UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION 7

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ENVIRONMENTAL PROTECTION
AGENCY-REGION VII
REGIONAL HEARING CLERK

IN THE MATTER OF:

General Services Administration Bannister Federal Complex Kansas City, Missouri	Docket No: CERCLA-07-2010-0006 ENVIRONMENTAL WORK AGREEMENT FOR SITE INVESTIGATIONS, REMOVAL ASSESSMENT AND RESPONSE ACTIONS UNDER CERCLA SECTIONS 101, 104, 107, 120, and 122

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I. INTRODUCTION

This Environmental Work Agreement ("Agreement") is entered into by the United States Environmental Protection Agency ("EPA") and the United States General Services Administration ("GSA"). This Agreement concerns the performance of Site Investigations, Removal Assessments, and Response Actions at the GSA facility within the Bannister Federal Complex in Kansas City, Missouri ("Site"). This Agreement is based on the information available to the Parties on the Effective Date and is entered into by the Parties without trial or adjudication of any issues of fact or law:

II. JURISDICTION

1. GSA and EPA enter into this Agreement pursuant to their respective authorities contained in Sections 101, 104, 107, 120, and 122 of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, 42 U.S.C §§ 9601, 9604, 9607, 9620, and 9622 ("CERCLA"); and Executive Order 12580 delegated EPA's authority to Regional Administrators on September 13, 1987, by EPA Delegation No. 14-14-C and this authority has been further redelegated to the EPA Region 7, Regional Administrator.

III. STATEMENT OF PURPOSE

2. In entering into this Agreement, the objectives of the Parties are:

   i. For GSA to conduct environmental investigations including Site Investigations (SI), Removal Assessments (RA) and Response Actions under the oversight of EPA to perform environmental activities in accordance with this Agreement and the Work Plan required by this Agreement and to address the contamination identified in the Site Preliminary Assessment and Site Inspection (May 2008) and as otherwise subsequently identified during the SI and SA.

ii. To provide for oversight by EPA of the actions undertaken by GSA pursuant to this Agreement.

iii. To facilitate exchange of information by the Parties.

iv. The activities conducted under this Agreement shall be consistent with CERCLA and the National Oil and Hazardous Substance Pollution Contingency Plan ("NCP"), 40 C.F.R. Part 300, and EPA Guidance. In addition, GSA activities conducted under this Agreement shall be consistent with CERCLA § 120.

v. To facilitate communication with the public and the creation of a Community Advisory Panel to provide input to the agencies on matters related to environmental conditions and redevelopment of the Bannister property.

IV. PARTIES BOUND

3. This Agreement shall apply to and be binding upon GSA and EPA.

4. Under no condition shall a party under this Agreement utilize the services of any consultant, prime contractor, or subcontractor who has been suspended, debarred, or voluntarily excluded within the scope of 40 C.F.R. Part 32 or under the Federal Acquisition Regulation at 48 C.F.R. Subpart 9.4 et. Seq.

5. Each undersigned representative of a Party certifies that he or she is fully authorized to enter into the terms and conditions of this Agreement and certifies that he/she is fully authorized to legally bind such Party to this Agreement.

V. DEFINITIONS

6. The terms used in this Agreement shall have the same definitions as the terms defined in Section 101 of CERCLA, 42 U.S.C. § 9601, and the NCP, 40 C.F.R. § 300.5

7. Additionally, the following terms used in this Agreement are defined as follows:

i. "Agreement" shall mean this Environmental Work Agreement for Site Investigations, Removal Assessments, and Response Actions and shall include all Attachments and Appendices to this document. All such Attachments and Appendices are integral parts of this Agreement and shall be an enforceable part of this Agreement. Deliverables submitted and approved shall be deemed incorporated herein and enforceable hereunder.

ii. "Applicable or Relevant and Appropriate Requirement" or "ARAR" shall mean any standard, requirement, criterion, or limitation as provided in Section 121(d)(2) of CERCLA, 42 U.S.C. § 9621(d)(2), and the NCP;

iii. "Day" means calendar day unless otherwise noted in this Agreement. Any submittal that, under the terms of this Agreement, would be due on a Saturday, Sunday, or Federal or State holiday shall be due on the following business day;

iv. "Deliverable" shall mean the Health and Safety Plan, Work Plans, QA/QC Plan and Schedule, the Response Actions Complete Report, and the documents identified in GSA's final approved Work Plan, and any subsequent requirements for further Deliverables or modifications to such Deliverables;

v. "Effective Date" shall be the date EPA signs this Agreement, after signature by GSA.

vi. "EPA" shall mean the United States Environmental Protection Agency and any successor departments or agencies of the United States.

vii. "GSA" shall mean the United States General Services Administration and any successor departments or agencies of the United States.

viii. "MDNR" shall mean the Missouri Department of Natural Resources.

ix. "Parties" shall mean EPA and GSA, while "Party" shall mean any one of those entities;

x. "Response Costs" shall mean all costs, including, but not limited to, direct and indirect costs, that EPA incurs in reviewing or developing plans, reports, and other items pursuant to this Agreement, verifying the Work, or otherwise implementing and overseeing this Agreement, including, but not limited to, payroll costs, contractor costs, travel costs, laboratory costs. Such costs are only for work above and beyond the funded core mission EPA carries out as Federal regulator for CERCLA, RCRA, TSCA and related programs;

xi. "Site" shall mean the real properties under GSA ownership, custody, or control within the Bannister Federal Complex as described in the Memorandum of Agreement signed by the General Services Agency, the Department of Energy, and the Corps of Engineers in July 1993. (Attachment 1) The site is also depicted in the map marked as (Attachment 2). The Site specifically excludes those portions of the Bannister Federal Complex either owned or controlled by the United States Department of Energy, National Nuclear Security Administration, its employees; agents, contractors, successors or assigns, as well as those portions of the Bannister Federal Complex for which response actions currently are being undertaken by the United States Department of Energy, National Nuclear Security Administration, its employees, agents, contractors, successors or assigns;

xii. "Waste Material" shall mean 1) any "hazardous substance" under Section 101(14) of CERCLA, 42 U.S.C. § 9601(14); 2) any pollutant or contaminant under Section 101(33) of CERCLA, 42 U.S.C. § 9601(33); and 3) any "solid waste" under Section 1004(27) of RCRA, 42 U.S.C. § 6903(27);

xiii. "Work" shall mean all activities the GSA is required to perform under this Agreement; and

xiv. "Work Plan" shall mean a work planning document, prepared specifically under Section IX including a timetable, plan, or schedule that indicates the time and sequence of events.

VI. FINDINGS OF FACT

8. For purposes of this Agreement, the following constitutes a summary of the facts upon which this Agreement is based. None of the facts related herein shall be considered admissions by any Party, and they shall not be used for any purpose other than determining the jurisdictional basis of this Agreement.

9. The Bannister Federal Complex is located at 1500 East Banister Road, Kansas City, Jackson County, Missouri. The 300 acre federal complex is bordered on the east by the Blue River and Blue River Road, on the south by Bannister Road and Indian Creek, on the west by Troost Avenue, and on the north by a wooded bluff and Legacy Park.

10. In May 2008, GSA completed a preliminary environmental assessment of the GSA managed properties within the federal complex, and the results of that assessment are

documented in the May 2008 Preliminary Assessment and Site Inspection ("PA/SI") and Addendum 1 to PA/SI (Attachment 3). The PA/SI evaluated numerous areas of potential environmental concern at the GSA managed portion of the federal complex. Based upon the results of the PA/SI, no further investigation or cleanup is needed at a number of areas that were evaluated, including the photo development center, separator basins, and stained areas. Focused further investigation and assessment is needed at limited areas of Buildings 1, 2, 4, 28 and 50, to further assess potential contamination sources due to historic use and handling of solvents, oils, and other materials containing hazardous substances. Potential pathways of exposure for these sources are soil, ground and surface water, and air. GSA is preparing and will submit to EPA a draft Work Plan to investigate these sources and potential sources as identified in the PA/SI. Upon acceptance of the Work Plan by EPA, GSA will complete the aforementioned investigations.

VII. EPA REGULATORY DETERMINATIONS

11. For purposes of this Agreement, the following constitutes a summary of EPA's Regulatory Determinations upon which this Agreement is based. None of the Regulatory Determinations related herein are admissions nor are they legally binding upon any Party with respect to any unrelated claims of person(s) not a Party to this Agreement.

12. Substances have been identified at the Site which are "hazardous substances" as defined in Section 101(14) of CERCLA, 42 U.S.C. § 9601(14), or constitute "any pollutant or contaminant" that may present an imminent and substantial danger to public health or welfare as set forth in Section 104(a)(1) of CERCLA, 42 U.S.C. § 9604(a)(1).

13. The presence of hazardous substances at the Site or the past, present or potential migration of hazardous substances currently at or emanating from the Site, constitute actual and/or threatened "releases" as defined in Section 101(22) of CERCLA, 42 U.S.C. § 9601(22).

