

Guidance for Petroleum Spill Stipulation Agreement

PURPOSE

The Petroleum Spill Stipulation Agreement (Stipulation) is to be used to conduct the cleanup and removal of petroleum discharges pursuant to an enforceable written agreement between the Department of Environmental Conservation (Department) and the Potentially-Responsible Party (PRP). The Stipulation is applicable state-wide.

BACKGROUND

Under Article 12 of the New York State Navigation Law, the Department of Environmental Conservation is responsible for the remediation of petroleum spills. The Department exercises this responsibility by either hiring a state contractor to remediate the spill site, or by directing a discharger (the PRP) to do so.

The DSM has worked with other Divisions to develop a procedure for enforceable agreements between the Department and a party willing to remediate a petroleum spill. The Stipulation is a short-form Order on Consent. If a party enters into an agreement under a Stipulation, then no Department permits are required for the cleanup activities, and the cleanup activities are exempt from State Environmental Quality Review (SEQR) requirements.

The Stipulation embodies the agreement between the PRP, who is cleaning up the discharge, and the Department. The Department uses the Stipulation to ensure timely cleanup activity and as a binding commitment by the PRP to perform the necessary cleanup. The PRP uses the Stipulation, which incorporates all the substantive conditions of any required discharge permits, to proceed with the required cleanup activity without an admission of liability.

DEFINITIONS

The following terms are used in this guidance document according to the listed definitions:

(1) Corrective Action

Activities undertaken to identify and cleanup a release of petroleum to the environment. These activities may include site assessment, site investigation, interim remediation, remediation, operation and maintenance of equipment, monitoring of remediation progress, post-remediation monitoring, and termination of remediation.

(2) Interim Remediation

Activities undertaken to address immediate threats to public health or the environment from a petroleum release. Interim remediation can be performed to begin the cleanup of the release prior to designing and implementing a remediation plan for a more comprehensive cleanup of the release.

(3) Investigation

Activities undertaken to evaluate the extent of contamination resulting from a release of petroleum. These activities may include site history and records review, collection of soil and groundwater samples and evaluation of the severity of impact on the public health and the environment from a petroleum release. The information gathered during the investigation shall be sufficient to identify the areal extent, depth of contamination, and degree of contamination in both soil and groundwater. The investigation generates information to support interim and comprehensive remediation decisions.

(4) Remediation

Activities undertaken to remove petroleum contamination sufficiently to return the site to pre-spill conditions, or at a minimum, to protect human health and the environment. These activities may include evaluating risk, making decisions on further action, monitoring, designing and operating cleanup equipment.

DISCUSSION

The PRP should expect to receive a letter of responsibility, a one-page Stipulation agreement, a sample or proposed Corrective Action Plan identifying the work to be done and dates of completion, and this guidance document. Contained within this guidance document are the air and water discharge limits, waste transporter requirements, and Long Island well operating requirements.

(1) Letter of Responsibility

The Department issues a Letter of Responsibility to the party or parties who are considered to be responsible for the spill occurrence and the spill cleanup, based upon the information available at the time.

(2) Stipulation

A Stipulation is a short-form Order on Consent. The Department, through its Regional Spill Engineer (RSE) sends a Stipulation to obtain a signed, legally-binding commitment from a PRP to conduct a spill cleanup. A Stipulation is not intended to be used at all sites. A Stipulation is used for those projects that

go beyond an initial response. A Stipulation is not intended for spills where the complete cleanup can be accomplished in a short period of time, such as surface spills which are responded to and completely remediated within a few days. The RSE uses a Stipulation for cleanup projects which are expected to extend beyond an investigative or monitoring stage of a spill cleanup. A Stipulation can be used at any time during a spill cleanup project. If an initial investigation results in a discovery of more extensive contamination, a Stipulation can be used at that time to address cleanup activities for the remainder of the project.

A Stipulation will include all the substantive conditions of any required discharge permit, and since the remedial activities are specified in the enforceable Stipulation document, those activities are exempt from State Environmental Quality Review (SEQR).

A Stipulation is not an expression or admittance of guilt by a PRP. A Stipulation represents the acceptance of responsibility to cleanup a spill in accordance with an agreed upon plan and schedule. The Department retains the right to pursue any claims it might have against the PRP, such as for penalties for violations of the Navigation or Environmental Conservation Law. Also, by signing a Stipulation, the PRP agrees to be bound by the terms of the Stipulation, and waives the right to a notice and hearing, as provided by law, on the terms of the Stipulation. By law, everyone has a right to a notice and hearing to argue the need for them to comply with the conditions of an order. This would usually occur if a PRP believed they were not the responsible party. This waiver is the PRP's acceptance of the terms of the Stipulation including any attachments (eg., Corrective Action Plan) to the agreement. It is important to understand that they are only waiving their right to the remediation aspects of the site. Any other issues, eg., penalties, etc., can still be contested as allowed by law.

(3) Corrective Action Plan

The Corrective Action Plan attached to the Stipulation identifies a time table for the PRP to prepare and submit project data to the RSE for review and/or approval. The time table should reflect the severity and complexity of the discharge to be remediated. It is intended that the Corrective Action Plan be developed by the PRP. The RSE can provide guidance as to acceptable time frames for certain activities and deliverables. The RSE should establish reasonable time frames, allowing the PRP to obtain adequate, reliable, and pertinent information necessary to develop well-conceived Investigation and Remediation Plans.

(4) Regulatory Limits

This guidance document details the regulatory limits to be used in the Stipulation. It identifies effluent limitations for wastewater and air streams from interim or permanent remedial systems. It also contains regulatory requirements for the operation of groundwater wells in Long Island, and for waste transporters involved in Corrective Action or Remediation Plans. The standard Stipulation package does not contain requirements or information regarding wetlands permits which may be needed for work or discharges in wetlands areas. The Division of Fish and Wildlife and/or the Division of Marine Resources should be consulted on a case-by-case basis for projects involving wetlands areas.

PROCEDURE

Upon completing an investigation as to the source and cause of the spill, the RSE, or designee proceeds with the tasks identified in Attachment 1, Stipulation Procedure, as described below:

(1) Does the Spill Warrant a Stipulation or Long-Form Order on Consent

The specific circumstances of the spill incident will determine if a Stipulation or long-form Order on Consent is appropriate, or if no formal cleanup order is warranted.

(a) No Stipulation or Long-Form Order on Consent

Spills with little environmental impacts, presenting little human health hazards and that will have no secondary air or water discharges produced during the cleanup operations, do not require a Stipulation or Order on Consent. Some examples may include: tank test failures with no impacts observed; spills on a concrete pad which are cleaned up immediately; or spills satisfactorily cleaned up by removing a small amount of contaminated soil or debris.

(b) Stipulation Needed

Spills that are expected to take several months or years to cleanup (generally three months to three years) will require a Stipulation. Additionally, spill cleanups which may result in air or water discharges, and would otherwise require a NYSDEC permit to discharge, require a Stipulation. Some examples may include: an investigation of an underground storage tank leak; a groundwater cleanup operation; an extensive contaminated soil removal project; a soil remediation project using vapor extraction; or a soil bioremediation project.

(c) Long-Form Order on Consent Needed

Spills which cause or have the potential to cause very significant environmental, safety or human health impacts may require a long-form Order on Consent. Spills which are very complex or complicated due to the responsible parties involved, the assessment of significant penalties, the source, the cause or the actual and potential impacts may require a long-form Order on Consent. Some examples may include a spill which results in the relocation of nearby residents, a spill which contaminates a public water supply well, a public water supply system, or several private water supply wells; a surface water spill with other than de minimis natural resource damages; and a spill caused by negligence which results in serious injury to nearby residents.

(2) The RSE Identifies the PRP of the Spill

Based on the information collected during the investigation, the RSE identifies the potential responsible party(ies), notifies the PRP(s) using a standard Letter of Responsibility via certified mail with return receipt, copies the insurance company(ies) of the PRP(s) as notice that their client has been identified as responsible for a spill, and confirms the PRP's acceptance of the responsibility for cleanup. At anytime, if it is determined by DEC that the PRP is not responsible for the spill, DEC will take over and complete the remediation.

(3) The PRP Develops a Project Corrective Action Plan With the RSE

The PRP discusses the specific activities of the project with the RSE. This discussion should include such activities as who will investigate the spill site (consultant/contractor), who will design the remediation system (if needed), when will each phase begin, the scope of the project and ultimate completion dates. These activities, and the time frame for completion of each activity should be specifically described in a project Corrective Action Plan. Not all activities will be able to be projected immediately and some may change as the project unfolds.

Attachment 2 contains a Sample Corrective Action Plan, and a checklist of items and issues which should be considered in the development of a comprehensive plan.

(4) The PRP Signs the Stipulation

The PRP prepares the Corrective Action Plan, as described above and after having discussed it with the RSE, attaches the Corrective Action Plan to the Stipulation, signs the Stipulation, and returns the Stipulation and Corrective Action Plan to the RSE.

(5) The Regional Director Signs the Stipulation

The RSE reviews the Stipulation for correctness and completeness, and transmits the Stipulation to the Regional Director for signature. The Regional Director signs the Stipulation, and sends a copy via certified mail return receipt requested to the PRP. The RSE proceeds to enforce the time table and limits contained in the Stipulation and Corrective Action Plan.

