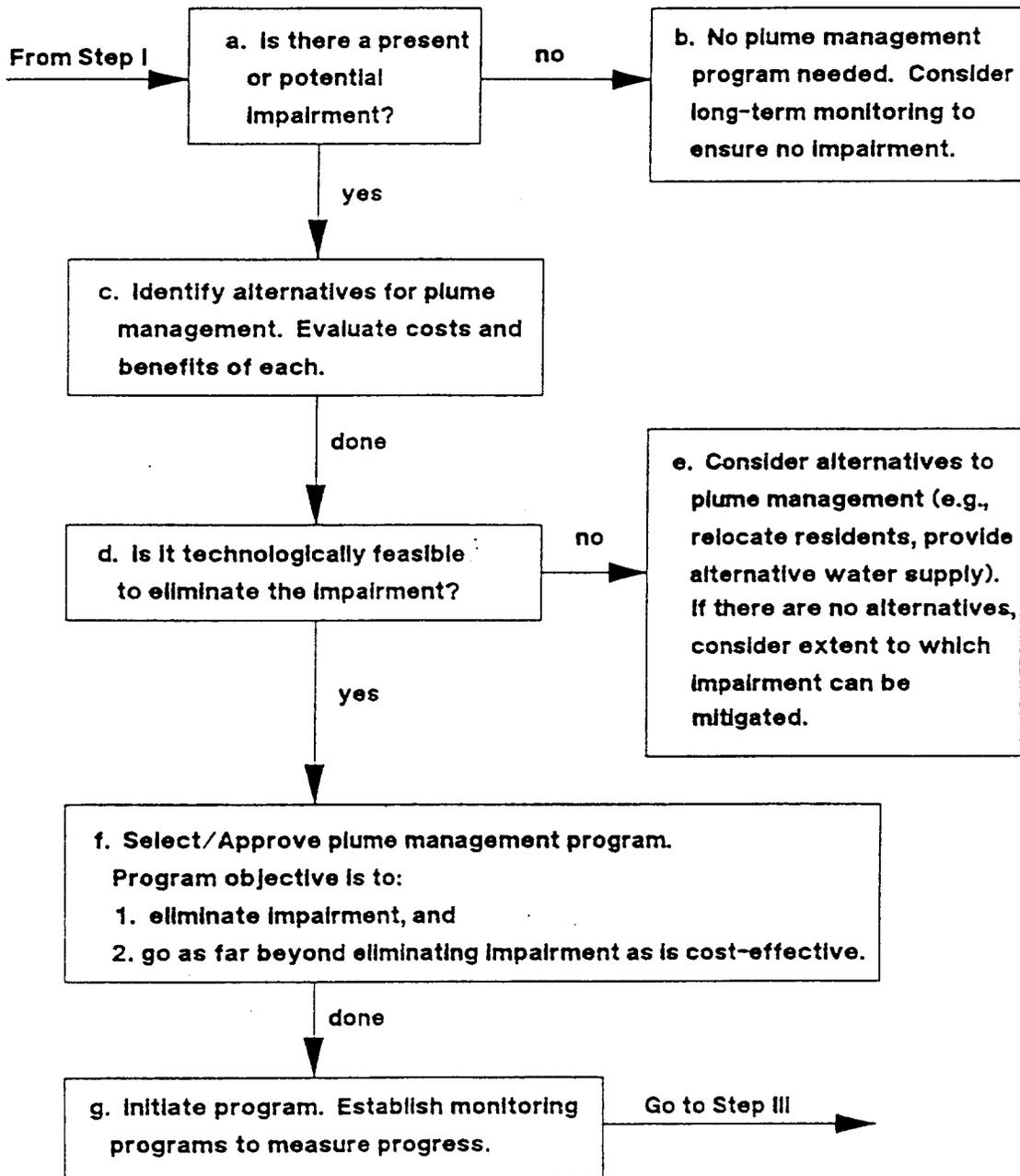
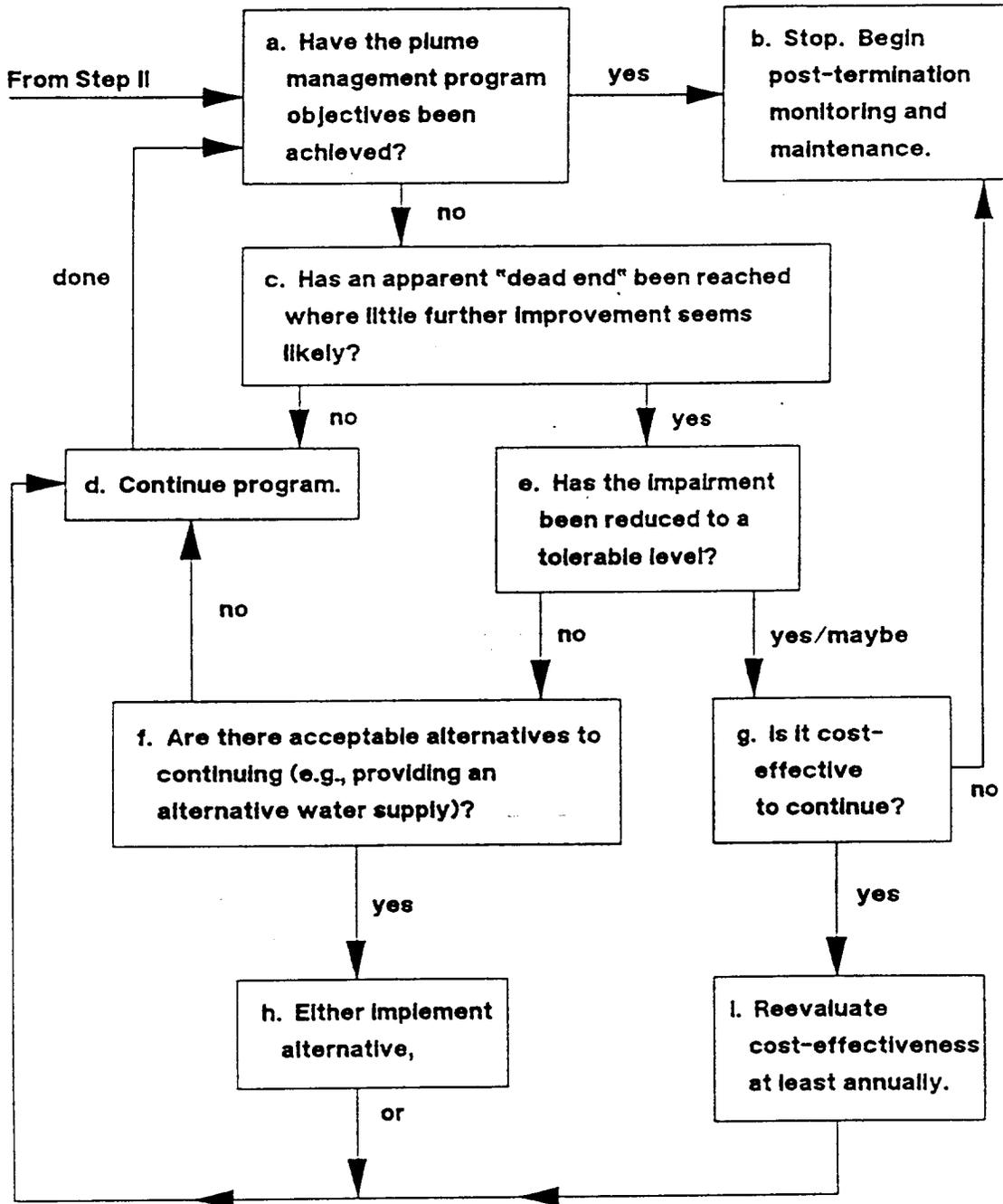


