



**GUIDANCE FOR CONSTRUCTION OF PUBLIC  
WORKS PROJECTS IN AREAS WHERE  
CONTAMINATION IS SUSPECTED OR KNOWN**

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**VERMONT STATE AGENCY OF NATURAL RESOURCES  
WASTE MANAGEMENT DIVISION**

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## Introduction

Many public works projects, such as water and sewer pipelines, encounter areas where there may be subsurface contamination<sup>1</sup>. Often times, the subsurface contaminants are petroleum products released from Underground or Above Ground Storage Tanks (USTs or ASTs). In these cases some costs relating to environmental monitoring, materials changes, worker health and safety plans, or site investigation may be eligible for reimbursement from the State's Petroleum Cleanup Fund (PCF).

The Petroleum Cleanup Fund (PCF), established under the authority of 10 V.S.A. Chapter 59, §1941, was created to pay, subject to available funding, for certain **uninsured** costs for the cleanup and restoration of contaminated soil and groundwater caused by releases of petroleum from ASTs and USTs and for compensation of third party claims for injury and damage caused by such releases. Proof that there is no insurance, which would cover the environmental costs of the project, must be provided from the party responsible for the petroleum release, where the work is being conducted before the PCF reimburses any costs.

Reimbursement claims are limited to \$1,000,000 for releases from USTs and \$25,000 from ASTs per site. **The PCF does not cover all construction costs in a contaminated area, only documentable additional costs associated with contamination from eligible sources. The PCF does not cover any costs covered by private insurance.** In many cases environmental costs incurred during pipeline construction occurs off the property containing the source of contamination (e.g. current or former gas station with USTs). Because this is off site contamination, this would be a third party damage claim. Such claims are frequently covered under a property owners' liability insurance - even if the owners' property insurance specifically excludes pollution coverage to the property itself. Before a reimbursement claim can be approved by the PCF all insurance issues must be clarified.

The Waste Management Division (WMD), which administers the PCF, believes that planning will minimize increased costs and delays caused by construction in contaminated areas. This guidance document was written to provide general information on the role of the WMD in pipeline construction projects, which cross or are in hazardous waste contaminated areas. The first section of this document outlines a pre-bid preliminary investigation procedure. The second section covers general contractor guidelines during construction. The third section covers procedures to be followed when unexpected contamination is found during construction. Expenses eligible for PCF reimbursal are covered in the last section. Specific construction details, such as material specifications, are not covered and will be listed in the construction contract document.

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<sup>1</sup> This guidance document is written for sewer or water pipeline construction, but may be applicable to other construction projects effected by subsurface contaminants.

## I. Pre-bid Preliminary Investigation Procedure

The first part of the preliminary investigation is a review of suspect properties along the proposed pipeline route by the project engineer in consultation with the Waste Management Division, Facilities Engineering Division (sewer), and Water Supply Division (waterline). Contamination along a proposed reach of a pipeline may be suspected based on research, interviews, site inspection(s), and/or historic information about facilities along the project. Operating or former gas stations, service garages, bulk fuel distributors, etc., even if not listed on the State's Active or Closed Hazardous Sites lists and including those which have been converted to other uses or closed for years - even decades, should *always* be suspected as potential sources of contamination.

Information gathered should be from as many sources as possible, including interviews with long-time town residents and town officials, Sanborn Fire Insurance maps, Agency of Transportation maps, and any other available historic maps, aerial photographs, and town historical societies. A site inspection must be conducted. Sources of information at the WMD include the Active Hazardous sites file, the Closed Hazardous sites file, the active USTs file, and the pulled USTs file. WMD files exist only starting from 1987, so research using the previously mentioned sources is necessary in order to identify older suspect properties. **If no or only cursory research into potential petroleum contamination sources is performed, costs incurred associated with petroleum contamination may not be eligible for reimbursement from the PCF.**

If contamination is suspected within the proposed working zone of the project, then a subsurface investigation should be performed. This will likely involve soil borings, but could include test pits or groundwater monitor wells. If possible, this investigation work should be incorporated with ongoing geologic investigations by the project owner to identify subsurface conditions, such as depth to ledge, soil type, etc. and will need to be completed before the project is put out to bid. If the site in question is an active or closed hazardous waste site with an environmental consultant, then this consultant may be able to provide an evaluation of contamination along this section of the pipeline reach. In addition documents of past or ongoing site investigations will be available at the WMD.

The objective of the subsurface investigation is to define the degree and extent of contamination in soil and groundwater along the reach of the pipeline project. Based on the site investigation results, reasonable estimates can be made of the length and amount of contamination that could be encountered during the project. With the contamination reasonably defined, bid items can be included to address additional installation costs through the contaminated areas. One of the goals of planning is to eliminate any contractor change orders or delays due to contamination along the construction route.