A PRP does not need to wait for a signed Stipulation to begin work at a site. It is expected that in most cases the PRP will have already commenced interim investigative or remedial work and will finalize the Stipulation during the first few days of the project.

(6) If The PRP Does Not Sign The Stipulation

If a PRP decides not to sign the Stipulation, then the RSE will notify the PRP that the Department is taking over the project. The RSE will then hire a standby contractor to proceed with the appropriate Corrective Action Plan, and the PRP, if determined to be the Responsible Party (RP), will be required to pay for all costs incurred by the Department plus any appropriate penalties.

(7) Multiple PRPs

In cases where there are multiple PRPs, the RSE issues a Stipulation to each party which the Region identifies as a possible contributor to the discharge. If one PRP agrees to sign the Stipulation, then the Region proceeds with that PRP in cleaning up the discharge, and notifies the non-cooperative PRPs of the agreement between the cooperative PRP and the Department. If more than one of the PRPs agree to sign the Stipulation, then the RSE meets with the cooperative PRPs to develop the Corrective Action Plan, and notifies any remaining PRPs of the agreement between the Region and the cooperative PRPs.

In the case of multiple PRPs, if only one PRP performs the spill cleanup, that PRP has a right to seek contribution from any other PRP.

(8) Amendments to Corrective Action Plan

Upon authorization by the Regional Director, Regional Spill Engineers are authorized to approve changes to the Corrective Action Plan.

REGULATORY LIMITS

The PRP is expected to meet the regulatory limits and other substantive requirements which apply to the particular project being addressed by the Stipulation, as detailed below. For example, if the Corrective Action Plan or the Remediation Plan includes a wastewater discharge, then the wastewater discharge must meet the effluent limits defined in this document for the petroleum components present at the site.

(1) Wastewater Discharge Limits

Wastewater discharges for petroleum spill projects are classified according to the discharge point i.e. groundwater, surface water, or publicly-owned treatment works (POTW). The discharge limits are standardized according to these discharge points (groundwater, surface water, or POTW), regardless of the technology being used to treat the wastewater, and regardless of the quality of the receiving stream. Therefore, air stripping systems, packed columns, shallow trays, and activated carbon treatment systems operate under the same discharge limitations. The characteristics of the waste stream being treated will determine which treatment technology will provide satisfactory emissions in a cost-effective manner. Attachment 3 contains General Conditions applicable to the operation of all wastewater discharges pursuant to a spill project Stipulation. Tables 1 and 2 in Attachment 3 of this guidance document identify the appropriate discharge limits for gasoline and fuel oil components. The project investigation should identify which contaminants are present at the site, and the Remediation Plan must identify the appropriate discharge limits from Attachment 3 of this guidance document for the petroleum components present at the site.

A groundwater discharge, for purposes of the Stipulation, is a wastewater stream which may reach the groundwater system either directly or indirectly. Hence, wastewater which is injected to the subsurface through injection wells or leaching pools is regulated as a groundwater discharge. Wastewater which is discharged to a recharge basin or to a dry, unlined ditch is also considered to be a groundwater discharge.¹

A surface water discharge is a wastewater stream which enters a surface water or a lined drainage ditch leading to a surface water.

A discharge to a POTW is a wastewater stream which enters a municipal sewage treatment plant by connection to a pipeline, or is otherwise transported to the treatment plant. The POTW determines the limits appropriate for each wastewater stream according to the operational capabilities of the treatment plant.

The groundwater discharge limits listed in Attachment 3, Table 1, of this guidance document, are divided into Group A compounds and Group B compounds. The compounds of interest have been divided so that it is convenient, where appropriate, to establish different monitoring frequencies on the two groups of compounds on a site-specific basis. The primary compounds of interest for groundwater discharges are listed as Group A compounds. In general, Group A compounds should be monitored more closely than Group B compounds.

¹ An unlined dry ditch should be considered a groundwater discharge if significant percolation through the subsurface can be expected to occur. In order to standardize the Stipulation, a discharge to an unlined ditch in a primary or principle aquifer area should be considered a groundwater discharge. Best engineering judgement may be used to determine if a discharge to an unlined dry ditch in other areas should be classified as a groundwater discharge (if significant percolation is expected to occur) or a surface water discharge (if no significant percolation is expected to occur).

The discharge limits listed in Attachment 3, Table 1, are groundwater quality standards or guidance values. These limits are used so that the Stipulation is applicable for any groundwater discharge, regardless of the current usage of the groundwater accepting the discharge stream. The only exception for allowing a discharge to groundwater above the limits established in Tables 1 and 2, of Attachment 3, is that the discharge is being hydraulically-controlled or contained by the remediation system. In cases where a "contained area" or "hydraulically-controlled area" is established, discharge limits need not apply. This exception is in accordance with the Division of Water Technical and Operational Guidance Series 2.1.2., "Groundwater Contamination Remediation Strategy".

The discharge limits identified in Attachment 3, Table 2, are drinking water quality standards or guidance values. These limits are used so that the standard Stipulation is applicable for any surface water discharge, regardless of the current usage of the surface water accepting the discharge. The frequency of monitoring a surface water discharge may reflect the site-specific characteristics, such as the receiving water is used for drinking water downstream or the receiving water is saline and undrinkable.

The Corrective Action Plan, which becomes part of the Stipulation, will also incorporate site and equipment monitoring requirements, including the analytical methods to be used and the frequency of such monitoring.

(2) Long Island Wells

Any groundwater well in Suffolk, Nassau, Queens and Kings Counties, which will produce greater than 45 gallons of water per minute, must have Department approval to be constructed and operated. The drilling company must be registered with the Department in order to install the pumping well. Department registrations and approvals for Long Island wells may be obtained from the NYSDEC Division of Water, SUNY Building No. 40, Stony Brook, New York 11790. The Corrective Action Plan and the Remediation Plan must include the appropriate registration and approval information for the RSE to review and approve.

Drawdown water pumped from groundwater wells on petroleum spill sites in the counties of Long Island (Suffolk, Nassau, Queens and Kings) should be re-injected to the same formation in the groundwater to the extent possible. Hence, remediation projects may use the groundwater discharges to control the contaminant plume migration and/or to alleviate the potential for excessively de-watering the sole-source aquifer system.

The PRP is required to analyze the potential effects on other production wells within one-quarter mile of the proposed petroleum spill project pumping well. Any adverse effects, such as loss of head or deformation of neighboring contaminant plumes being remediated, should be addressed by the PRP prior to allowing the project production well to operate.

(3) Waste Transporters

The RSE and his/her designees are authorized to issue Department Part 364 Waste Transporter Permits on a limited (emergency) basis to PRPs, and/or a PRP's contractor, to transport solid waste generated from a petroleum spill being investigated or remediated in accordance with a Stipulation. Although this authority is given to specific DSM staff, the Stipulation, Corrective Action and Remediation processes are best expedited if the PRP is required to use waste transporters who already have Part 364 permits. When needed, the DSM-issued emergency transporter permits are issued only for petroleum-contaminated media which is classified as non-hazardous waste according to State and federal regulations. The emergency transporter permits are temporary permits, i.e., valid for approximately one week or less, and valid only for transportation to facilities permitted by the Department under Part 360 Solid Waste Management Facilities Permits. The Division of Solid Waste may be consulted, as needed, to verify that a proposed disposal site is an approved facility for the material being transported under the emergency transporter permit.