Exhibit 1.7-1
(continued)
STRATEGY FOR SPILL CLOSE-OUT DECISIONS
Step III - Termination



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might not qualify as resource impairment, contamination can migrate and pose a threat to a resource that is currently unaffected.

The minimum requirement for plume management is that all reasonable and technologically feasible measures must be taken to eliminate resource impairment without regard to cost. Our goal is to restore ground water to compliance with applicable standards. As long as you consider the impairment situation to be unacceptable, continue the plume management program, unless there are other feasible alternatives, such as provision of an alternative water supply. However, if a plume management program reaches a "dead end," such that monitoring indicates that little further progress is being made (or is proceeding at a very slow pace) toward improving ground-water quality, you may consider terminating the cleanup. At this point, if you consider the impairment to have been reduced to a "tolerable level," reevaluate the costs and benefits of continuing with the plume management program (see Subsection 1.c, below, for guidance on how to decide if the impairment has been reduced to a "tolerable level"). If and when you determine that plume management is no longer cost-effective, that is, the incremental cost of continuing plume management is greater than the monetary value of the additional resources that might reasonably be recovered, you may terminate a plume management program. The definition of "cost-effective," in this instance, means that the cost of taking the next step or continuing the clean-up process is less than the monetary value of the additional resources that are expected to be recovered. To summarize, before deciding to close-out a spill, take the following steps, in their proper order:

1. Determine that the spill has resulted in resource impairment.
2. Continue plume management activities as long as you consider the impairment situation to be unacceptable.
3. If monitoring data indicate a "dead end" situation has been reached, evaluate whether contaminant concentrations have been lowered to a "tolerable level."
4. If a "tolerable" contamination level has been reached, evaluate the costs and benefits of continuing with the plume management program.
5. Continue the plume management program if doing so is, in your judgment, cost-effective.
6. Terminate the plume management program if continuing with it is, in your judgment, no longer cost-effective.

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We do not require further monitoring of site conditions if you have followed the above procedures before deciding to terminate clean-up activity.

Your responsibilities (in consultation with other regional staff and the BSPR Central Office, as necessary) in executing the remediation strategy are as follows:

- # Approve the final selection of the source control and plume management programs;
- # Determine when a resource impairment situation exists;
- # Decide if terminating a plume management program can be considered or, if not, if there are any acceptable alternatives to continuing with the program; and
- # Supervise and coordinate all site investigations, monitoring activities, and negotiations with the owner; assemble the case reports; and act as liaison with the Regional Attorney on enforcement cases.

The BSPR Central Office, if consulted, can assist you by:

- # Conducting detailed hydrogeologic evaluations of the site, at your request, to identify, where possible, sources of contamination;
- # Providing advice related to all hydrogeologic issues, including site monitoring; evaluating consultant reports and options for source control and plume management; and reviewing all cost-benefit data; and
- # Rendering the decision on when a plume management program has reached a technical "dead end."

c. Evaluating "Dead Ends," "Tolerable Level," and "Benefits of a Resource"

There are three critical points in the decision to terminate cleanup. The first of these is the point at which you must judge whether a cleanup has reached a technical "dead end." One possible approach is using a statistical method for analyzing monitoring data to demonstrate the dead end situation, such as that used by the State of Florida in their clean-up program.[1] This statistical method is applied to show that if the decline in contaminant concentrations were plotted over time, the slope of the curve would essentially equal or approach zero.

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To determine whether the cleanup has reached a dead end point, the change in total volatile organic aromatics (VOA) concentrations (as measured monthly in designated monitoring wells) must be graphed over time.¹ Next, see if the curve you've just plotted matches, within statistically significant limits, a curve whose slope in the lower portion approaches zero. This "zero slope" curve is defined by the equation $C = C_f + C_o e^{-kt}$, where:

$C =$ Total Volatile Organic Aromatics (VOA) contaminant concentration at time t ;

$C_f =$ Final concentration that the curve approaches asymptotically;

$C_o =$ Concentration differences between the final concentration and the concentration at time zero;

$e =$ 2.718, the base of natural logarithms;

$k =$ Exponential factor that indicates how fast concentration approaches C_f ; and

$t =$ Time in days from some fixed starting point.

If the two curves are found to fit, a dead end situation is determined to exist.

BSPR generally will only allow a dead end termination if the plume management program has been in effect for at least one year. This one-year requirement may be waived if:

- # It is technically feasible to apply other proven ground-water treatment techniques to further reduce contaminant levels at the site;
- # The costs and time frames involved to further reduce contaminant levels employing the proposed alternative methods are acceptable; and
- # The effects on water resources, if contaminants remain at existing levels are unacceptable.

The second critical juncture is the point at which you must decide if the resource impairment has been reduced to a "tolerable level."

¹ If the petroleum contaminant does not contain a representative amount of the constituents defined as total VOA, an appropriate alternative contaminant may be chosen, and the change in its concentration plotted over time.