14. GSA is a "person" as defined in Section 101(21) of CERCLA, 42. U.S.C. § 9601(21).

15. The Site is a "facility" as defined in Section 101(9) of CERCLA, 42 U.S.C. § 9601(9), and GSA is the present owner and/or operator of the facility within the meaning of Section 107 of CERCLA, 42 U.S.C. § 9607.

16. EPA has determined the actions required by this Agreement are necessary to protect the public health or welfare or the environment, are in the public interest, 42 U.S.C. § 9622(a), are consistent with CERCLA and the NCP, 42 U.S.C. §§ 9604(a)(1) and 9622(a).

VIII. NOTICE TO STATE

17. By providing a copy of this Agreement to MDNR, EPA and GSA are notifying the State of Missouri of this Agreement.

IX. WORK TO BE PERFORMED

18. All work performed under this Agreement shall be under the direction and supervision of, or in consultation with, qualified personnel with expertise in hazardous substances response actions. GSA has contracted with Terracon Consultants Inc. to conduct environmental investigations on their behalf. GSA has also contracted with Tetra Tech Inc. to act as environmental project manager over Terracon on GSA's behalf. Each contract was competitively bid among multiple vendors and will provide the services necessary to complete all EPA-directed action on the GSA portion of the Bannister Federal Complex. GSA has issued Tetra Tech Inc. a Scope of Work for developing a draft Work Plan for further environmental

investigation. The scope includes all recommendations for further investigation contained in the GSA 2008 PA/SI report. The Work plan shall encompass investigative work to be performed by Terracon Consultants upon acceptance in final form by EPA.

19. GSA shall be responsible for ensuring that activities and Deliverables are performed in accordance with the terms and conditions of this Agreement. All work performed under this Agreement shall be in accordance with the schedules set out in the Work Plan. GSA and their contract representatives will conduct the Site Investigations, Removal Assessments, and Response Actions in accordance with the Work Plan.

20. The Site Investigations, Removal Assessments and any necessary response actions conducted at the Site under this Agreement shall be performed in a manner not inconsistent with CERCLA and with the NCP.

21. GSA shall complete the activities indicated by EPA, identified in the PA/SI and as listed in the task order Statement of Work to Tetra Tech Inc.

22. GSA shall submit to EPA the Draft Work Plan indicated previously, within 60 calendar days of the effective date of this Agreement To the extent that information concerning the details of a particular item does not yet exist so that it can be described in the Work Plan, the Work Plan shall set forth plans for submittal of supplements to the Work Plan, including schedules. All references to and enforcement of the Work Plan shall also be applicable to any Work Plan supplement(s).

23. Within 60 calendar days of GSA's receipt from EPA of written approval on part or all of any Work Plan, GSA shall commence implementation of the parts of the Work Plan, which EPA has approved, and complete implementation in accordance with the portions of the Work Plan, including any schedules, which EPA has approved.

24. All Deliverables required in response to written request by EPA shall be incorporated into and enforceable under this Agreement. In the event that EPA approves a portion of a Deliverable required to be submitted to EPA, the approved portion shall be enforceable under this Agreement. In the event of conflict between this Agreement and any document attached hereto, incorporated in or enforceable hereunder, the provisions of this Agreement shall control.

25. This agreement is not intended to address contamination on GSA property that has migrated from off-site properties and is the responsibility of non-parties. Any work to address such contamination from off-site sources will be the subject of separate negotiations between EPA and GSA.

26. In addition to the information and documents otherwise required by this Agreement, GSA shall provide to EPA, upon written request, any and all technical information and documents in its possession, custody or control related to the response action at the Site including, but not limited to, Site geophysical or analytical data (including raw data); Site safety data; Site monitoring data; operational logs; copies of all hazardous waste manifests; information and documents concerning GSA's compliance with Quality Assurance requirements of this Agreement; information and documents relating to GSA's efforts to secure access; and information and documents relating to any project delays. Nothing herein shall be interpreted as limiting the inspection and information gathering authority of EPA under Federal law.

27. Within 60 calendar days of the date GSA concludes it has completed implementation of all the Work directed by EPA, GSA shall submit a written Response Actions Completion ("RAC") Report signed by GSA's signatory authority to EPA requesting EPA approval of GSA's determination that Work is completed. The RAC Report shall detail the work

undertaken to implement the Work specifically directed by EPA, and any provisions for maintenance at the Site of institutional controls (land use controls). EPA will review the adequacy of GSA's implementation of the Work, as documented by the RAC Report and accomplishment of the items in the Work Plan.

28. Off-Site Shipments

a. GSA shall, prior to any off-Site shipment of Waste Material from the Site to an out-of-state waste management facility, provide written notifications of such shipment of Waste Material to the appropriate state environmental official in the receiving facility's state and EPA's project coordinator. However, this notification requirement shall not apply to any off-Site shipments when the total volume of all such shipments will not exceed 10 cubic yards.

b. GSA shall include in the written notification the following information: (i) the name and location of the facility to which the Waste Material is to be shipped; (ii) the type and quantity of the Waste Material to be shipped; (iii) the expected schedule for the shipment of the Waste Material; and (iv) the method of transportation. GSA shall notify the state in which the planned receiving facility is located of major changes in the shipment plan, such as a decision to ship the Waste Material to another facility within the same state or to a facility in another state.

29. GSA shall not commence any Work except in conformance with the terms of this Agreement. GSA shall not commence implementation of the Work Plan or part thereof

developed hereunder until receiving written EPA approval of the Work Plan or part thereof pursuant to Section X.

X. SUBMITTAL AND FINALIZATION OF DELIVERABLES

30. GSA shall complete and transmit each final Deliverable to EPA on or before the corresponding deadline indicated in the final, approved Work Plan. Deliverables are initially prepared by GSA in draft, subject to review, comment, modification, or approval by EPA.

31. Review of any Deliverable by EPA may concern all aspects of the Deliverable (including completeness) and may include, but is not limited to, technical evaluation of any aspect of the Deliverable, and consistency with CERCLA, the NCP and any EPA guidance or policy. Comments by EPA will be provided with adequate specificity so that GSA may respond to the comment and make changes to the Deliverable. GSA shall revise the draft Deliverable in accordance with EPA comments. Within 60 days of GSA receipt of EPA's comments, GSA shall transmit to EPA a draft final Deliverable, which shall include GSA's response to all written comments, received within the comment period. Only draft Final Deliverables shall be subject to the Dispute Resolution provisions of the Agreement. All Final Deliverables shall be provided to MDNR.

32. Documents, including plans, reports, sampling results and other correspondence to be submitted pursuant to this Agreement, shall be sent by email or postal mail in electronic format between the EPA and GSA Project Managers designated pursuant to Section XVI. GSA agrees to fully correct all deficiencies, incorporate, and integrate all information in comments supplied by EPA pursuant to Paragraph 33, unless one of the Parties invokes Dispute Resolution.

XI. SUBSEQUENT MODIFICATIONS OF DELIVERABLES

33. Following finalization of any Deliverable pursuant to Section X above, either Party may seek to modify the Deliverable, including seeking additional fieldwork, pilot studies, computer modeling, or other supporting technical work, only as provided in this Section.

34. Either Party may seek to modify a Deliverable after finalization if it determines that, based on new information (i.e., information that became available, or conditions that became known, after the Deliverable was finalized) that the requested modification is necessary or that the modification assists in the evaluation of impacts on the public health or the environment or in protecting human health and/or the environment. A Party may seek such a modification by submitting a concise written request to the Project Manager of the other Party. The request shall specify the nature of the requested modification and the new information.

35. In the event that a written agreement between the Parties is reached, the modification shall be incorporated by reference and become fully enforceable under this Agreement. In the event that an agreement is not reached by the Project Managers on the need for a modification, dispute resolution may be invoked by a Party to determine if such modification shall be made.

36. Nothing in this Section shall alter EPA's ability to request the performance of additional Work at the Site.

XII. NOTIFICATION OF RELEASES

37. In the event of any action or occurrence during performance of the Work which causes or threatens a release of Waste Material from the Site that constitutes an immediate threat to public health or welfare or the environment, GSA shall immediately take all appropriate action. GSA shall also immediately notify the EPA Project Manager, or in the event of his/her

unavailability, the Region 7 Spill Line at 913-281-0991 of the incident or Site conditions. The EPA is responsible for conducting any emergency Removal Actions because that authority has not been delegated to GSA by Executive Order 12580. In the event that GSA fails to otherwise take appropriate response action as required by this paragraph, and EPA takes such action instead, GSA shall reimburse EPA all costs of the response action not inconsistent with the NCP pursuant to Section XXIII (Payment of EPA's Response Costs).