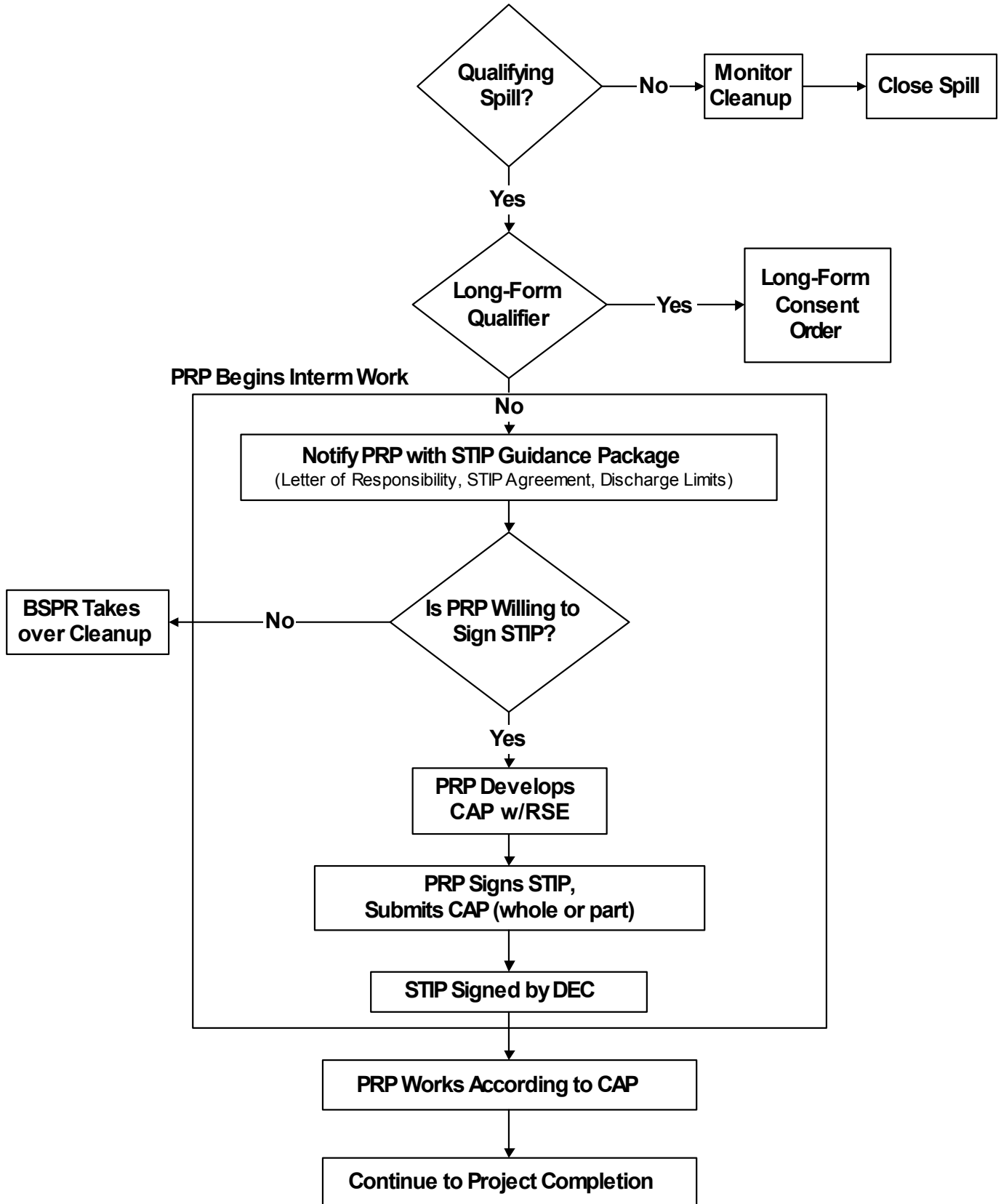
(4) Air Emissions

The air emissions limits for air strippers, soil vapor extraction systems and cold-mix asphalt units have been established by a Memorandum of Understanding (MOU) between the Division of Air Resources and the DSM. The procedures for issuing a Stipulation are included in the air emissions MOU. The MOU is included in this guidance document as Attachment 4. Any air discharge streams produced under the Corrective Action Plan activities or the Remediation Plan activities must comply with the appropriate discharge limits defined in Attachment 4 of this guidance document. Specifically, air stripper emissions must comply with the limits identified in Appendix 1 of Attachment 4. Soil vapor extraction emissions must comply with the limits identified in Appendix 2 of Attachment 4. Cold-mix asphalt units operated under a Beneficial Use Determination (BUD) must comply with the soil processing limits identified in Appendix 3 of Attachment 4, when processing gasoline-contaminated soil.

Attachment 1

Stipulation Procedure

Stipulation Procedure



Attachment 2

Corrective Action Plan

1. Sample Corrective Action Plan

2. Sample Corrective Action Plan Checklist

Sample Corrective Action Plan

Corrective Action Plan for Spill No. _____

1. Within [insert number, for example 10] days of the effective date of this Order, Respondent shall submit to the Department, for its approval, an Investigation Plan, detailing the scope of work proposed to investigate the nature and extent of the contamination caused by this spill.
2. Within [insert number, for example 30] days of the approval by the Department of the Investigation Plan, submitted pursuant to paragraph 1 above, Respondent shall conduct the work described in it, and submit a report based on the information gathered through the Investigation Plan.
3. Within [insert number, for example 90] days of the completion of the investigation, Respondent shall submit a Remediation Plan to the Department, detailing the work proposed to remediate the contamination caused by this spill. The Department shall either approve or disapprove the plans and specifications in writing. If the submittal is disapproved, the Department shall specify any deficiencies and required modifications. Within [insert number, for example 20] days of receipt of the Department's disapproval notice, Respondent shall submit a revised Remediation Plan which addresses the Department's comments, correcting all deficiencies identified in the disapproval notice.
4. Within [insert number, for example 10] days of receipt of the Department's notice of approval of the Remediation Plan, submitted pursuant to paragraph 3 above, Respondent shall implement the approved Remediation Plan.
5. The approved Remediation Plan shall be made part of the Stipulation agreement between Respondent and the Department.

Any modifications to this Corrective Action Plan must be approved in advance in writing by the Department.

Sample Corrective Action Plan Checklist

INVESTIGATION PLAN

1. Scaled site map, identifying all structures, storage tanks, dispensers, etc. and proposed locations for investigation sampling points.
2. Description of proposed activities to evaluate site history, and to determine the source, cause and extent of the release being investigated.
3. Description of proposed sampling techniques (eg. soil gas survey, soil borings, well points, etc.).
4. Description of proposed analytical techniques (eg. HNU headspace, portable gas chromatograph, stationary lab, etc.).
5. Proposed reporting deadline.

INVESTIGATION REPORT

1. Scaled site map, identifying all structures, storage tanks, dispensers, etc. , along with the actual sampling locations utilized in the investigation.
2. Description of scope of work performed.
3. Description of sampling techniques performed.
4. Description of analytical techniques performed.
5. Scaled site maps identifying the extent of contaminant plumes (eg. dissolved phase and/or free-product phase and/or adsorbed phase and/or vapor phase) and migration pathways as determined by the investigation.
6. Tabular summary of analytical results.
7. Hardcopy of actual analytical data outputs.
8. Conclusions drawn from investigation.
9. Recommendations for future activities at the site.
10. Proposed locations for additional sampling locations, monitoring locations, remedial equipment, etc. as appropriate.

REMEDIATION PLAN

1. Scaled site map, identifying all structures, storage tanks, dispensers, sampling and monitoring locations, etc. and proposed locations for remedial sampling, monitoring and equipment locations.
2. Description of proposed activities to mitigate the release.
3. Description of proposed sampling techniques.
4. Description of proposed analytical techniques.
5. Scaled site maps identifying the extent of contaminant plumes, and the anticipated area of influence of remedial equipment.
6. Description and schematic of proposed remedial systems.
7. Description of proposed remedial equipment site-specific pilot testing.
8. Proposed time schedule for specific remedial activities (pilot tests, installation, schedule maintenance, etc.).
9. Anticipated time needed to complete the remedial efforts.

MONITORING PLAN

1. Scaled site map, identifying all structures, storage tanks, dispensers, sampling and monitoring and equipment locations, etc.
2. List of parameters to be monitored.
3. Regulatory/effluent limits for each parameter being monitored.
4. Frequency of monitoring for each parameter.
5. Analytical technique used for each parameter.
6. Reporting schedule.

Attachment 3

Wastewater Discharge Limits

- 1. General Conditions Applicable to All Wastewater Discharges**
- 2. Table 1: Wastewater Limits for Groundwater Discharges**
- 3. Table 2: Wastewater Limits for Surface Water Discharges**

General Conditions Applicable to All Wastewater Discharges

1. Advance notice shall be given to the Department of any planned changes in the treatment facility or activity which may result in noncompliance with effluent limitations.
2. Any noncompliance which may endanger health or the environment must be reported orally within 24 hours from the time Respondent becomes aware of the circumstances. A written report shall also be provided within 5 days. The written report shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if it has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate and prevent the noncompliance and its recurrence.
3. Bypasses which do not cause a violation of effluent limitations are allowable, but only for essential maintenance, repairs or replacement to assure efficient and proper operation. The Department must be given 5 days advance written notice of any anticipated bypass. The Department shall be notified within 24 hours of any unanticipated bypass.

Bypass is prohibited, and the Department may take enforcement action, unless:

- the bypass was unavoidable to prevent loss of life, personal injury, public health hazard, or severe property damage;
- there were no feasible alternatives to the bypass such as the use of auxiliary treatment facilities or retention of untreated wastes; and
- required notices were submitted to the Department and, with the exception of emergency conditions, were accepted by the Department.

"Bypass" means the intentional or unintentional diversion of wastewater around any portion of a treatment facility for the purpose or effect of reducing the degree of treatment intended to be provided by the bypassed treatment facility.

"Severe property damage" means substantial damage to property, damage to treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which would not reasonably be expected to occur in the absence of a bypass.

TABLE 1
Wastewater Limits For Groundwater Discharges

GROUP A		
COMPOUND	GASOLINE	FUEL OIL
pH range	6.5 - 8.5	6.5 - 8.5
Benzene	1.0 ug/l	1.0 ug/l
Ethylbenzene	5 ug/l	5 ug/l
Toluene	5 ug/l	5 ug/l
o-Xylene	5 ug/l	5 ug/l
m-Xylene	5 ug/l	5 ug/l
p-Xylene	5 ug/l	5 ug/l
Mixed xylenes	5 ug/l	5 ug/l
Naphthalene	10 ug/l	10 ug/l
MTBE	10 ug/l	10 ug/l

**TABLE 1 (Continued)
Wastewater Limits For Groundwater Discharges**

GROUP B		
COMPOUND	GASOLINE	FUEL OIL
Isopropyl benzene	5 ug/l	5 ug/l
n-Propyl benzene	5 ug/l	5 ug/l
p-Isopropyl benzene	5 ug/l	5 ug/l
1,2,4-Trimethyl benzene	5 ug/l	5 ug/l
1,3,5-Trimethyl benzene	5 ug/l	5 ug/l
n-Butyl benzene	5 ug/l	5 ug/l
sec-Butyl benzene	5 ug/l	5 ug/l
t-Butyl benzene	5 ug/l	5 ug/l
Anthracene	N / A	50 ug/l
Dibenz (a,h) anthracene	N / A	50 ug/l
Fluorene	N / A	50 ug/l
Fluoranthene	N / A	50 ug/l
Phenanthrene	N / A	50 ug/l
Pyrene	N / A	50 ug/l
Acenaphthene	N / A	20 ug/l
Benzo (a) anthracene	N / A	20 ug/l *
Benzo (b) fluoranthene	N / A	20 ug/l *
Chrysene	N / A	20 ug/l *
Benzo (a) pyrene	N / A	20 ug/l *
Benzo (g,h,i) perylene	N / A	20 ug/l *
Indeno (1,2,3-c,d) pyrene	N / A	20 ug/l *
Benzo (k) fluoranthene	N / A	20 ug/l *

N / A = not applicable

* The groundwater standards or guidance values for these compounds are not currently detectable by standard laboratory methods. These discharge limits are practical and enforceable limits.