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Unfortunately, there is no universally accepted definition of what constitutes a "tolerable level" for situations in which the cleanup has failed to reduce contamination to the established quality standards or criteria; you must use your own judgment to determine whether the remaining contamination is tolerable or intolerable. If, for example, ground-water cleanup has reached a dead end, and your assessment is that the remaining effects of the spill are still unacceptable (e.g., noticeable petroleum odors in a home), then you should continue the clean-up effort. On the other hand, if a ground-water cleanup in an urban area has reached a dead end, residents are receiving clean potable water from a municipal supply, and there are no other known impacts of concern, then the cleanup may be terminated despite the fact that established clean-up standards have not been achieved. We recommend that you consult with the NYS Department of Health (NYSDOH) and the BSPR Central Office if you are uncertain about what constitutes a "tolerable level" of contamination in any given situation. NYSDOH can provide assistance regarding:

- # Acceptable levels of contaminants in drinking water, especially if a contaminant is not covered by existing water quality standards;
- # The acceptability of providing alternative public water supplies; and
- # Quantitative risk assessments to determine the acceptability of residual contaminant levels.

Only NYSDOH may conduct a quantitative risk assessment (or evaluate one offered by an PRP/RP) to establish a clean-up standard or to judge whether remaining contaminant levels represent a significant health risk (see also Part 1, Section 6.1, Exposure and Risk Assessments).

The third critical point during the spill close-out decision process is when you must quantify the benefits of a resource against which you will weigh the costs of continuing the cleanup. It is very difficult to place a monetary value on the benefits of, for example, a ground-water aquifer. As is true of "tolerable level," there is no universally applied method to assess the benefits of a resource. Generally, our objective is to protect the best use of a resource. For ground water, this means, in almost all cases, use as a drinking water supply, even if the aquifer is not used currently as a drinking water supply. We would want to preserve its potential use as a drinking water supply, however, as the best use of that resource, unless the background contamination of the water was already such that it was unfit for consumption (e.g., a high dissolved solids content). In this case, protecting the best use of this resource would require not only cleaning up the free and/or dissolved product, but also cleaning up the contaminated soil to eliminate it as a continuing source of ground-water contamination.

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Nonetheless, it still could be possible to terminate a ground-water cleanup without reaching the clean-up standard if it was expected that the natural flushing and degradative processes would effectively eliminate any remaining contamination and preserve the best use of the resource. The only guideline we can offer, therefore, is that there should be a strong preference to assume that the benefits of the resource outweigh the costs of most clean-up operations.

Exhibit 1.7-2 summarizes different spill situations and scenarios to illustrate the factors and considerations that might figure into your evaluation of the spill close-out decision following your execution of the remediation strategy. The scenarios in Exhibit 1.7-2 are intended only as examples; that is, they should not be used as decision rules per se. We hope, however, that these examples will stimulate ideas on different approaches that will enable you to determine whether spill close-out is warranted and ensure that an acceptable, supportable decision is made.

2. Spill Close-Out Decisions in State-Managed Versus Responsible-Party-Managed Cleanups

The guidelines for spill close-out outlined above apply to both state-managed and responsible-party-managed cleanups. You should keep in mind two important differences, however. First, do not make any technical decisions for the PRP/RP. Limit your input to informing the PRP/RP of the clean-up objectives. With this in mind, in some cases, you may provide some technical guidance on options available to the PRP/RP, and, if asked, you can discuss your experiences with a particular contractor and provide a list of contractors you use to a PRP/RP. It is up to the PRP/RP, however, to make the case for choosing a certain clean-up technology and to demonstrate its effectiveness to your satisfaction. Cost should only be considered in the PRP/RP's choice of a clean-up technology when technology options are shown to be equally effective.

Second, it is up to the PRP/RP to make the case for terminating a cleanup, especially when a clean-up standard has not been met. Any dead end situation, tolerable level, or cost-effectiveness analyses an PRP/RP makes must be documented fully to allow you to make an independent analysis of the data and conclusions reached. That is, BSPR personnel are to make the final calls on these issues based upon the data supplied. Any follow-up monitoring that may be required is the PRP/RP's responsibility.

3. Spill Close-Out for Hazardous Material Spills

BSPR responsibility for hazardous material spills is limited to emergency actions only. After the emergency has been alleviated, BSPR personnel are to turn over to the Division of Hazardous Waste Remediation the responsibility for conducting any further work required to clean up the spill. Accordingly, BSPR does not really close-out a hazardous material spill as we do for petroleum spills. Spill close-out decisions in these cases come under the purview of the Division of Hazardous Waste Remediation.