38. In addition, in the event of any release of a hazardous substance from the Site, GSA shall immediately notify the National Response Center at 800-424-8802. GSA shall submit a written report to EPA within seven days after each release, setting forth the events that occurred and the measures taken or to be taken to mitigate any release of endangerment caused or threatened by the release and to prevent the reoccurrence of such a release. This reporting requirement is in addition to, and not in lieu of, reporting under Section 103(c) of CERCLA, 42 U.S.C. § 9603(c), and Section 304 of the Emergency Planning and Community Right-To-Know Act of 1986, 42 U.S.C. § 11004, *et seq.*

39. The following applies to situations other than Emergency Response as discussed in Paragraph 37, above.

a. In the event that EPA determines that activities conducted pursuant to this Agreement or any other circumstances or activities may create an imminent and substantial endangerment to the health or welfare of the people on the Site or in the surrounding area or the environment, EPA may determine that GSA should cease further implementation of the Work or any portion of the Work, pursuant to this Agreement for such period of time as needed to abate the danger. GSA will cease implementation of the work until EPA determines that the danger is abated.

b. In the event that GSA determines that Work undertaken in furtherance of this Agreement or any other circumstances or activities at the Site may create an imminent and substantial endangerment to the health or welfare of the people on the Site or in the surrounding area or to the environment, GSA may cease implementation of the Work or portions of the Work. GSA shall notify EPA as soon as is possible, but not later than 24 hours after such stoppage of Work, and provide EPA with documentation of its analysis in reaching this determination. If EPA disagrees with GSA's determination, it may require GSA to resume implementation of this Agreement.

c. If EPA concurs in the work stoppage by GSA, or if EPA requires or orders a Work stoppage, GSA's obligations shall be suspended and the time periods for performance of that Work, as well as the time period for any other Work dependent upon the Work that was stopped, shall be extended pursuant to this Agreement.

d. Any disagreements pursuant to this Paragraph 39 shall be resolved through the Dispute Resolution procedures of this Agreement by referral directly to the Dispute Resolution Committee.

e. Upon confirmation by EPA that there is an imminent threat to human health, welfare or the environment, GSA shall take all appropriate action to remove the threat. Within 30 days following the completion of the removal action, GSA shall provide EPA with a report detailing the removal actions taken by GSA.

XIII. PROGRESS REPORTS

40. In addition to the Deliverables set forth in Section IX of this Agreement, GSA shall provide to EPA monthly progress reports by the 10th day of the following month. These progress reports shall: (a) describe the actions which have been taken to comply with this Agreement during that month; (b) include all results of sampling and tests and all other data received by GSA; (c) describe work planned for the next two months with schedules relating such work to the overall project schedule for Work completion; and (d) describe all problems encountered and any anticipated problems, and actual or anticipated delays, and solutions developed and implemented to address any actual or anticipated problems or delays.

41. Laboratory reports shall be made available for review by the Parties immediately upon completion of laboratory analysis.

XIV. QUALITY ASSURANCE AND SAMPLING

42. All sampling and analyses performed pursuant to this Agreement shall conform to EPA direction, approval, and guidance regarding sampling, quality assurance/quality control ("QA/QC"), data validation, and chain of custody procedures and the Uniform Federal Policy for Quality Assurance Project Plans (UFP-QAPP). GSA shall ensure that the laboratory used to perform the analyses participates in a QA/QC program that complies with the appropriate EPA guidance. GSA shall follow, as appropriate, "QA/QC Guidance for Removal Activities: Sampling QA/QC Plan and Data Validation Procedures" (OSWER Directive No. 9360.4-01, April 1, 1990), as guidance for QA/QC and sampling. GSA shall only use laboratories that have a documented Quality System that complies with ANSI/ASQC E-4 1994, "Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs" (American National Standard, January 5, 1995), and "EPA Requirements

for Quality Management Plans (QA/R-2) (EPA/240/B-01/002, March 2001)," or equivalent documentation as determined by EPA. EPA may consider laboratories accredited under the National Environmental Laboratory Accreditation Program ("NELAP") as meeting the Quality System requirements.

43. Upon request by EPA, GSA shall have such a laboratory analyze samples submitted by EPA for QA monitoring. GSA shall provide to EPA the QA/QC procedures followed by all sampling teams and laboratories performing data collection and/or analysis.

44. Upon request by EPA, GSA shall allow EPA or its authorized representatives to take split and/or duplicate samples. GSA shall notify EPA not less than 10 days in advance of any sample collection activity, unless shorter notice is agreed to by EPA. EPA shall have the right to take any additional samples that EPA deems necessary. Upon request, EPA shall allow GSA to take split or duplicate samples it takes as part of its oversight of GSA's implementation of the Work.

XV. ACCESS

45. Without limitation on any authority conferred on them by law, authorized representatives of the EPA shall have authority to enter the Site at all reasonable times for the purposes of, among other things: (1) inspecting records, operating logs, contracts, and other documents relevant to implementation of this Agreement; (2) reviewing progress of GSA, its contractors, or agents in implementing this Agreement; (3) conducting such tests as any of the Project Managers deem necessary; and (4) verifying the data submitted to EPA by GSA.

46. To the extent that this Agreement requires access to property not owned and controlled by GSA, GSA shall, pursuant to CERCLA § 104, make best efforts to obtain access and to obtain signed access agreements for itself, its contractors, agents, and EPA, and provide

EPA with copies of such agreements. GSA may request the assistance of EPA in obtaining access, and upon such request, EPA may obtain the required access.

47. Nothing in this Agreement shall be construed to limit the discretion of GSA or EPA to exercise the authority of the President under Section 104(e) of CERCLA, 42 U.S.C. § 9604(e).

XVI. PROJECT MANAGERS

48. EPA and GSA shall each designate a Project Manager for the purpose of overseeing the implementation of this Agreement. A Party may change its designated Project Manager by notifying the other Party, in writing, within five days of the change. Communications between the Parties concerning the terms and conditions of the Agreement shall be directed through the Project Managers as set forth in this Agreement. Each Project Manager shall be responsible for assuring that all communications from the other Project Manager are appropriately disseminated and processed by the respective Agencies. The Project Managers shall meet approximately once a month, except as otherwise agreed by the Parties, to review and discuss the progress of Work being performed at the Site and the preparation of Deliverables.

49. To the maximum extent possible, communications between the Parties shall be directed to the Project Manager. Currently identified Project Managers shall be as follows:

a. Three (3) copies of documents submitted to EPA should be sent to :

Ronald Hammerschmidt, Ph.D.
Project Manager
US Environmental Protection Agency, Region 7
901 North 5th Street
Kansas City, Kansas 66101

b. Three (3) copies of documents should be sent to GSA at:

Courtney Springer
Project Manager

General Services Administration
1500 East Bannister Road
Kansas City, Missouri

XVII. RECORD PRESERVATION

50. GSA shall preserve all records and documents in its possession or in the possession of its divisions, employees, agents, accountants, contractors, or attorneys that relate to the presence of hazardous wastes and constituents, hazardous substances, pollutants, and contaminants at the Site or to the implementation of this Agreement. The documents/records shall be retained pursuant to Document Retention Standards as required by applicable law. GSA shall notify EPA at least 45 days prior to destruction or disposal of any such documents or records. Upon request by EPA, GSA shall make available such records or documents, or true copies to EPA. After termination of this Agreement, documents may be converted to permanent electronic or optical media and paper originals disposed of after 45 days notification to EPA, unless otherwise required by law.

51. GSA may assert that certain documents, records and other information are privileged under the attorney-client privilege or any other privilege recognized by applicable law. If GSA asserts such a privilege in lieu of providing documents, GSA shall provide EPA with the following: (a) the title of the document, record, or information; (b) the date of the document, record, or information; (c) the name and title of the author of the document, record, or information; (d) the name and title of each addressee and recipient; (e) a description of the contents of the document, record, or information; and (f) the privilege asserted by GSA. However, no documents, reports or other information created or generated pursuant to the requirements of this Agreement shall be withheld from EPA on the grounds that they are privileged.

XVIII. DISPUTE RESOLUTION

52. Except as specifically set forth elsewhere in this Agreement, if a dispute arises under this Agreement, the procedures of this Section apply.

53. All Parties to this Agreement shall make reasonable efforts to informally resolve disputes at the Project Manager or immediate supervisor level. If resolution cannot be achieved informally, the procedures of this Section shall be implemented to resolve a dispute.

54. The Dispute Resolution Committee (DRC) will serve as a forum for resolution of disputes for which agreement has not been reached through informal dispute resolution. The EPA representative on the DRC is the Director of the Superfund Division of EPA, Region 7, or his/her designate. GSA's designated member is Mary Ruwwe or her designate. Written notice of any delegation of authority from a Party's designated representative on the DRC shall be provided to the other Party. If GSA objects to EPA's decision regarding a draft final Deliverable or to any EPA action taken pursuant to this Agreement, the GSA shall submit to the Dispute Resolution Committee ("DRC") a written statement of dispute setting forth the nature of the dispute, GSA's position with respect to the dispute and the technical, legal and factual information GSA is relying upon to support its position.

55. Following elevation of a dispute to the DRC, the DRC shall have 21 days to resolve the dispute and issue a written decision signed by the Parties. If the DRC is unable to resolve the dispute within this 21-day period, the written statement of dispute shall be forwarded to the Regional Administrator, EPA, Region 7, for resolution, who shall issue a written decision resolving the dispute.