## **A. Preliminary site investigation guidelines**

Below are some general guidelines which should be followed during the preliminary subsurface field investigation:

### **1. compliance responsibility**

The environmental consultant performing site characterization activities, such as drilling and test pit excavation is responsible to ensure it is in compliance with state and federal regulations, including VOSHA and OSHA. In addition site investigation practices should follow the WMD guidance document, "*Site Investigation Guidance*" dated August 1996.

### **2. WMD site characterization support**

The Waste Management Division will make every effort to provide support during pre-bid investigative work on the project. When given sufficient notification, this support may include reviewing the Hazardous Sites list and assisting the project engineer to decide what, if any additional site characterization work may be required for the pipeline project. The WMD staff may work with the project engineer to insure that appropriate soil and groundwater samples are collected if necessary. This work is expected to be in conjunction with ongoing geologic investigations of the site by the project owner or its project engineer.

It may be necessary for the project owner or the project engineer to hire an environmental consultant to further characterize the area, especially when multiple properties with contamination will or have been encountered. The environmental consultant is expected to work with the project engineer, project owner, Facilities Engineering Division, Waste Management Division, and Water Supply Division to address the environmental issues associated with construction in contaminated areas. The consultant can be hired directly by the project owner, the project engineer, or the construction company. The environmental consultant must be qualified and have direct experience in investigations and clean up of contaminated properties and will be required to submit a work plan and cost estimate to the WMD prior to starting their work. A list of environmental consultants who work in the State of Vermont is available from the WMD. This additional characterization will allow for more realistic bid items to be included for materials, additional labor, environmental monitoring, worker health and safety planning, handling, transport, and treatment of contaminated soils and/or groundwater, and other items determined to be necessary to address the contamination.

### **3. sample locations**

If additional site characterization is determined to be necessary, sampling points (borings or test pits) should be placed along the alignment and hydraulically down gradient from potential sources. At a minimum, three sampling points should be installed along the proposed alignment of the pipeline project

to address suspected contamination: one should be as close as possible to the source, as described above, and the other two should be placed approximately 50 to 75 feet on each side of the first boring. Additional sampling points may be necessary to define the length of contamination along a proposed pipe alignment. The decision to obtain additional samples will be made through discussions with the WMD, the project engineer, the environmental consultant, and the project owner.

## **B. Contaminated soil**

Contaminated soil is often encountered at both active and inactive Hazardous Waste Sites. A plan must be developed in order to deal with contaminated soils encountered. This plan should include work procedures, treatment, and disposal locations. Disposal of this contaminated soil is the responsibility either of the project owner or the owner of the contaminated property(ies), not the pipeline contractor, since the project owner and/or facility owner are the generators of the waste.

Every effort should be made to backfill contaminated soils during construction. Contaminated soils to be backfilled, should be placed at the bottom of the trench with at least 18" of uncontaminated soil used for closing the trench.

Soils, which cannot be backfilled either because they are geotechnically unsuitable or because they do not fit in the excavation will need appropriate disposal and follow the "*Agency Guidelines of Petroleum Contaminated Soil and Debris*". Commonly used contaminated soil disposal methods are onsite or off site polyencapsulation (providing the site meets WMD stockpiling criteria), landfill disposal (as waste or daily cover), and out of state disposal at asphalt batch or thermal desorption plants.

It is expected that in many instances the project owner can provide an appropriate stockpile location, which should be identified prior to the start of construction. Temporary stockpiles should be avoided unless the soils will be backfilled. Contaminated soils destined to be polyencapsulated or shipped off site should be transported to their final (approved) location as they are generated in order to reduce handling and transport costs.

## **C. Contaminated groundwater**

Many times construction site de-watering is necessary and is included as part of the contractor bid. If an environmental consultant is used, they will need to develop a plan in order to sample and treat contaminated water, if it is encountered prior to disposal. Treatment methods may include re-injection through an infiltration basin, filtration through activated carbon, air stripping, pumping to fractionation tanks, or disposal to a wastewater treatment plant (with appropriate permission from the plant owner and Wastewater Management Division). De-watering is not eligible for PCF reimbursement, however the costs for testing, treatment, and disposal of contaminated water is eligible.

When petroleum contaminated water is treated and discharged to a surface water, a permit is required from the Waste Water Management Division. This discharge is covered under General Permit 3-9004 and is obtained by filing a Notice of Intent.<sup>2</sup> Obtaining the permit requires a 10 day public comment period on the Notice of Intent. This permit must be obtained prior to construction, if trench dewatering is anticipated. If this permit process is not used and dewatering in a petroleum contaminated area does prove necessary, the cost of construction delays, while waiting for an emergency discharge permit (1272 Order) will not be eligible for PCF reimbursement.