Exhibit 1.7-2

**Illustration of Spill Close-Out
Decisions: Factors Considered
(USE AS EXAMPLES ONLY)**

Basic Scenario: One year into cleanup to recover free product & treat dissolved ground-water contamination due to large, recent oil spill. Free product now appears in only a few wells irregularly and in very small quantities. Dissolved contaminant concentrations dropped quickly in first 6 months, but decline has slowed since then and remains 2 ppb above drinking water standards (i.e., a possible "dead end" situation). No large-scale soil excavation has been attempted; only limited amounts when the tank was removed.

Factors to Consider	Possible Clean-up Decision
Contaminated aquifer is not used for drinking water, but is connected hydraulically to aquifer that is a sole source water supply. Hydraulic conductivity is high.	Continue cleanup and consider soil remediation.
Contaminated aquifer and ground water, in general, not used for drinking water. No other known impacts.	Close-out spill per procedure.
Contaminated aquifer and ground water, in general, not used for drinking water, but public concern is high. Some homes with noticeable petroleum odor.	Continue ground-water cleanup, considers soil remediation, and reevaluate after another 6 months.
Contaminated aquifer is used as drinking water supply, although no impact on water wells as yet. Nearest wells are more than one mile away from spill site. No surface-water impact.	Close-out spill per procedure.
Contaminated aquifer is used for drinking water and wells have been impacted. Further clean-up progress judged not feasible technically. Alternative water supply is available.	Implement alternative water supply option and close-out spill per procedure.

4. Available Clean-Up Standards

A variety of standards and criteria exist by which to measure the cleanup of the different contaminated media (i.e., air, surface water, ground water, and soil). Some of these standards and criteria are based upon protection of human health, whereas others are based upon protection of environmental resources; some were set by the federal government (and adopted by the state) and others were set by the state. Different state agencies --NYSDOH and NYSDEC for example -- may have different standards for the same contaminants. Local governments may also have their own standards, and these may apply if they are part of an enacted law or regulation and if their application has not been specifically preempted by state law. Generally, you should apply the most stringent standard for the contaminant of greatest concern to human health (in most cases, those contaminants believed or known to be carcinogenic).² The available standards are discussed below, grouped by media, and can also be found in Appendix E.

Unfortunately, standards or criteria do not exist for all contaminants in all media. In these cases, if you are not sure which clean-up standard you should apply, consult with your RSE, the health department, and the BSPR Central Office. If a standard must be developed, one will be provided for you by the health department.

a. Clean-Up Standards for Surface and Ground Water

Quality standards and guidance values for different surface-water and ground-water classifications appear in 6 NYCRR Parts 701 and 702 (surface water) and Part 703 (ground water). The basis for a standard or guidance value is protection of human health or aquatic life. These regulations also provide authority for the use of guidance values when a standard does not exist for a given water classification.

These standards are categorized according to the New York State water classification system. A description of this system, as taken from Parts 701 through 703, is summarized below:

<u>Water Classes</u>	<u>Protection For:</u>
A, A-S, AA, AA-S	Fresh Drinking Water Supply
GA (Ground water)	Drinking Water Supply
A, A-S, AA, AA-S, B, C	Fishing and Fish Propagation
D	Fishing and Fish Survival
SA, SB, SC	Fishing and Marine Fish Propagation

² Where hardness is employed in the formula, it refers to the sum of magnesium and calcium concentrations, expressed as calcium carbonate in milligrams per liter or parts per million (ppm).

Water Classes

Protection For:

I
SD

Fishing and Fish Propagation
Fishing and Fish Survival

There are two additional classifications for ground water you may encounter in certain areas of the state:

Class GSA. The best usage of class GSA waters is as a source of potable mineral waters, for conversion to fresh potable waters, or as raw material for the manufacture of sodium chloride or its derivatives or similar products. Such waters are saline waters found in the saturated zone. No discharge of sewage; industrial wastes or other wastes; color, taste, or odor producing substances; toxic pollutants; thermal discharges; radioactive substances; or other deleterious matter is allowed that would impair the waters for use as sources of saline waters for the best use as outlined above, or to cause or contribute to a condition in contravention of standards for other classified waters.