56. The pendency of any dispute under this Section shall not affect GSA's responsibility for timely performance of the Work required by this Agreement, except that the

time period for completion of Work affected by such dispute shall be extended for a period of time not to exceed the actual time taken to resolve any good faith dispute in accordance with the procedures specified herein. All elements of the Work Plans approved by EPA-which are not affected by the dispute shall continue and be completed in accordance with the applicable schedule.

57. Within 21 days of resolution of a dispute pursuant to the procedures specified in this Section, GSA shall incorporate the resolution and final determination into the appropriate plan, schedule, or procedures and proceed to implement this Agreement and associated work according to the amended plan, schedule, or procedures.

58. Resolution of a dispute pursuant to this Section of this Agreement constitutes a final resolution of any dispute arising under this Agreement. The Parties shall abide by all terms and conditions of any final resolution of dispute obtained pursuant to this Section of this Agreement.

XIX. EXTENSIONS

59. A request by GSA for an extension shall be submitted in writing and shall specify:

a. The timetable and deadline or the schedule that is sought to be extended;

b. The length of the extension sought;

c. The reasons for the extension; and

d. Any related timetable, deadline, or schedule that would be affected if the extension were granted.

60. Within seven days of receipt of a request for an extension, the EPA shall advise GSA in writing of its position on the request. If EPA does not concur in the requested extension, it shall include in its statement of nonconcurrence an explanation of the basis for its position.

Within seven days of receipt of a statement of nonconcurrence with the requested extension, the GSA may invoke dispute resolution.

61. If the Parties agree that an extension is warranted, the affected timetable and deadline or schedule shall be extended accordingly.

62. A timely and good faith request for an extension shall toll any assessment of stipulated penalties or application of judicial enforcement of the affected timetable and deadline or schedule until a decision is reached on whether the requested extension will be agreed to. If dispute resolution is invoked and the requested extension is denied, stipulated penalties may be assessed and may accrue from the date of the original timetable, deadline, or schedule. Following the grant of an extension, an assessment of stipulated penalties or an application for judicial enforcement may be sought only to compel compliance with the timetable and deadline or schedule as most recently extended.

XX. FORCE MAJEURE

63. GSA agrees to perform all mutually agreed upon requirements brought forth by EPA within the time limits established under this Agreement, unless the performance is delayed by a *force majeure*. For purposes of this Agreement, a *force majeure* is defined as any event arising from causes beyond the control of GSA, or of any entity controlled by GSA, including, but not limited to their contractors and subcontractors, which delays or prevents performance of any obligation under this Agreement despite GSA's best efforts to fulfill the obligation. *Force majeure* does not include increased cost of performance.

64. If any event occurs or has occurred that may delay the performance of any obligation under this Agreement, whether or not caused by a *force majeure* event, GSA shall first notify EPA orally. Within 7 days thereafter, GSA shall provide to EPA in writing an explanation

and description of the reasons for the delay; the anticipated duration of the delay; all actions taken or to be taken to prevent or minimize the delay; a schedule for implementation of any measures to be taken to prevent or mitigate the delay or the effect of the delay; GSA's rationale for attributing such delay to a *force majeure* event, if they intend to assert such a claim; and a statement as to whether, in the opinion of GSA, such an event may cause or contribute to an endangerment to public health, welfare or the environment.

65. If EPA agrees that the delay or anticipated delay is attributable to a *force majeure* event, the time for performance of the obligations under this Agreement that are affected by the *force majeure* event will be extended by EPA for such time as is necessary to complete those obligations. An extension of time for performance of the obligations affected by the *force majeure* event shall not, of itself, extend the time for performance of any other obligation. If EPA does not agree that the delay or anticipated delay has been or will be caused by a *force majeure* event, EPA will notify GSA in writing of its decision. If EPA agrees that the delay is attributable to a *force majeure* event, EPA will notify GSA in writing of the length of the extension, if any, for performance of the obligations affected by the *force majeure* event.

XXI. FUNDING

66. It is the expectation of the Parties to this Agreement that all obligations of GSA arising under this Agreement will be fully funded. GSA agrees to seek sufficient funding through its budgetary process to fulfill its obligations under this Agreement.

67. Any requirement for the payment or obligation of funds, including stipulated penalties, by GSA established by the terms of this Agreement shall be subject to the availability of appropriated funds, and no provision herein shall be interpreted to require obligation of payment of funds in violation of the Anti-Deficiency Act, 31 U.S.C. Section 1341. In cases

where payment or obligation of funds would constitute a violation of the Anti-Deficiency Act, the dates established requiring the payment or obligation of such funds shall be appropriately adjusted.

68. If appropriated funds are not available to fulfill GSA's obligations under this Agreement, EPA reserves the right to initiate an action against any other person, or to take any response action permitted by law and Executive Order, which would be appropriate absent this Agreement.

XXII. STIPULATED PENALTIES

69. In the event that GSA fails to submit a Deliverable to EPA pursuant to the appropriate timetable or deadline in accordance with the requirements of this Agreement, or fails to comply with a term or condition of this Agreement, EPA may assess a stipulated penalty against GSA. A stipulated penalty may be assessed in an amount not to exceed $500 per day for the first 14 days (or part thereof), and $1,000 per day for each additional day (or part thereof) for which a failure set forth in this Paragraph occurs.

70. Upon determining that GSA has failed in a manner set forth in this Section, EPA shall notify GSA in writing. If the failure in question is not already subject to dispute resolution at the time such notice is received, GSA shall have 15 days after receipt of the notice to invoke dispute resolution on the question of whether the failure did in fact occur. GSA shall not be liable for the stipulated penalty assessed by EPA if the failure is determined, through the dispute resolution process, not to have occurred. No assessment of a stipulated penalty shall be final until the conclusion of dispute resolution procedures (if invoked) related to the assessment of the stipulated penalty.

71. Stipulated penalties assessed pursuant to this Section shall be payable to the EPA-Hazardous Substances Superfund and mailed to U.S. Environmental Protection Agency, Fines, and Penalties, Cincinnati Finance Center, P.O. Box 979077, St. Louis, Missouri 63197-9000. A copy of the payment shall be provided to EPA's Project Manager.

72. Stipulated penalties assessed pursuant to this Section shall be payable to the EPA-Hazardous Substances Superfund only in the manner and to the extent expressly provided for in Acts authorizing funds for, and appropriations to, the GSA. In the event the GSA has to pay stipulated penalties under this Agreement, the GSA will seek Congressional approval and authorization to pay such penalties to the Federal Hazardous Substances Superfund. Such payment will not entail expenditures that exceed available appropriations, and nothing in this Agreement may be considered as implying that Congress will, at a later date, appropriate funds sufficient to pay such penalties.

73. This Section shall not affect GSA's ability to obtain an extension of a timetable, deadline, or schedule pursuant to Section XIX (Extensions) of this Agreement.

74. Nothing in this Agreement shall be construed to render any officer or employee of GSA personally liable for the payment of any stipulated penalty assessed pursuant to this Section.

XXIII. PAYMENT OF EPA'S RESPONSE COSTS

75. GSA agrees to provide for reimbursement of EPA's response costs, (including oversight costs) incurred at the Site in connection with this Agreement above and beyond EPAs fiduciary responsibility to carry out their core mission under CERCLA, CAA, CWA, RCRA and TSCA regulations. Cost will be reimbursed issuing a separate agency agreement similar to (Attachment 4) . EPA will submit quarterly bills to GSA for its actual response costs with an

itemized accounting of such costs. GSA shall make all payments within 30 days of receipt of the bill.

76. GSA shall make all payments required by this Paragraph to "EPA Hazardous Substance Superfund," referencing the name and address of the party(ies) making payment and EPA Site/Spill ID number A7T4. GSA shall send the payment to: U.S. Environmental Protection Agency, Superfund Payments, Cincinnati Finance Center, P.O. Box 979076, St. Louis, Missouri 63197-9000.

77. GSA may contest payment of any Response Costs billed under this Paragraph if GSA determines that EPA has made a mathematical error, or if GSA believes EPA incurred excess costs as a direct result of an EPA action that was clearly inconsistent with the NCP. Such objection shall be made in writing within 30 days of receipt of the bill and must be sent to the EPA Project Manager. Any such objection shall specifically identify the contested Response Costs and the basis for objection. In the event of an objection, GSA shall within the 30-day period pay all uncontested Response Costs to EPA in the manner described in Paragraph 76. Respondents shall send the EPA Project Manager a copy of the transmittal letter paying the uncontested Response Costs. Simultaneously, GSA shall initiate the Dispute Resolution procedures in Section XVIII. If EPA prevails in the dispute, within 5 days of the resolution of the dispute, GSA shall pay the sums due to EPA in the manner described in Paragraph 76. If GSA prevails concerning any aspect of the contested costs, GSA shall pay that portion of the costs for which they did not prevail in the manner described in Paragraph 76. The dispute resolution procedures set forth in this Paragraph in conjunction with the procedures set forth in Section XVIII (Dispute Resolution) shall be the exclusive mechanisms for resolving disputes regarding GSA's obligation to reimburse EPA for its Response Costs.