**TABLE 2
Wastewater Limits For Surface Water Discharges**

COMPOUND	GASOLINE	FUEL OIL
pH range	6.5 - 8.5	6.5 - 8.5
Benzene¹	7 ug/l	7 ug/l
Ethylbenzene	5 ug/l	5 ug/l
Toluene	5 ug/l	5 ug/l
o-Xylene	5 ug/l	5 ug/l
m-Xylene	5 ug/l	5 ug/l
p-Xylene	5 ug/l	5 ug/l
Mixed xylenes	5 ug/l	5 ug/l
Naphthalene	10 ug/l	10 ug/l
MTBE	10 ug/l	10 ug/l

N A = not applicable

¹ The benzene limits for discharge to Class A surface waters are applicable for water bodies capable of 7:1 dilution ratio of base flow to discharge flow. The Division of Water may be consulted for assistance as needed.

Attachment 4

**Memorandum of Understanding
by
Division of Air Resources
and Division of Spills Management**

- 1. Memorandum of Understanding**
- 2. Appendix 1: Air Stripper Emission Limits**
- 3. Appendix 2: Soil Vapor Extraction Emission Limits**
- 4. Appendix 3: Cold-Mix Asphalt Emission Limits**

Memorandum of Understanding
Division of Air Resources
and the Division of Spills Management

Technical Guidance for Regulating and Permitting Air Emissions From
Air Strippers, Soil Vapor Extraction Systems and Cold-Mix Asphalt
Units

BACKGROUND

The Division of Spills Management (DSM) and the Division of Air Resources (DAR) have developed and accepted this document as a means of defining and streamlining the areas of responsibility of each division regarding the installation and operation of air strippers, soil vapor extraction systems and cold-mix asphalt units, as part of a petroleum spill remediation project.

In February 1991, the DSM (as the Division of Water) and the DAR signed a Memorandum of Understanding which addressed air strippers for groundwater remediation projects. The issues related to emissions from soil vapor extraction systems (SVES) and cold-mix asphalt (cold-mix) units were left for a later date. In November 1992, the Department issued Operation and Delegation (O & D) Memorandum #92-31 which authorized the DSM to regulate and permit all remedial activities at spill sites. This O&D Memorandum also authorizes a pilot project to assess the practicality of using Stipulations and consent orders on a routine basis in the DSM. The Stipulations should include all of the substantive requirements of a Department permit for remedial activities. This MOU embodies the requirements and limits agreed upon by the DSM and the DAR for air emissions from air strippers, SVES and cold-mix units, to be applied in accordance with the O & D Memorandum. In addition, the DSM is working with the Division of Regulatory Affairs (DRA) to establish permit procedures to be used by DSM staff in issuing permits for spill cleanup activities when a Stipulation is not used. The same emission limits should apply to all DSM-related remedial activities whether executed within a Stipulation, a permit processed by the DSM, or a permit processed by the DRA (until the Stipulation and DSM permit procedures are finalized).

The DSM and the DAR have agreed to update the MOU from February 1991 to include the SVES and cold-mix unit operations at this time, and to further study the operations to possibly adjust the emission limits on air strippers, SVES and cold-mix units as appropriate. In the meantime, the DSM should use this MOU in implementing the Stipulation and/or the permitting authority provided by the O & D Memorandum.

RESPONSIBLE PARTY FUNDED PROJECTS

For remediation projects directed by the DSM, but funded by the responsible party (RP), the DSM Regional Spill Engineer (RSE) shall:

- (1) issue a Stipulation to the RP, using the emission limits established herein; or
- (2) issue a remedial project permit, using the emission limits established herein; or
- (3) notify the RP of the need to obtain appropriate DEC permits through the DRA (until the Stipulation and the remedial permit procedures are finalized). The emission limits established herein shall be applied to these DEC permits.

The RSE shall be responsible for all application, review, monitoring and enforcement activities for Stipulations and permits issued by the DSM. The DRA and Regional Air Pollution Control Engineer (RAPCE) shall be responsible for all application, review, monitoring and enforcement activities for permits issued by DRA.

DEPARTMENT-FUNDED PROJECTS

The DSM has the ability to fund remedial activities when a responsible party is unwilling, unable or unknown. The DSM shall be responsible for all activities, through authorized standby contractors, undertaken to remediate the spill site. The same emission limits shall apply to the DSM-funded projects as the RP-funded projects.

PROCEDURES

A. Air Strippers

The RSE shall require air emissions treatment, as appropriate, on any air stripper in response to nuisance complaints or in areas with significant potential impact on receptors, regardless of the actual emission rates and concentrations, unless the complaints or potential impacts can be resolved by adjusting the air stripper operating parameters. If nuisance complaints or potential impacts are not a factor, the procedures for constructing and operating an air stripper for spill remediation under a DSM-processed Stipulation or permit are:

1. The RP shall submit an Air Stripper Data Sheet (see Appendix 1) for review by the RSE.
2. The RSE shall evaluate the submitted data in accordance with the emission limit graphs contained in Appendix 1.
3. The RSE shall require air emissions treatment, or an adjustment of design parameters necessary to comply with the emission limit graphs contained in Appendix 1.
4. The RSE shall provide the RAPCE with a copy of the Air Stripper Data Sheet indicating that an air stripper is proposed for the identified remedial project, that the appropriate review of the data has been performed, and that emissions treatment is or is not being required.
5. The RSE shall maintain a file for the submitted air and water quality information for DAR personnel to

review at any time.

6. The RSE may authorize the removal of air emissions treatment when monitoring data from two consecutive months of operation indicates that, according to the emissions graphs, emissions treatment is no longer needed.
7. The RSE shall submit an updated Air Stripper Data Sheet to the RAPCE if the operational parameters change during the remedial project, which changes the status of emissions treatment requirements for the air stripper.
8. The RSE may authorize a start-up period of up to thirty days for an air stripper, provided that the air emissions for benzene are less than ten times the limits in Appendix 1. During the start-up period, emissions should be monitored on a weekly basis, while allowing the operator to adjust the equipment for optimum performance. If the benzene emissions are greater than ten times the limits in Appendix 1, then emissions treatment will be necessary during the start-up period.

The procedures for constructing and operating an air stripper for spill remediation at Department funded projects are the same as at responsible party funded projects, except that the Air Stripper Data Sheet shall be prepared by the RSE or the authorized standby contractor instead of an RP.

B. Soil Vapor Extraction Systems

The RSE shall require air emissions treatment, as appropriate, on any soil vapor extraction system in response to nuisance complaints or in areas with significant potential impact on receptors, regardless of the actual emission rates and concentrations, unless the complaints or potential impacts can be resolved by adjusting the soil vapor extraction system operating parameters. If nuisance complaints or potential impacts are not a factor, the procedures for constructing and operating a soil vapor extraction system (SVES) for spill remediation under a DSM-processed Stipulation or permit are:

1. The RP shall submit a SVES Data Sheet (see Appendix 2) for review by the RSE.
2. The RSE shall evaluate the submitted data in accordance with the emission limit graphs contained in Appendix 2.
3. The RSE shall require air emissions treatment, or an adjustment of design parameters necessary to comply with the emission limit graphs contained in Appendix 2.
4. The RSE shall provide the RAPCE with a copy of the SVES Data Sheet indicating that a SVES is proposed for the identified remedial project, that the appropriate review of the data has been performed, and that emissions treatment is or is not being required.
5. The RSE shall maintain a copy of the submitted SVES Data Sheet on file for possible review by DAR staff.
6. The RSE may authorize the removal of air emissions treatment when monitoring data from two consecutive months of operation indicates that, according to the emissions graphs, emissions treatment is no longer needed.
7. The RSE shall submit an updated SVES Data Sheet to the RAPCE if the operational parameters change during the remedial project, which changes the status of emissions treatment requirements for the SVES.
8. The RSE may authorize a start-up period of up to thirty days for an SVES, provided that the air emissions for benzene are less than ten times the limits in Appendix 2. During the start-up period, emissions should be monitored on a weekly basis, while allowing the operator to adjust the equipment for optimum performance. If the benzene emissions are greater than ten times the limits in Appendix 2, then emissions treatment will be necessary during the start-up period.

The procedures for constructing and operating a SVES for spill remediation at Department funded projects are the same as at responsible party funded projects, except that the SVES Data Sheet shall be prepared by the RSE or the authorized standby contractor instead of an RP.