Class GSB. The best usage of class GSB waters is as a receiving water for disposal of wastes. Such waters are those saline waters found in the saturated zone which have chloride concentrations in excess of 1,000 milligrams per liter or a total dissolved solids concentration in excess of 2,000 milligrams per liter. No discharge of sewage; industrial wastes or other wastes; color, taste, or odor producing substances; toxic pollutants; thermal discharges; radioactive substances; or other deleterious matter is allowed that would be deleterious, harmful, detrimental, or injurious to the public health, safety, or welfare or which may cause or contribute to a condition in contravention of standards for other classified waters. Class GSB shall not be assigned to any ground waters unless the Commissioner finds that the adjacent and tributary ground waters and the best usage thereof will not be impaired by such classifications. NOTE: The GSB classification has not been assigned to any ground water in New York State.

Quality standards for class GA water (ground water) are the most stringent of:

- # The numeric standards listed for specific substances;
- # The maximum contaminant levels for drinking water or the standards for raw water quality promulgated by the state commissioner of health; or
- # The maximum contaminant levels for drinking water promulgated under the Safe Drinking Water Act.

There is also what is generally referred to as the non-degradation standard. This standard states that sewage, industrial and other wastes, substances that produce odor or taste, thermal discharges, toxic

pollutants, radioactive substances, and other deleterious matter must not impair the quality of the ground water such that it is render and unsafe or unsuitable as a potable water supply, nor cause or contribute to a condition that contravenes standards for other classified water of the state.

Some of the applicable standards for common oil spill contaminants are provided in Exhibit 1.7-3. The full list of available standards is provided in Appendix E (the Technical Operating Guidance 1.1.1). Note that for benzene, a principal constituent of gasoline and a known carcinogen, the state standard is 1 microgram per liter, which is also the limit of analytical detection using currently available and accepted methods.

Part 701 requires that surface-water quality values be derived according to the methodologies contained in that regulation. DEC has determined that these methodologies will also be used to derive new ground-water values. Most values consist of a single number, but for some substances formulae are provided for calculation of a site-specific value. Such computation becomes necessary when the toxicity of the substance varies according to such factors as pH, temperature, or hardness.³ Paragraph 701.15(f) of the surface-water quality regulations specifies an ambient value of 100 micrograms per liter (ug/l) for the total of organic chemicals having a standard or guidance value established pursuant to human-health methodologies. A value of 100 ug/l will also be used for ambient ground-water concentrations as well as for effluent limits for discharges to surface and ground water. For discharges to surface water of substances containing benzene, toluene, and xylene, the standards are 50 ug/l each for benzene, toluene, and xylene, and 100 ug/l for total petroleum hydrocarbons. Substances with a standard, guidance value, or ground-water effluent limitation greater than 100 ug/l are not to be included in the 100 ug/l value for surface-water or ground-water permits.

b. Clean-Up Standards for Soil

Contaminated soil can be a source of vapors, free product, and dissolved contaminants. If left unremedied, this continuing source of contamination can limit the effectiveness of an effort to remove free product and clean up ground water contaminated by a spill. Therefore, some effort to remove or clean up

³ Where hardness is employed in the formula, it refers to the sum of magnesium and calcium concentrations, expressed as calcium carbonate in milligrams per liter or parts per million (ppm).

Exhibit 1.7-3

**Applicable Ambient Water Quality
Standards and Guidance Values
for Selected Petroleum Product Constituents
in Drinking Water Supplies**

Constituent	Water Classes	(micrograms/liter)	
		Standard	Guidance Value
Benzene	A, A-S, AA, AA-S	-	1.0
	GA	ND	-
Ethylbenzene	A, A-S, AA, AA-S	-	50
	GA	-	50
Ethylene glycol	A, A-S, AA, AA-S	-	50
	GA	-	50
Naphthalene	A, A-S, AA, AA-S	10	-
	GA	-	10
Phenanthrene	A, A-S, AA, AA-S	-	50
	GA	-	50
Toluene	A, A-S, AA, AA-S	-	50
	GA	-	50
Xylenes	A, A-S, AA, AA-S	-	50
	GA	-	50
Lead	A, A-S, AA, AA-S	50	-
	GA	25	-

ND = non-detectable.

Source: Division of Water Technical Operational Guidance Series (1.1.1), Ambient Water Quality Standards and Guidance Values.

contaminated soil must occur in order for free product recovery and/or a ground-water cleanup to be successful. A key question, however, is how much soil contamination can be left in place without threatening ground-water quality. This is still an area of continuing research at both the federal and state level.