XXIV. RESERVATIONS OF RIGHTS

78. Nothing in this Agreement shall be construed as a restriction or waiver of any rights that EPA or GSA may have under CERCLA or any other statute.

XXV. OTHER CLAIMS

79. Nothing in this Agreement shall constitute or be construed as a release from any claim, cause of action, or demand in law or equity by or against any persons, firm, partnership, or corporation not a signatory to this Agreement for any liability it may have arising out of or relating in any way to the generation, storage, treatment, handling, transportation, release, or disposal of any hazardous substances, hazardous wastes, pollutants, or contaminants found at, taken to, or taken from the Site.

80. EPA shall not be held as a Party to any contract entered into by GSA to implement the requirements of this Agreement and subsequent Work Plan activities.

XXVI. OTHER APPLICABLE LAWS

81. All actions required to be taken pursuant to this Agreement shall be undertaken in accordance with the requirements of all applicable state and federal laws and regulations unless an exemption from such requirements is provided in CERCLA or the NCP.

XXVII. EFFECTIVE DATE

82. The effective date of this Agreement shall be the date it has been signed by EPA, after signature by GSA.

XXVIII. MODIFICATION/AMENDMENT OF AGREEMENT

83. Modifications, extensions, and/or actions taken pursuant to Section X (Submittal and Finalization of Deliverables), Section XIV (Quality Assurance and Sampling), and Section XIX (Extensions) may be effected by the agreement of the Project Managers. Any such

modifications or amendments shall be reduced to writing; shall be effective as of the date it is signed by all the Project Managers or signatories, as applicable; and shall be incorporated into and modify, this Agreement.

84. Modifications or amendments not permitted by the preceding Paragraph may be effected only by the written agreement of the Parties or upon completion of Dispute Resolution, as applicable.

XXIX. TERMINATION

85. The provisions of this Agreement shall be deemed satisfied upon written notification from EPA to GSA. Termination of this Agreement shall not terminate GSA's obligations under Section XVII (Record Preservation), Section XXIII (Payment of EPA's Response Costs), and Section XXIV (Reservation of Rights).

Signature sheet for the foregoing Environmental Work Agreement for Site Investigations, Removal Assessment and Response Actions, GSA Bannister Federal Complex, the U.S. Environmental Protection Agency and the United States General Services Administration.

Jason Klumb

30·April·'10
Date

Jason Klumb
Regional Administrator
U.S. General Services Administration Heartland Region

Signature sheet for the foregoing Environmental Work Agreement for Site Investigations, Removal Assessment and Response Actions, GSA Bannister Federal Complex, the U.S. Environmental Protection Agency and the United States General Services Administration.

4/30/10

Karl Brooks
Regional Administrator
U.S. EPA Region 7

Date

ENVIRONMENTAL WORK AGREEMENT

ATTACHMENT 1

Memorandum of Agreement
Between the
U. S. Department of Energy,
The U. S. General Services Administration
and the
U. S. Department of Defense
Concerning the Bannister Federal Complex,
Kansas City, MO

1. Purpose

The Department of Energy (DOE), the General Services Administration (GSA) and the Department of Defense (DOD), acting through the U. S. Army Corps of Engineers (USACE), collectively known as "the parties", enter into this Memorandum of Agreement (Agreement) to set forth the understandings and commitments of the parties with respect to their responsibilities as specified herein for environmental investigatory work at the Bannister Federal Complex (federal complex), Kansas City, MO. Investigatory work shall include all site investigations which are required to be performed prior to an agency's proposal of corrective or remedial action under the Resource Conservation and Recovery Act (RCRA) (42 USC 6901 et seq) or the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (42 USC 9601, et seq). Specifically, DOE will proceed with a RCRA Subtitle C Facility Investigation; DOD and GSA will conduct CERCLA Remedial Investigations pursuant to Subpart E of the National Contingency Plan (NCP), 40 C.F.R. § 300.430(a) (iii)(F)(2). The undertakings of the Parties shall hereinafter, generally be referred to as investigations or investigatory work.

2. <u>Responsibilities</u>

Subject to the provisions of paragraph 3, <u>Funding</u>:

a. DOE shall be responsible for investigation of:

1. possible release sites on the federal complex shown in red on Attachment I; 2. sites identified in the Corrective Action Administrative Order on Consent, U.S. EPA Docket No. VII-89-H-0026 (Corrective Action Order); and, 3. other possible release sites within the DOE area of custody and control, or under permit to DOE, which may be identified in the future. All such investigation shall be performed in accordance with the requirements of the RCRA Corrective Action Order or of the RCRA corrective action requirements, if any, included in any final operating permit issued to DOE.

b. Pursuant to the provisions of CERCLA and the NCP, GSA shall be responsible for the investigation of: (1) possible release sites identified in blue on Attachment 1; and, (2) such other release sites within the GSA area of custody and control which may be identified in the future.

c. Pursuant to the provisions of CERCLA and the NCP, USACE shall be responsible only for the investigation of the possible release site identified within the Old Landfill, the approximate location and limits thereof being shown in green on Attachment I.

d. The designation of each agency's responsibility for release sites shown on Attachment 1 is based on a practical division of the federal complex in order to permit the efficient and effective process of investigation and possible cleanup activities at release sites. Each agency's responsibility includes the investigation of any migration of hazardous substances from particular release sites: (1) beyond the federal complex; and, (2) into other areas of the federal complex, including into release sites for which another party is lead agency. The parties hereby grant to each other the right of access to their respective designated areas in instances where a party finds it necessary to investigate the migration of hazardous substances. Such right of entry shall be coordinated with the agency which has control of the area, subject to each agency's security requirements. Each agency's obligations under this Agreement are contingent upon obtaining reasonable access to areas of the federal complex deemed necessary for such investigations.

e. Within 60 days after the effective date of this Agreement, each party shall provide the other parties with a schedule of its work to be completed under this Agreement. Each schedule shall state the work to be undertaken as well as the anticipated completion dates. Any change in an agency's schedule shall be transmitted semi-annually by the responsible agency to the other parties.

f. Upon completion of each agency's investigatory work at a particular site or sites, such agency shall provide to the other parties and to the cognizant federal or state regulatory agency, a copy of its CERCLA Remedial Investigation Report or its RCRA Facility Investigation (as the case may be) which assesses the extent of hazardous substances present in the soil or groundwater. CERCLA remedial action or RCRA corrective action at a particular site or sites, if any, shall be as determined or agreed to between the lead agency for such site or sites and the cognizant federal or state regulatory agency under agreements or other arrangements separate herefrom.

g. If any future transfer of custody and control of areas which include release sites identified under this Agreement occurs between GSA and DOE, these parties agree to negotiate in good faith an agreement regarding which party shall continue the investigatory and/or cleanup work being performed at such release sites.

3. <u>Funding</u>

a. The obligations of the parties under this Agreement are subject to the availability of funds appropriated by Congress and administratively made available by the parties for the purpose of this Agreement. The parties shall make a good faith effort to secure funding for any activities under this Agreement. Nothing in this Agreement shall be construed to require the parties to obligate funds in any fiscal year in contravention of the Anti-Deficiency Act, (31 U. S. C. Section 1341) and nothing in this Agreement shall be construed as implying that the Congress will, at a later time, appropriate funds sufficient for the purpose of this Agreement.

b. Each agency reserves the right to seek reimbursement from any party hereto for investigatory costs described herein as well as for cleanup costs to the extent that such agency can establish that the other party or parties, or their contractors or tenants, contributed hazardous substances to the release site for which the claiming agency is the lead agency under this Agreement.

4. Technical Coordination

Each party agrees to designate a point of contact and an alternate to meet as necessary and to coordinate technical, administrative or logistical matters which may from time to time arise hereunder. Each party shall furnish the name, address, and phone number of the point of contact and alternate to the other parties. Each party further agrees to provide copies of documents, studies, and reports generated in the investigatory process to the other parties. The parties also agree that historical records and information generated or used in the investigatory process shall be made available, upon request, to any party hereto, subject to the providing agency's security restrictions.

5. Regulatory Compliance

All investigatory actions undertaken by the parties pursuant to this Agreement shall be performed in accordance with applicable federal or state law and regulations. Each agency hereunder shall be the "lead agency" with the federal or state regulatory agency for those sites under its responsibility as designated on Attachment I and shall be responsible for obtaining all necessary reviews, approvals or agreements from such regulatory agencies.

6. Delays or Discontinuation of Work

If any party fails to pursue or complete its investigatory work under this Agreement within a reasonable time, either of the other Parties may terminate the Agreement upon 30 days' written notice.