#### **D. Pre-bid health and safety plan**

When an environmental consultant is used, they must develop a site specific Health and Safety Plan (HASP) based on the observed contaminants and site conditions and compliant with OSHA “*Hazardous Waste Operations and Emergency Response*” (29CFR 1920.120) This HASP will cover hazards associated with documented petroleum contamination at the site and would also be used in areas where unexpected contamination of a similar type is encountered. It includes on-site monitoring by an environmental professional in contaminated reaches, soil and groundwater screening levels, required type of personal protective equipment and action levels to determine when each type of protective equipment is to be used, and minimum worker training requirements. This site specific HASP is meant to supplement the contractor’s normal construction site safety plan for its employees. This HASP should be completed prior to the request for construction bids and included in the bid packet. Construction contractors are expected to use this HASP for bid estimating purposes. The winning contractor is not required to use this HASP or environmental consultant, but may use them during construction. In all cases VOSHA worker safety requirements including 29CFR 1920.120 must be met and will be the responsibility of the construction contractor.

#### **E. Summary of pre-bid information**

In summary the environmental consultant will provide the results of the environmental investigation, including but not limited to:

- ! Estimated length of contaminated pipe reaches; (for design and bid)
- ! Amount and level of soil contaminants; (for design and bid)
- ! Location and concentration of contaminated groundwater; (for design and bid)
- ! Plans for the treatment and/or disposal of contaminated soils and/or groundwater; (municipality/owner responsibility)
- ! Site specific Health and Safety Plan for the petroleum contaminants of concern. (for bid, contractor is responsible for VOSHA compliance during construction)

This material should be included in the contract bid documents so that contractors can prepare their bids appropriately.

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<sup>2</sup> As of this March 18, 2002 document revision, Waste Water Management General Permit 3-9004 is not available for use. Please contact Waste Water Management for the appropriate discharge permit.

## **II. Guidance for Construction along Pipe Reaches of Public Works Where Contamination is Known**

This section is for the construction phase of a project, and assumes that an environmental consultant has been hired by the project owner to:

- ! Identify and quantify the extent of contaminated reaches of pipeline;
- ! Write a site specific Health and Safety Plan, which covers only hazards associated with documented petroleum contamination at the site;
- ! Develop plans for the treatment and potential disposal of contaminated soils or groundwater.

### **A. Materials upgrades**

It is the responsibility of the project design engineer to coordinate with Facilities Engineering and the Water Supply Division on specific materials and construction methods, which are compatible with the anticipated contaminants (for example, Viton pipe gaskets resistant to gasoline). Water Supply or Facilities Engineering may recommend or require that in areas subject to contamination from likely sources (i.e. fuel stations, bulk petroleum storage facilities), that the project owner install resistant gaskets whether contamination is encountered or not.

### **B. Work procedures in contaminated areas**

Work must be done in accordance with all applicable OSHA and VOSHA safety standards. The standard developed by OSHA titled "*Hazardous Waste Operations and Emergency Response*" (29CFR 1920.120) may apply. If contractors have any questions concerning training and safety requirements for working in contaminated areas VOSHA must be consulted. It is the responsibility of the contractor to ensure that workers in hazardous areas designated by the site specific HASP or the environmental consultant have the appropriate training. The construction contractor is responsible for providing all necessary safety equipment, ensuring proper worker training and safety, and performing all administrative and record keeping requirements of 29CFR 1920.120. The construction contractor is expected to ensure that appropriate site monitoring of soils and ambient air in the work area during construction in the designated hazardous pipeline reaches is performed.

The procedures outlined in Section I regarding contaminated soil and groundwater must be followed. The plans developed during the pre-bid investigation should be followed as appropriate. The environmental consultant will coordinate with the WMD and project owner concerning treatment and disposal of petroleum contaminated soils, that cannot be backfilled, and the treatment of contaminated groundwater. The environmental consultant is expected to be in close contact with WMD to ensure that the environmental work is done in accordance with WMD regulations and guidelines. This work must be done in a manner, which minimally disrupts pipeline construction activities and is cost effective. It is expected that actual conditions may be different from those predicted during the pre-bid investigation. If work must be interrupted for reasons involving site contamination, the construction contractor is expected to mobilize to another area of the project.



Bentonite clay plugs should be considered for installation at both ends of pipe reaches through contaminated areas, if hydraulic conditions are appropriate. The purpose of these clay plugs is to prevent contaminant migration along pipe bedding material into previously uncontaminated areas.

### **III. Procedures for Construction Through Unexpected Contamination**

Petroleum product contamination may be encountered at an unexpected location, as a result of an unknown abandoned UST or other unsuspected source.

#### **A. Construction procedures for projects with other known contamination**

Some pipeline projects already have one or more known areas of contamination. Plans will have already been developed to deal with contaminated soil and groundwater, a HASP will be in place, and a bid price has been negotiated for these other areas. The construction contractor and/or project engineer is required to notify the project owner and the WMD that contamination has been encountered. If a new contaminated area is discovered during construction, the WMD expects that the previously developed plans and unit prices will be followed. PCF reimbursal will be at the bid price, unless extenuating circumstances are present.