Note that the issue of how much soil contamination represents a significant continuing source of ground-water contamination is separate from the proper on-site or off-site management of contaminated soil and debris once removed. All residuals generated from a spill cleanup must be managed properly in accordance with state and hazardous waste disposal requirements.⁴ Guidance on the proper management of contaminated soil and debris is provided in Part 2, Section 3.

c. Clean-Up Standards for Indoor Air

When samples are collected to evaluate indoor air quality, the local or state health department is to compare the measured contaminant levels to background indoor air quality, measured in residences believed to be outside of the area impacted by the spill, in accordance with the NYS Department of Health (NYSDOH) indoor air sampling protocol (see Appendix N). The health department's reasons for comparing indoor air samples to background indoor air quality are two fold. First, there are no state indoor air quality standards, nor does NYSDOH currently have the statutory authority to set such standards. Second, from the public health perspective, no one should be exposed involuntarily to levels of a potentially harmful material in excess of levels that are characteristic of the individual's community.

NYSDOH developed a four-part protocol for indoor air quality sampling that includes general conditions and requirements for sampling test and background homes, a residential indoor air quality questionnaire for all sampled residences, the sample collection protocol, and instructions on analytical methodologies. The protocol calls for measuring concentrations of 16 constituents of petroleum products, not just benzene, toluene, and xylene (BTX), as BTX is not a sufficiently reliable indicator. The protocol states that indoor air samples should be collected "whenever there is a reasonable expectation that indoor air may be contaminated as a result of a petroleum spill." The protocol goes on to say that "many of the elements that must be considered in the determination of whether or not indoor air samples are collected are the same elements that would be considered in evaluating the spill itself." The most obvious site condition factors that would argue for collecting indoor air samples would be:

- # A high or fluctuating ground-water table;
- # Porous or granular soil;

⁴ *If an RP-managed cleanup, it is the RP's responsibility to supply you with all the necessary documentation to show that proper residuals management procedures were followed. When the state manages the cleanup, you will receive such documentation from your contractor.*

- # Unsealed or wet basements;
- # Natural or man-made conduits for subsurface flow; and
- # Proximity and nature of the spill.

For more on the indoor air sampling protocol, see Part 1, Section 4, Site Investigation Procedures.

5. Documenting Spill Close-Out

Our policy on proper documentation for spill close-out is very clear. You are responsible for ensuring that a spill case file is complete in all respects. We recognize the trade-off you must make to fulfill this requirement. Time spent on fulfilling documentation requirements takes away from time you need to stay abreast of your other cases and to take on new cases as they arise. Yet you must keep in mind that a complete spill case file is necessary to support efforts to recoup funds already spent so that these funds can then become available for additional work.

There are three basic administrative tasks that must be completed prior to close-out of a spill: (1) make sure that the spill case file contains all the necessary documentation; (2) update all the spill case information on the Spill Information System; and (3) generate and complete the Investigative Summary Report and Penalty Recommendation.

- (1) **Make Sure All Proper Documentation is in the Spill Case File.** Your responsibilities for case documentation differ depending on whether the PRP/RP or the state manages the spill response. These requirements are discussed in detail in Part 4, Section 1, Case Documentation, and in Part 4, Section 3, Preparation of Payment Packages. In summary, follow these general guidelines to ensure that the spill file is complete:

- # If the PRP/RP assumes responsibility for cleanup of a spill, the spill case file must include the following documentation:

- Spill Response Form;
- Letter of Notification;
- On-Site Investigation Form;
- Plan of Action (this need not be very formal or complicated; see Part 1, Section 5); and
- Any correspondence, progress reports, photographs, samples, permits, documentation of telephone conversations, and the like.

- # If the cleanup is managed by the state, the case file must include the following documentation:

- Technical Documentation (including Job Inspection Reports or field notes, pictures, and other analytical/monitoring data);