7. Resolution of Interagency Conflicts

Any conflict arising under this Agreement and not resolved by local representatives, shall be elevated to the following officials: (a) USACE District Commander, GSA Assistant Regional Administrator, and DOE Area Office Manager; (b) USACE Division Commander, GSA Regional Administrator, and DOE/Albuquerque Operations Office Manager; and,

(c) appropriate senior level officials in the headquarters office of each agency. A period of thirty (30) days at each agency level shall be allowed for resolution of the dispute. Thereafter, if no agreement can be reached between the agencies, the matter shall be referred to the Office of Management and Budget for resolution in accordance with applicable law.

8. Amendments

This Agreement may be amended at any time by mutual agreement of DOE, GSA, and the USACE. Amendments shall be in writing and shall be signed by appropriate agency officials.

9. Period of Agreement

This Agreement will continue in effect until completion of the parties' site investigatory work at the federal complex, unless terminated earlier pursuant to paragraph 6 or by written agreement of all parties.

10. Public Information

Each party will provide information to local citizens and public officials relative to their investigatory activities at the federal complex consistent with applicable federal or state laws and regulations. Each agency will coordinate public releases of information regarding activities under this Agreement and provide copies thereof to the other parties.

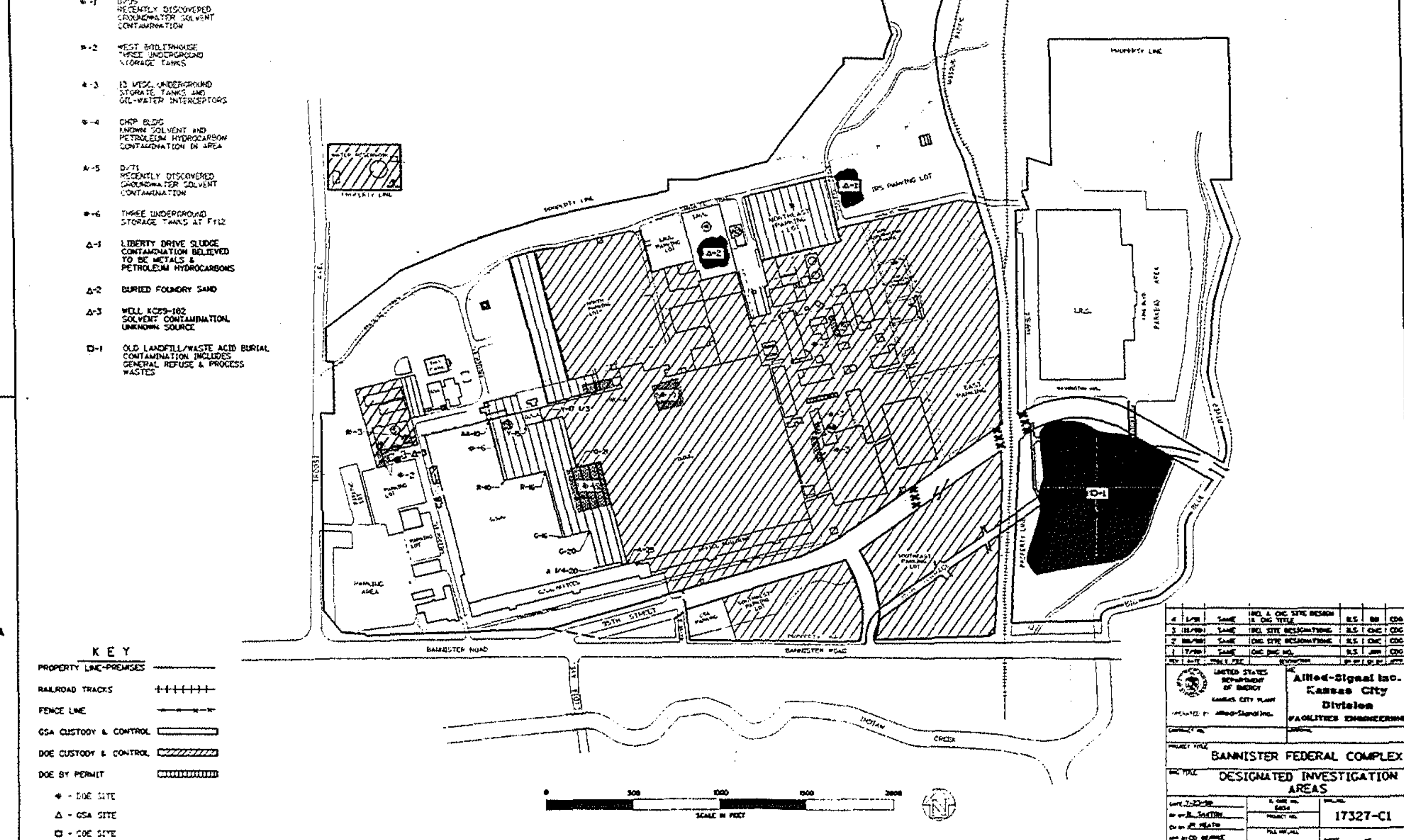
11. Effective Date

This Agreement shall become effective upon signature of all parties.

U. S. Department of Energy	U. S. General Services Administration
Dated: 7/19/93	Dated: 7/2/93
	Col, Gor Richard H. Goring Colonel, Corps of Engineers District Engineer
	Dated: 14 JUL 93