#### **B. Construction procedures for projects with no other known contamination**

Construction may encounter contamination along a pipeline where there is no other known or even suspected sources of contamination and hence no plan is in place to address the problem. With thorough research in the project planning stage, the WMD does not believe that this situation will occur frequently. Water and sewer lines are almost always in urban areas with a long history of settlement, commercial, and/or industrial use. **If no or only cursory research into potential petroleum contamination sources is performed, reimbursement of costs from the PCF may be reduced.**

If contamination is found, the construction contractor and/or project engineer is required to notify the project owner and the WMD that contamination has been encountered. After notification, the contractor is expected to mobilize to an uncontaminated section of pipe reach.

An environmental consultant must then be hired and will work with all parties involved (project engineer, project owner, contractor, Water Supply and/or Facilities Engineering) to delineate the extent and type of contamination and develop an appropriate Health and Safety Plan. All procedures described in Sections I and II must be followed.

### **IV. Summary Report**

A summary report describing the degree and extent of contamination encountered, contaminated soil and/or groundwater disposed, any sample results, worker protection levels used, and any other pertinent details must be submitted to the WMD. The summary report must be received by the WMD prior to any payment of PCF reimbursement claims.

## V. Petroleum Cleanup Fund Reimbursable Costs

Eligible costs incurred during pipeline construction or pipeline replacement will be reimbursed by Petroleum Cleanup Fund as a third party claim. Third party claims are limited to \$1,000,000 for releases from USTs and \$25,000 from ASTs per site. **The PCF only covers eligible additional costs associated with petroleum product contamination from a UST or AST release. The PCF does not cover any costs covered by private insurance. Insurance issues must be settled prior to PCF claims being paid. If no or only cursory research into potential petroleum contamination sources is performed prior to project initiation, reimbursement of costs from the PCF will be significantly reduced.**

All efforts must be made to provide a cost estimate to the WMD for approval prior to initiation of onsite work. If pre-approval is not possible, costs must be in accordance with the environmental consultant pricing schedule in the current WMD guidance document, “*Procedures for Reimbursement by the PCF*”. Costs must be consistent with the bid price, approved estimate, or WMD environmental consultant pricing schedule in order to be reimbursed from the PCF.

### EXAMPLES OF COSTS ELIGIBLE FOR REIMBURSEMENT:

- *initial site characterization*

The project owner will cover drilling costs when the preliminary investigation to find contamination can be incorporated with the geologic investigations. Support to characterize soil and groundwater will either be provided by the WMD or an environmental consultant. If an environmental consultant is hired, then the PCF will reimburse these costs, where appropriate.

- *environmental oversight during construction*

If necessary, environmental consultant costs are eligible for PCF reimbursement.

- *soil disposal*

Earthmoving of contaminated soils as part of normal construction for the installation of pipe is not PCF reimbursable. Transport to the stockpile location (or other disposal location) and building of the stockpile, additional costs of screening for contamination, stockpile monitoring, or final stockpile disposal will be PCF reimbursable, where applicable.

- *contaminated groundwater*

The final plan and cost estimate for treatment of contaminated ground water must be pre-approved by the WMD. Site de-watering as part of the normal construction is not PCF reimbursable. The sampling and treatment of contaminated groundwater prior to its disposal is PCF reimbursable as well as the administrative cost of obtaining a discharge permit.

- *materials upgrades*

The PCF will reimburse the upgrade of materials in areas where contamination is present or imminent (example - the pipeline is down-gradient of an expanding petroleum product plume).

- *reimbursement rates*

If the construction contractor and/or project engineer is providing the environmental services, it must be done in accordance with WMD regulations and guidelines. PCF reimbursal for these activities will be limited to the current PCF rate schedule in the current WMD guidance document, "*Procedures for Reimbursement by the PCF*".

- *barriers to prevent contaminant migration*

Installation and materials for the installation of bentonite clay plugs used to isolate contaminated pipe reaches and prevent future contaminant migration along permeable pipe bedding material will be PCF reimbursable.

Other costs not included in the above list may be eligible for reimbursement from the PCF and will be reviewed on a case by case basis. The criterion for eligibility will be that the cost is an additional expense incurred due to the contamination encountered. Expenses that would have occurred in any case during construction are not eligible for reimbursement from the PCF. For other information concerning the PCF please refer to the document titled "*Procedures for Reimbursement from the Petroleum Cleanup Fund, Vermont Agency of Natural Resources, Waste Management Division*".

Approved by:

\_\_\_\_\_  
P. Howard Flanders  
Director, Waste Management Division

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Date