- Letter of Notification;
 - Spill Response Form;
 - Oil Spill Accounting Request Authorization Form;
 - Contractor Documentation (including Letter of Authorization to Contractor, Contractor's Payment Application/Voucher Certificate, Notice of Satisfactory Work Completion);
 - Vendor Documentation (including Letter of Authorization to Vendor, Solicitation Record, Standard Vouchers Form, Standard Clause Form, Contractor's Payment Application/Voucher Certificate, Voucher Payment Package Transmittal Form); and
 - Documentation for Hazardous Material Spills.
- # Review all documentation and resolve any discrepancies with the PRP/RP, the Contract Unit, the Regional Spill Response Section, and/or the contractor.
- # Send a Letter of Satisfactory Work Completion to the contractor, and a copy each to the Regional Project File and the Fund Administrator, upon completion of the spill project or the contractor's services, whichever comes first. This form notifies the contractor of DEC's intention to close-out a project, and each contractor is given 30 days to submit all outstanding bills.
- # Make sure you have received the complete Contractor Payment Package.
- (2) Update the Spill Information System. After you verify that the spill case file is complete, enter and/or update the information on that case on the NYSDEC Spill Information System database. The Spill Information System (SIS) is our database of all spill case information. Project milestones are entered on the SIS and must be kept current. Periodically, each regional office electronically sends a copy of its database to the BSPR Central Office where a master database is kept. The following guidelines pertain to the Spill Information System:
- # For consistency among the regions, BSPR Central Office, and the Fund Administrator, the terms "completed," "administratively complete," and "closed," have these meanings when used in reference to any spill cleanup:

COMPLETED: A project (regardless of funding) is considered "completed" (identified by the environmentally complete date on the Spill Information System) when all clean-up activities have ceased, the site is restored to its original condition, and all contractors have been released from the project. The status field will be

designated as an "A" for active projects until the project is "administratively complete."

ADMINISTRATIVELY COMPLETE:

A project is considered "administratively complete" (as symbolized by a "C" in the "status field" of the Spill Information System) when the project is determined "completed" and all required paperwork has been submitted and processed (e.g., satisfactory completion letters sent to state-funded contractors or spillers, all payment packages received and forwarded to the Fund Administrator, and the ISR forwarded to BSPR) by the Regional Office.

CLOSED: For non-state-funded projects, a project is considered "closed" after the Regional Water Engineer or designee determines that the project is "administratively complete." For state-funded projects (any spill project where Oil Spill monies were expended) only the Fund Administrator is authorized to make this determination.

- # Upon notification from the Fund Administrator that a project is closed, BSPR Central Office will make the appropriate entry into the Spill Information System and notify the Regional Office and Central Office Fiscal Management.
 - # Once the project is closed by the Fund Administrator, no fund money can be expended under that Project Identification Number (PIN). For those projects that must be reopened, a new PIN must be requested. If your region is unsure about whether a spill has been closed or not, contact BSPR Central Office to verify of the project's status.⁵
 - # Regional offices shall ensure that the Spill Information System is kept updated and all appropriate entries are made. Regional files for closed projects are retained for a minimum of six years.
- (3) *Generate the Investigative Summary Report and Penalty Recommendation.* After all contractor payment packages have been submitted (and, preferably, the contractor paid), the spill case file has been completed, and all information has been entered into the Spill Information System, you should then prepare the Investigative Summary Report (ISR). The ISR is a synopsis of the entire spill case and can be generated, in part, by automated extracts from the SIS. If you choose to recommend a penalty assessment, specify the amount you believe should be assessed. Your recommendation is contained in the Penalty

⁵ *Spill numbers can be reused if the contamination has been determined to be ongoing, but this practice is discouraged. We prefer that a new number be issued. The original spill number may be retained, even if the original PIN no longer applies, as long as site activity is ongoing.*

Recommendation form, which you attach to the ISR. Detailed information concerning the ISR and Penalty Recommendation is contained in Part 4, Section 1. The following general guidelines pertain to the preparation and handling of the ISR:

- # After generating the ISR from the SIS, complete the other relevant sections of the ISR by filling in the requested information. Provide more explanation as necessary. The history field can be attached for this purpose.
- # If you recommend a penalty, complete the Penalty Recommendation Form by checking the law that has been violated and choosing a monetary penalty. Explain your penalty decision (see Part 4, Section 1, Case Documentation, for more on penalty recommendation policy and procedures).
- # An ISR must be completed and submitted as a prerequisite for close-out of all PIN projects.
- # Upon receipt of the ISR/Penalty recommendation, BSPR Central Office reviews the ISR and then transmits the package through the appropriate office (Legal Affairs for all penalty recommendations and Fiscal Management for all personnel costs) to the Fund Administrator. The Fund Administrator will either seek reimbursement, which could include the commencement of legal action by the Attorney General, or will consider the project "closed."

REFERENCES

1. State of Florida. Petroleum Contamination Site Cleanup Criteria. Section 17-70.010, Remedial Action Plan, Subsection 6a. Draft July 14, 1987. pp. 24-25.