C. Monitoring

The RSE may direct an RP or the authorized standby contractor to use a combination of field measurements and laboratory analysis to monitor the air emissions from air strippers and soil vapor extraction systems. Field instruments may be used to supplement laboratory analysis, but actual laboratory measurements for benzene concentrations in the air emissions stream shall be made to justify removal of emissions treatment from a discharge stream.

Field instruments can be subject to interferences and have certain limitations depending on the technology used for detection. Some instruments, such as photoionization detectors, will measure an air stream concentration as a total volatile hydrocarbon concentration. Some field instruments, such as Draeger tubes or portable gas chromatographs, can detect specific chemical concentrations. Any particular instrument shall not be identified in the monitoring requirements for field measurements. Rather, provisions shall be made to allow any reasonable field method capable of satisfying the following or similar reporting technique:

1. If a field instrument is designed to measure total volatile hydrocarbon concentrations in an air stream, then an air sample shall be collected from the emissions stack into a sampling bag, such as a Tedlar bag, and the total hydrocarbon concentration shall be measured from the sample bag. The benzene concentration shall be estimated by taking two percent (2%) of the measured total concentration as the estimated benzene concentration. If the estimated benzene concentration is greater than the air emission limits for that system, then laboratory analysis shall be performed to confirm the benzene emission concentration. If the laboratory results indicate a violation of the benzene emission limits, then emissions treatment shall be installed, or the system operating parameters adjusted, to satisfy the emission limits.
2. If a field instrument is designed to measure benzene concentrations specifically, then a sample shall be collected from the emissions stack, and the benzene concentration shall be measured in the sample. If the field measurement indicates a benzene concentration greater than the air emission limits for that system, then laboratory analysis shall be performed to confirm the benzene emission concentration. If the laboratory results indicate a violation of the benzene emission limits, then emissions treatment shall be installed, or the system operating parameters adjusted, to satisfy the emission limits.

D. Cold-Mix Asphalt Units

The procedures for operating a cold-mix asphalt unit at a spill site are:

1. The DSM shall include the DAR in the distribution of cold-mix asphalt unit Beneficial Use Determination (BUD) Approvals upon issuance by the DSM to the cold-mix unit owner/operator. (The DSM will provide DAR with a list of current BUD approvals).
2. The DSM shall limit the processing of gasoline-contaminated soil by cold-mix asphalt units so as not to exceed the concentration and feed rate graph in Appendix 3.
3. The BUD Approval requires the cold-mix unit owner/operator to notify both the RSE and the RAPCE at least fifteen days prior to processing petroleum-contaminated soil at a spill site. The notification shall include the processing, the amount of soil to be processed, and the petroleum products in the contaminated soil to be processed. For gasoline-contaminated soil, the concentration of benzene in the soil, as determined by laboratory analysis, and the processing feed rate shall also be included, to demonstrate compliance with the graph in Appendix 3.
4. If the cold-mix unit owner/operators receive no response from the RSE or the RAPCE within fifteen days of the date of processing, then the owner/operators are allowed to proceed with the contaminated soil processing in accordance with the provisions of their BUD Approvals.
5. The cold-mix asphalt units should be placed as far as possible from residences to avoid potential nuisance complaints and potential impacts.
6. Fugitive dust emissions should be minimized during cold-mix asphalt manufacturing operations.

Signed by Thomas M. Allen, P.E. on 4/14/93

Signed by Salvatore Pagano, P.E. on 4/13/93

Thomas M. Allen, P.E.
Director
Division of Air Resources

Salvatore Pagano, P.E.
Director
Division of Spills Management

Appendix 1

Air Strippers

1. Air Stripper Data Sheet
2. Air Stripper Benzene Emission Limits
3. Figure 1: Air Stripper Benzene Emissions, for Pumping Rates of 10-150 Gallons per Minute
4. Figure 2: Air Stripper Benzene Emissions, for Pumping Rates of 10-60 Gallons per Minute
5. Figure 3: Air Stripper Benzene Emissions, for Pumping Rates of 60-150 Gallons per Minute

Air Stripper Data Sheet

TO: (Regional Spill Engineer) or (File)
FROM: (Responsible Party or Contractor) or (Regional Spill Engineer)

1. Reason for Submittal:

_____ Notice of Operation
_____ Notice of Removal of Emission Control Equipment

2. Spill Name: _____
Spill Location: _____

3. Spiller: _____
Address: _____

4. Spill Number: _____ PIN Number: _____

5. Date Air Stripping Operations Began: ____/____/____

6. Estimated Project Duration: _____ Months or Years

7. Emission Point

- a. Emission I.D. Number: 001 (to be identified on site plan as well)
- b. Ground Elevation Above Sea Level: _____ FT.
- c. Stack Height: _____ FT.
- d. Height Above Nearest Structure: _____ FT.
- e. Stack Inside Dimensions: _____ FT.
- f. Air Exit Temperature: _____ EF
- g. Water Flow-rate: _____ GPM
- h. Air Flow-rate: _____ CFM
- i. Air Exit Velocity: _____ FT/SEC

$$= \frac{\text{Air Flow-rate in CFM}}{\text{Cross Sectional Area of Stack in FT}^2} \div 60$$

- j. Benzene Concentration in Water Influent: _____ UG/L
- k. Distance From Base of Stack to Nearest On-Site Bldg.: _____ FT
- l. Distance From Base of Stack to Nearest Off-Site Bldg.: _____ FT

8. Operation Time

- a. Hours/Day: 24
- b. Days/Year: 365
- c. % Operation by Season: 25% winter 25% summer
25% spring 25% Fall

9. Process Description

Air stripper to remove volatile compounds from groundwater, and to discharge the compounds to the atmosphere via cross-current air flow. (Include description of air discharge treatment if appropriate.)

10. Emission Controls

- _____ Not Needed Based on Analysis of Design Conditions
- _____ Not Needed Based on Analysis of Operating Conditions
- _____ Described Below

11. Control Equipment

- a. I.D. Number: 01 (to be identified on site plan as well)
- b. Control Type:
 - ___ none
 - ___ activated bed adsorber
 - ___ other, explain: _____
 - ___ thermal afterburner
 - ___ catalytic unit
- c. Manufacturer's Name: _____
- d. Model Number: _____
- e. Disposal of Collected Contaminants:
 - ___ landfill off-site
 - ___ recycled in the process
 - ___ other, explain: _____
 - ___ recycled on-site
 - ___ public sewer
- f. Date Emission Control Operations Began: ____/____/____
- g. Expected Useful Life: _____ Months or Years

12. Contaminant

- a. Name: Benzene
- b. CAS Number: 71-43-2
- c. Stripper Water Input: _____ LBS/HR
(= 7g. in GPM x 7j. in UG/L x 4.542 x 10⁻⁷)
- d. Stripper Efficiency: _____ %
- e. Stripper Water Output: _____ LBS/HR
(= 12c. - (12c. x 12d. ÷ 100))
- f. Control Equipment Input: _____ LBS/HR
(= 12c. - 12e.)
- g. Control Equipment Efficiency: _____ %
- h. Control Equipment Output: _____ LBS/HR
(= 12f.- (12f. x 12g. ÷ 100))
- i. Permissible Water Input Conc.: _____ UG/L
- j. Permissible Air Output Conc.: _____ LBS/HR

13. Fuels for Combustion Vented to the Same Emission Point

a. Fuel Used:

___ none ___ oil ___ gas
___ other, explain:

b. Fuel Type:

___ #2 fuel oil ___ natural gas
___ #4 fuel oil ___ LP gas
___ diesel fuel ___ other, explain:

c. Amount: _____ x 10³ GALS/YR (oil)
 x 10³ FT³/YR (gas)

d. For Oil Only, Sulfur Content: _____ % By Weight

e. For Gas Only, Heating Value: _____ BTU/FT³

Air Stripper Benzene Emission Limits

Stack Height (feet)	Water Flowrate (gal/min)	Maximum Benzene Influent (mg/l or ppm)
15	10	0.96875
	25	0.375
	60	0.15625
	100	0.0625
	150	0.0625
20	10	1.8125
	25	0.71875
	60	0.28125
	100	0.1875
	150	0.125
25	10	2.84375
	25	1.125
	60	0.53125
	100	0.28125
	150	0.1875
30	10	4.3125
	25	1.6875
	60	0.71875
	100	0.5
	150	0.28125