Attachment 1 - Map of Bannister Federal Complex

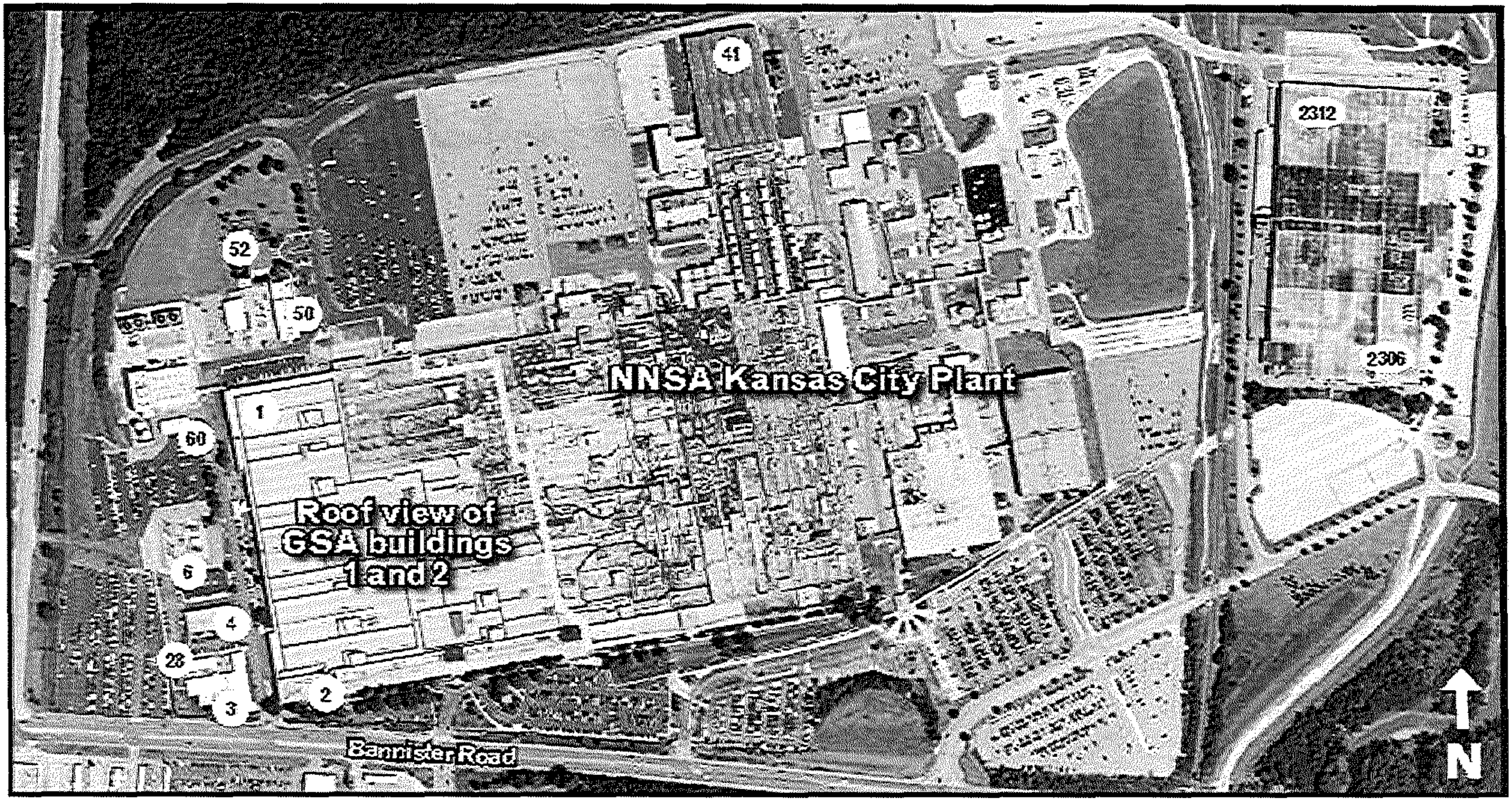
ATTACHMENT 1



ENVIRONMENTAL WORK AGREEMENT

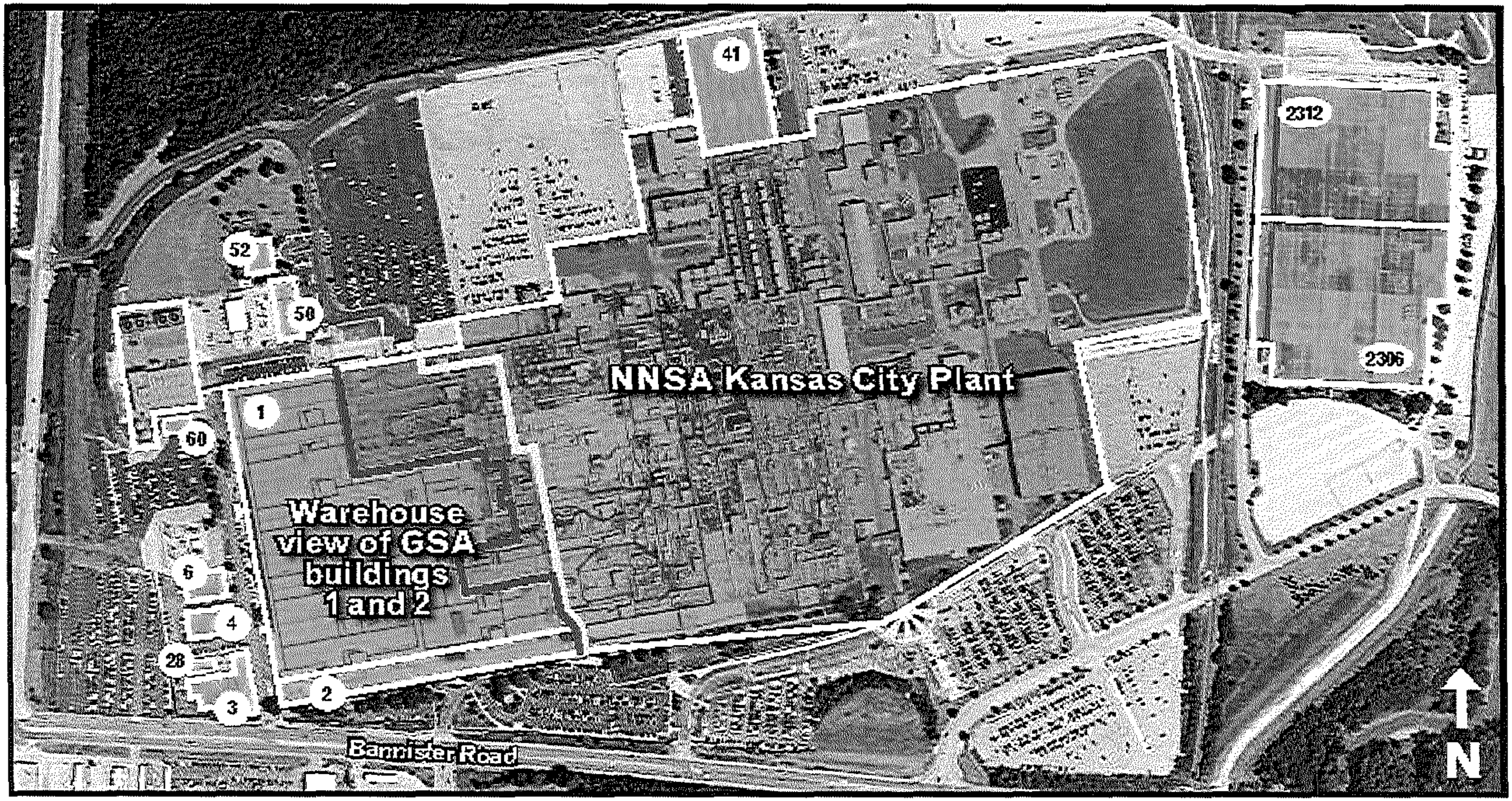
ATTACHMENT 2

Bannister Federal Complex map



Property ownership division line

Bannister Federal Complex map



- General Services Administration (GSA) owned and controlled buildings 1, 2, 3, 4, 6, 28, 41, 50, 52, 60, 2306, 2312
- General Services Administration (GSA) owned / Department of Energy (DOE) / National Nuclear Security Administration (NNSA) controlled and leased space
- Department of Energy (DOE) / National Nuclear Security Administration (NNSA) owned and controlled space
- Property ownership division line
- Firewall

Bannister Federal Complex map

Property ownership division line

General Services Administration (GSA) unoccupied and unusable space

Q Corridor: GSA owned, controlled and occupied space

16 Corridor: GSA owned, controlled and occupied space

Firewall

ENVIRONMENTAL WORK AGREEMENT

ATTACHMENT 3

Preliminary Assessment and Site Inspection

Presented To:

U.S. General Services Administration
1500 East Bannister Road
Kansas City, Missouri 64131-3088

Presented By:

SCS ENGINEERS
10975 El Monte, Suite 100
Overland Park, KS 66211
(913) 451-7510

40308251
Superfund

May 2008
File No. 02200070.57

SCS ENGINEERS

PRELIMINARY ASSESSMENT & SITE INSPECTION

GSA-MANAGED PROPERTY
BANNISTER FEDERAL COMPLEX
KANSAS CITY, MISSOURI

Prepared for:

U.S. General Services Administration
1500 East Bannister Road
Kansas City, Missouri 64131-3088

Prepared by:

SCS ENGINEERS
10975 El Monte, Suite 100
Overland Park, KS 66211

May 2008
File No. 02200070.57

Offices Nationwide
www.scsengineers.com

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APPENDICES

EXECUTIVE SUMMARY

SCS Engineers (SCS) was retained by the U.S. General Services Administration (GSA) to complete a combined Preliminary Assessment (PA) and Site Inspection (SI) for the GSA-managed portion of the Bannister Federal Complex (BFC). The decision to perform the PA/SI was based on historical use of the property as an aircraft engine manufacturing facility and on the need to further characterize areas of contamination identified during previous investigations. The PA/SI included review of site historical data and reports, initial site assessment visits, compilation of pathway and target population information, preparation of a site inspection work plan, collection of SI environmental samples, and preparation of this report.

SITE DESCRIPTION AND HISTORY

The BFC is located at 1500 East Bannister Road, Kansas City, Jackson County, Missouri 64131, west of the Blue River and north of Indian Creek. A levee has been constructed to protect the complex from a 500-year flood. The original BFC development included the Kansas City Plant (KCP), which was established in 1942 to build aircraft engines for the U.S. Navy. After World War II, manufacture of aircraft engines continued on the west side of the complex until the 1960s, while manufacture of non-nuclear components for nuclear weapons began at the KCP on the east side in 1949. The Department of Energy KCP occupies more than half of the KCP and continues to manufacture non-nuclear components and to machine electrical, electromechanical, mechanical, and plastic components.

Activities conducted by the DOE at the KCP under the Resource Conservation and Recovery Act (RCRA) corrective action program have included remediation of soil contaminated with polychlorinated biphenyls (PCBs), chlorinated volatile organic compounds (CVOCs), and petroleum hydrocarbons; lining of storm sewers to reduce PCB discharges to surface water; and collection and treatment of groundwater contaminated with CVOCs. The PA/SI addresses only the GSA-managed portion of the BFC (Site) and incorporates information relating to the KCP and the RCRA corrective action only as it is relevant to the GSA Site.

POSSIBLE CONTAMINANT SOURCES IDENTIFIED DURING THE PA

The following areas of potential environmental concern warranting investigation were identified from historical sources, interviews, and the site visit. This information provided the rationale for the SI, as documented in the *Site Inspection Work Plan, GSA-Managed Property, Bannister Federal Complex*, prepared for GSA, October 2006.

Building 1

- The former photo developing center in the basement of Building 1. Photo developing requires the use of chemicals, particularly silver, that may be of environmental concern.

- The janitorial room in the basement of Building 1 that was previously a carpenters' shop. According to an interview, various chemicals may have been discharged to the sink drain in this room. However, it was determined during the SI that the sink had been replaced since these discharges took place, so this area was not investigated.

- Area where a transformer leaked on the roof of Building 1. Transformers are located in structures on the roof of the building. One transformer containing PCBs leaked over time. The spill area was cleaned, and the floor of the structure was sealed.

- Stained soil along the railroad tracks. Railroad tracks were previously present on the north and west sides of the building. Remnants of the tracks remain, and stained areas were observed along the abandoned railroad tracks along the west side of the building during the site visit.

- Stains and spills in a battery storage area. A battery storage and charging area and with a trench floor drain is located on the north side of the building. Stains and small spills or leaks were observed on the floor during the site visit.

- The utility tunnel between Buildings 1 and 50. No contaminants were identified in a water sample collected from this tunnel by DOE in 2004, but it may warrant further investigation.