Figure 1

Air Stripper Benzene Emissions

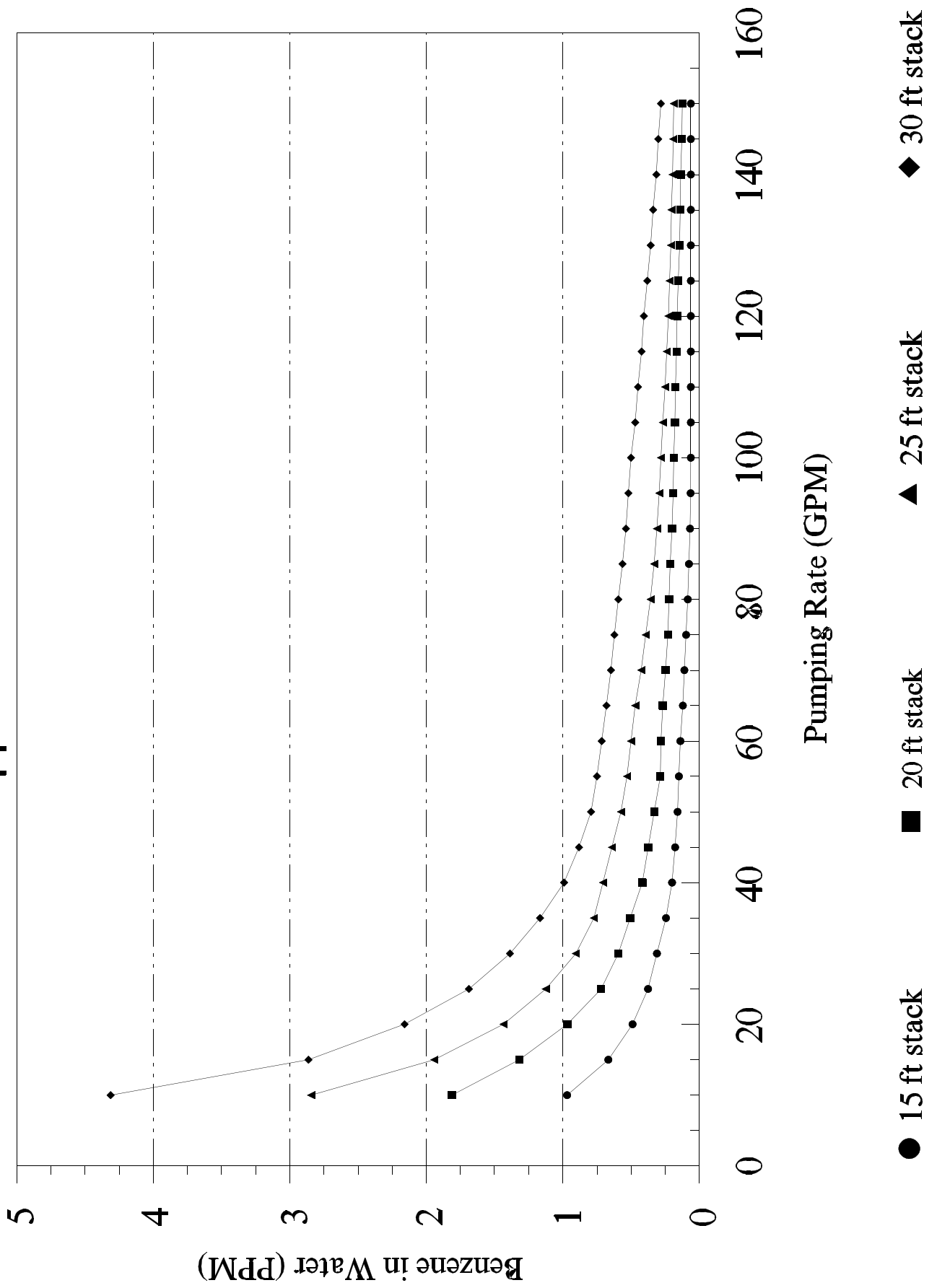


Figure 2

Air Stripper Benzene Emissions

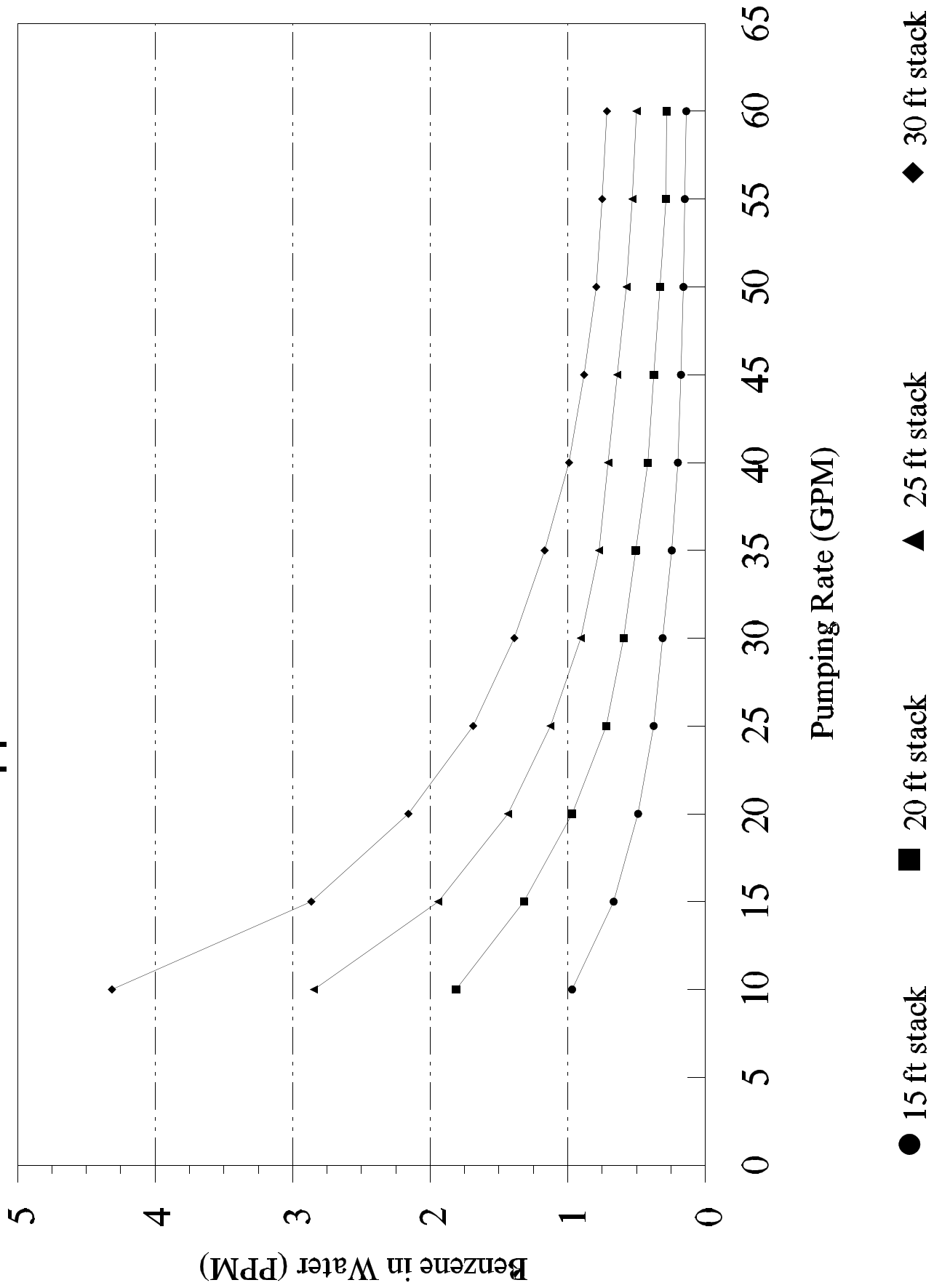
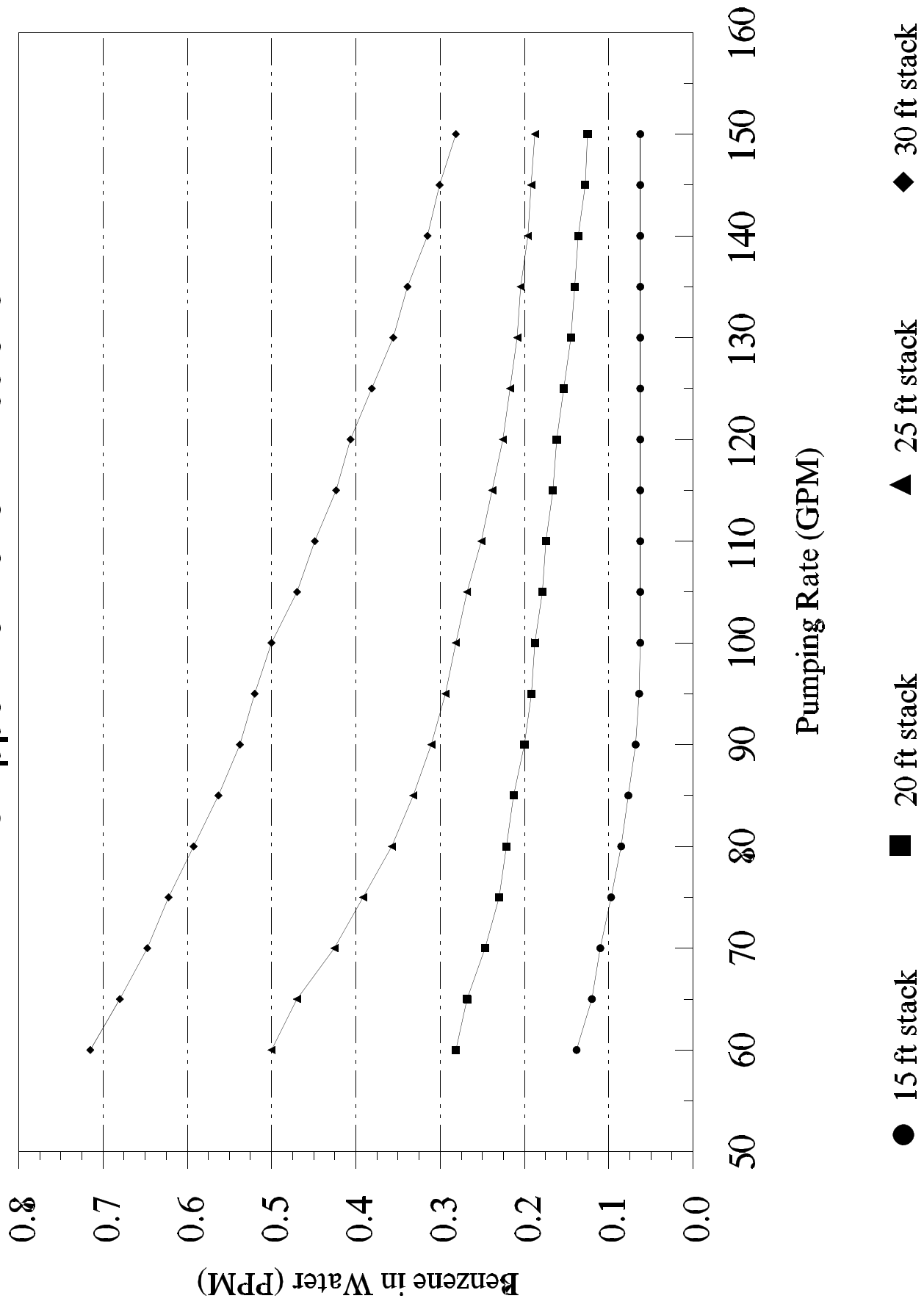


Figure 3

Air Stripper Benzene Emissions



Appendix 2

Soil Vapor Extraction Systems

1. SVES Data Sheet
2. SVES Benzene Emission Limits
3. Figure 4: Soil Vapor Extraction Benzene Emissions,
in Units of Parts per Million-Volume
4. Figure 5: Soil Vapor Extraction Benzene Emissions,
in Units of Micrograms per Cubic Meter
5. Figure 6: Soil Vapor Extraction Benzene Emissions,
in Units of Pounds per Hour

SVES Data Sheet

TO: (Regional Spill Engineer) or (File)
FROM: (Responsible Party or Contractor) or (Regional Spill Engineer)

1. Reason for Submittal:
____ Notice of Operation
____ Notice of Removal of Emission Control Equipment
2. Spill Name: _____
Spill Location: _____

3. Spiller: _____
Address: _____

4. Spill Number: _____ PIN Number: _____
5. Start-Up Date: ____/____/____
mo day yr
6. Estimated Project Duration: _____ Months or Years
7. Emission Point:
 - a. Emission I.D. Number: 001
 - b. Ground Elevation Above Sea Level: _____ FT
 - c. Stack Height: _____ FT
 - d. Height Above Nearest Structure: _____ FT
 - e. Stack Inside Dimensions: _____ FT
 - f. Air Exit Temperature: _____ F
 - g. Air Flow-rate: _____ CFM
 - h. Air Exit Velocity: _____ FT/SEC
= $\frac{\text{Air Flow-rate in CFM}}{\text{Cross-sectional Area of Stack in FT}^2 \times 60}$
 - i. Benzene Concentration in Air Influent: _____ UG/M³
_____ LB/HR
_____ PPM-V
 - j. Distance From Base of Stack to Nearest On-Site Bldg: _____ FT
 - k. Distance From Base of Stack to Nearest Off-Site Bldg: _____ FT
8. Operation Time
 - a. Hours/Day: 24
 - b. Days/Year: 365
 - c. % Operation by Season: 25% Winter 25% Summer
25% Spring 25% Fall
9. Process Description
Soil vapor extraction to remove volatile compounds from petroleum-contaminated soil, and to discharge the compounds to the atmosphere.
10. Emission Controls

- Not Needed Based on Analysis of Pilot Test Data
- Not Needed Based on Analysis of Operating Data
- Described Below

11. Control Equipment

- a. I.D. Number: 01 (to be identified on site plan as well)
- b. Control Type:
 - none thermal afterburner
 - activated bed adsorber catalytic unit
 - other, explain: _____
- c. Manufacturer's Name: _____
- d. Model Number: _____
- e. Disposal of Collected Contaminants:
 - landfill off-site recycled on-site
 - recycled in the process public sewer
 - other, explain: _____
- f. Date Emission Control Operations Began: ____/____/____
- g. Expected Useful Life: _____ Months or Years

12. Contaminant

- a. Name: Benzene
- b. CAS Number: 71-43-2
- c. Control Equipment Input (= 7i.): _____ LBS/HR (or UG/m³ or PPM-V)
- d. Control Equipment Efficiency: _____%
- e. Control Equipment Output (= (1-12d.) x 12c.): _____ LBS/HR (or UG/m³ or PPM-V)
- f. Permissible Air Output Conc.: _____ LBS/HR (or UG/m³ or PPM-V)

13. Fuels for Combustion Vented to the Same Emission Point

- a. Fuel Used:
 - none oil gas
 - other, explain: _____
- b. Fuel Type:
 - #2 fuel oil natural gas
 - #4 fuel oil LP gas
 - diesel fuel other, explain: _____
- c. Amount: _____ x 10³ GALs/YR (oil)
 _____ x 10³ FT³/YR (gas)
- d. For Oil Only, Sulfur Content: _____ % By Weight
- e. For Gas Only, Heating Value: _____ BTU/FT³

**Soil Vapor Extraction System (SVES)
Benzene Emission Limits**

Stack Height (feet)	Air Flow (cfm)	Maximum Benzene Emissions (ppm-v)	Maximum Benzene Emissions (ug/m³)	Maximum Benzene Emissions (lbs/hr)
15	50	8.00	26360	0.00494
	100	4.00	13180	0.00494
	150	2.66	8787	0.00494
	200	2.00	6590	0.00494
	250	1.60	5272	0.00494
20	50	14.88	49069	0.00919
	100	7.44	24535	0.00919
	150	4.96	16356	0.00919
	200	3.72	12267	0.00919
	250	2.98	9814	0.00919
25	50	24.10	79458	0.01488
	100	12.05	39729	0.01488
	150	8.03	26486	0.01488
	200	6.02	19864	0.01488
	250	4.82	15892	0.01488
30	50	35.72	117806	0.02206
	100	17.86	58903	0.02206
	150	11.91	39269	0.02206
	200	8.93	29452	0.02206
	250	7.14	23561	0.02206

Figure 4

Soil Vapor Extraction Benzene Emissions

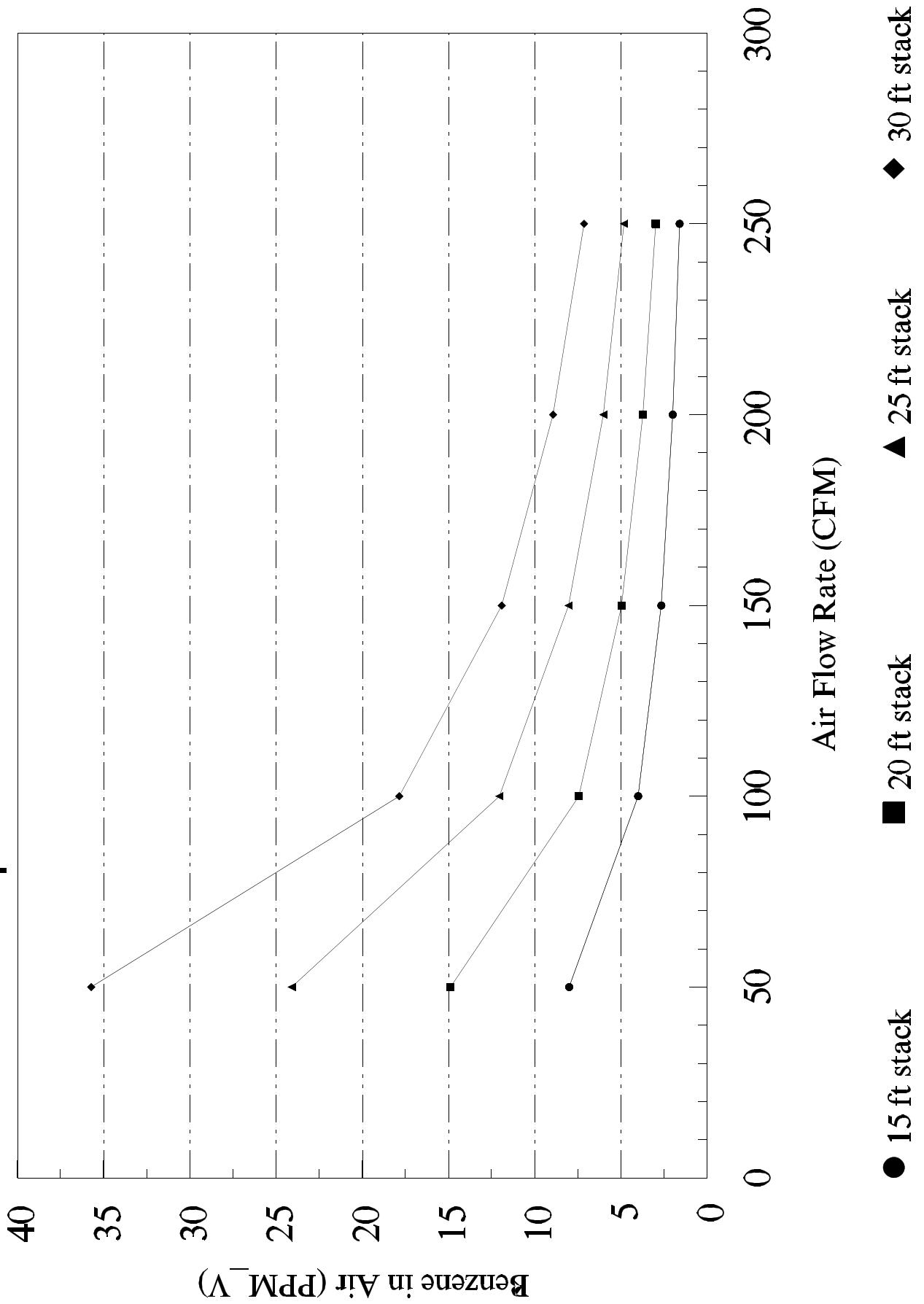


Figure 5

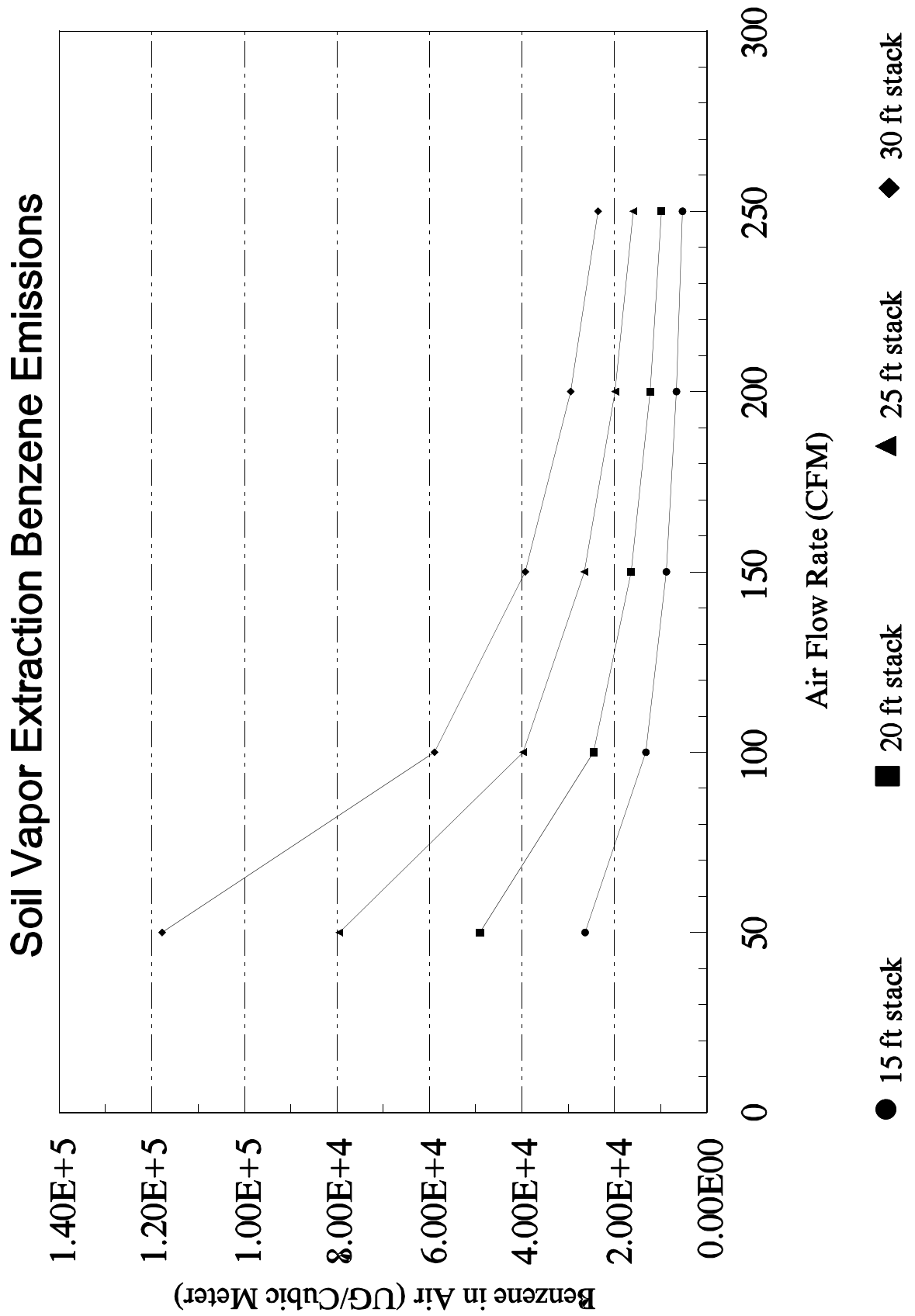
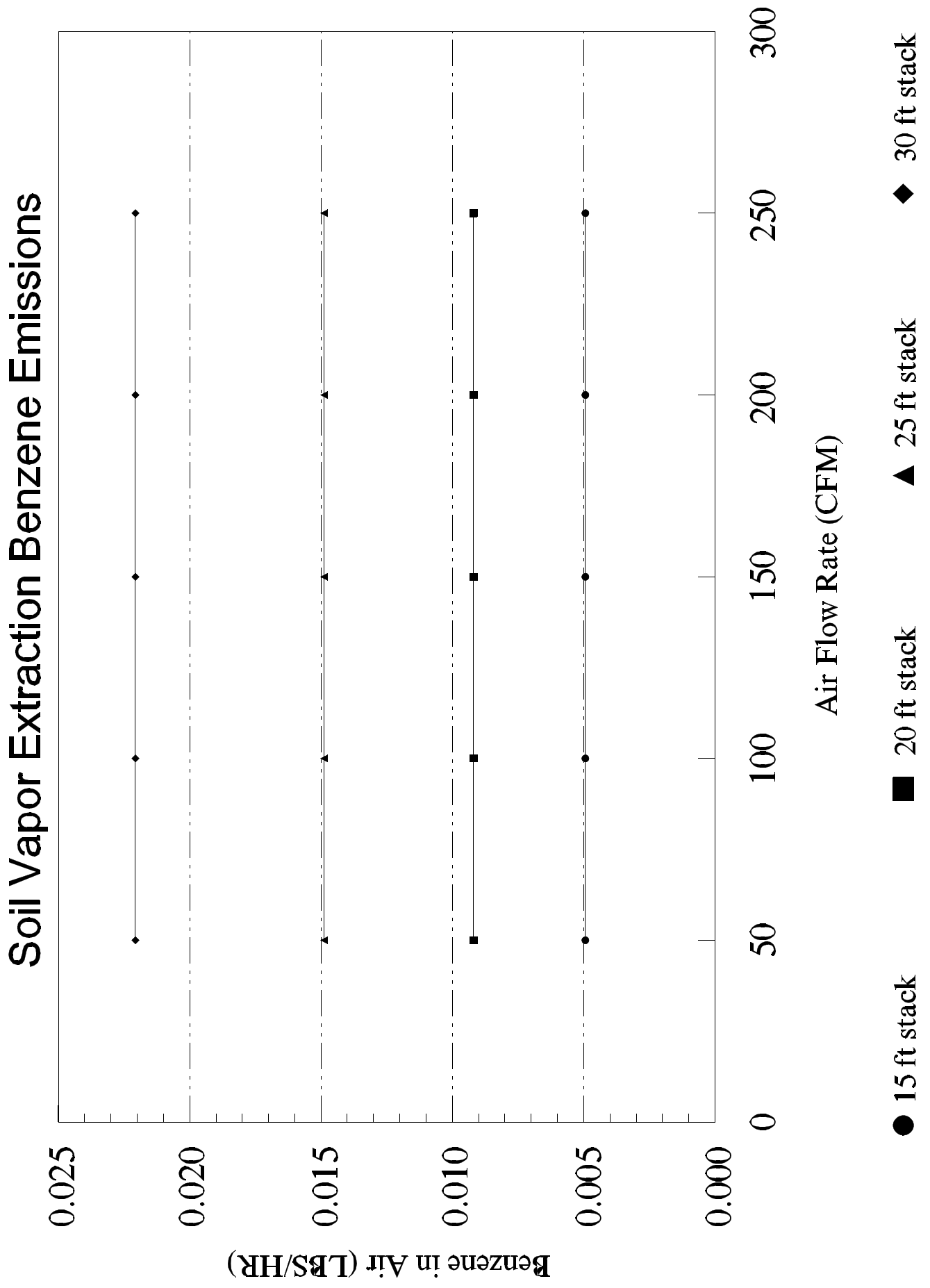


Figure 6



Appendix 3

Cold-Mix Asphalt Units

1. Cold-Mix Asphalt Soil Processing Rates for Gasoline-Contaminated Soil
2. Figure 7: Cold-Mix Asphalt Benzene Emissions for Gasoline-Contaminated Soil

Cold-Mix Asphalt Soil Processing Rates for Gasoline-Contaminated Soil

Maximum Soil Processing Rate (tons/hr)	Soil Benzene Concentration (mg/kg), (ppm)	Soil Benzene Concentration (ug/kg), (ppb)
10	5.000	5000
20	2.500	2500
30	1.667	1667
40	1.250	1250
50	1.000	1000
60	0.833	833
70	0.714	714
80	0.625	625
90	0.556	556
100	0.500	500
110	0.455	455
120	0.416	416
130	0.385	385
140	0.357	357
150	0.333	333
160	0.313	313
170	0.294	294
180	0.278	278
190	0.263	263
200	0.250	250

Figure 7