- Oil separator basins identified in the 1942 drawings. These were located on the northwest and southwest sides of Building 1 and collected water from storm sewers in the basement of the building.

Building 4

Vehicle maintenance in the area of this building may have resulted in the release of petroleum hydrocarbons.

Building 28

Battery storage could have resulted in the release of contaminants, particularly lead.

Building 50

Contamination with polychlorinated biphenyls (PCBs) and chlorinated volatile organic compounds (CVOCs) has been documented in the vicinity of this building in previous reports. The source and extent of this contamination have not been determined. On the basis of historical information and previous reports, the following potential sources were identified in the vicinity of Building 50:

- Leaks or discharges from the waste oil collection system in Building 50 (PCBs and CVOCs).

- Solvent spills during operations in Building 50 (CVOCs).
- Discharges from Building 50 via the deluge tank system (PCBs and CVOCs).
- Leaks from the former underground storage tanks (USTs), including the waste oil storage tank (PCBs).
- Spills or releases from the above ground storage tanks shown in the historical aerial photographs (CVOCs and PCBs).
- Releases from electrical equipment associated with the unit substation (PCBs).
- Releases from the high voltage line (PCBs).

SI INVESTIGATION ACTIVITIES

The original SI field work was conducted between October 30 and November 15, 2006, to evaluate the possible contaminant sources identified in the preceding section. After the initial work was performed, GSA requested additional field activities, which were performed from February 14 through February 17, 2007, and on April 26 and 27, 2007. The 2006 field work included:

- Hydraulic probing to evaluate CVOCs northeast of Building 50 and to assist in locating monitoring wells.
- Hydraulic probing to assess potential PCB contamination in the vicinity of the former unit substation.
- Monitoring well installation in the vicinity of Building 50 to delineate and monitor the chlorinated solvent groundwater contaminant plume in this area.
- Groundwater sampling from new and existing GSA monitoring wells.
- Hydraulic probing to investigate the PCB source material near the storm sewer.
- Hydraulic probing to evaluate potential petroleum hydrocarbon contamination in the vicinity of Building 4.
- Hydraulic probing to evaluate potential contamination in the vicinity of the oil/water separator basins on the west side of Building 1.
- Wipe sampling to evaluate current conditions in the PCB spill area in Building 1.
- Sediment, soil, dust sampling in the battery charging area in Building 1, the railroad tracks in Building 1, the trench drain and sump in Building 28, and the utility tunnel

between Buildings 1 and 50. A water sample was collected from the drain trap beneath the sink in the photo lab in Building 1.

The February 2007 field work involved excavation and sampling of test pits in selected areas along the storm sewer and near the unit substation in the continued effort to identify the source of the PCBs in the storm sewer. The test pits were initiated after hydraulic probing failed to provide any evidence of PCB contamination, and it appeared that probing might not be effective in identifying a localized source in these areas.

The April 2007 field work involved additional probing along a water pipeline and along the former high voltage line. The water pipeline, which runs north-south across Freedom Drive is scheduled for replacement and sampling was conducted to evaluate potential contamination that might lead to construction worker exposure. Since the line is perpendicular to the storm sewer line in Freedom Drive, the results are considered relevant to the SI. The probing along the high voltage line was conducted to further investigate the possibility that this line is the source of the PCBs in the storm sewer.

CONCLUSIONS

The results of the PA/SI assessment and investigation activities led to the following conclusions. The conclusions are divided into a discussion of sources and pathways.

Source Conclusions

The PA/SI explored a number areas and potential sources that were determined *not* to warrant further evaluation on the basis of information obtained during the PA or data collected during the SI. These are summarized below:

- Four USTs closed in accordance with Missouri Department of Natural Resources (MDNR) storage tank regulations, with closure approved by MDNR. These include the 8,000-gallon gasoline UST east of Building 4, the 3,000-gallon diesel UST on the northwest corner of Building 1, the 1,000-gallon UST south of Building 7, and the 500-gallon heating oil tank at the former Building 17 location (northeast area). On the basis of analytical data and MDNR approvals, these USTs do not warrant further assessment, investigation, or remediation. *It is recommended that the UST in-place closures be recorded in property deed notice in accordance with MRBCA storage tank guidelines and MDNR solid waste regulations, if this has not done.*

- Northeast area. Remaining sources and contamination identified during the PA in this area are being investigated and remediated with U.S. Environmental Protection Agency (EPA) and MDNR oversight under the DOE RCRA corrective action, so no further assessment or investigation of this area is considered warranted under the PA/SI.

- Building 41 underground structure. This structure was determined to be an oil/water separator, and was closed in place. Analytes detected in soil and groundwater outside the structure were below Missouri Risk-Based Corrective Action (MRBCA) Default

Target Levels (DTLs). On the basis of the evaluation of the structure and the analytical data, this unit does not warrant further assessment, investigation, or remediation.

- The USTs in the vicinity of Building 50. These have been eliminated as a potential source of PCBs during previous investigations. In addition, GSA received a letter from MDNR indicating that further investigation or remediation of residual petroleum hydrocarbons in the soil was not required. On the basis of this information, these USTs do not warrant further assessment, investigation, or remediation.

- Building 1, former photo developing center. The concentration of silver detected in water from the sink was below the City of Kansas City, Missouri, Sewer Use Ordinance Section 60-121 maximum total concentration of 5 mg/L. No discharges are currently occurring and past discharges were to the sanitary sewer. On the basis of the analytical data, current use, and historical waste discharge destination, no further assessment, investigation, or remediation of the former photo developing center is warranted.

- Building 1, former carpenters' shop sink. It was determined during the SI that the sink had been replaced since reported chemical discharges took place, so this area was not investigated. The sink discharges to the sanitary sewer.

- Building 1, roof transformer PCB leak. No PCBs were detected in the wipe sample from the sealed area where PCBs were spilled. On the basis of the cleanup and wipe sample analytical data, no further assessment, investigation, or remediation of this area is warranted. *It is recommended that a plan be implemented to ensure that the seal is properly maintained.*

- Building 1, stained soil along the railroad tracks. Although the concentration of arsenic detected in the soil sample from this area was above the MRBCA residential TL, it was determined to be below background concentrations. Therefore, no further assessment, investigation, or remediation of this area is warranted.

- Building 1, battery storage area. The lead concentration in one of the samples from this area exceeded the MRBCA residential TL. Although it is recommended that steps be taken to minimize lead discharges in this area, it is not considered to warrant further assessment, investigation, or remediation under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), because the drains discharge to the sanitary sewer.

- Building 1 oil/water separators. These units were shown on the 1942 plans, but could not be located. Soil samples from the approximate locations identified on the plans contained total petroleum hydrocarbon (TPH) concentrations below MRBCA DTLs. On the basis of these results and the results from closure of the Building 7 UST, which is suspected to have been an oil/water separator, further assessment and investigation of these units is not warranted.

- Building 1 utility tunnel. PCB Aroclor 1260 was detected at a concentration above the DTL, but below the non-residential TL for surface soil. *It is recommended that the area be cleaned*; however, because of the small size of the stained area, limited exposure, and lack of migration pathways, no further assessment, investigation, or remediation of this area is warranted.

- Building 4 crawl space. The concentrations of arsenic and lead detected in the sample from this area exceeded the MRBCA residential TL, and *it is recommended that the area be cleaned.* However, because of the small size of the stained area, limited exposure, and lack of migration pathways, no further assessment, investigation, or remediation of this area is warranted.

- Building 28, former battery storage area. The concentration of lead detected in the sediment sample from the sump exceeded the MRBCA residential TL, and *it is recommended that the sump be cleaned.* However, because of the small quantity of sediment present and the lack of current use, no further assessment, investigation, or remediation of this area is warranted.

- Building 50, deluge tank. This tank was sampled by DOE in 2004, and a water and sediment sample were analyzed for VOCs and PCBs. The only contaminant detected was Aroclor 1260 at a low concentration in the sediment sample. On the basis of these results, the deluge tank system is not considered to be a potential source of contamination.

- Building 51, former unit substation. Observations and soil samples from probes and test pits in the vicinity of this former structure provided no evidence of contamination with PCBs associated with this structure. On the basis of the investigation results, this former structure does not warrant further assessment or investigation.

Sources and potential sources identified as a result of the PA/SI include:

- CVOCs on the northeast corner of Building 50.
- PCBs associated with the former high voltage line on the east side of Building 50.
- Metals and PAHs in the vicinity of Building 4.

These are discussed further in the following pathway conclusions and recommendations sections.

Pathway Conclusions

Conclusions associated with each of the pathways are summarized below:

- Groundwater (Building 50). A release of CVOCs to groundwater is occurring or has occurred from a source on the northeast corner of Building 50 at the site. The contaminant plume is commingling with groundwater contamination from the DOE portion of the BFC to the southwest of Building 50, and is being captured by the footing tile drain collection system in the subbasement of the West Boiler House. The collected groundwater is treated at a groundwater treatment system located at the

KCP industrial wastewater pretreatment facility. There is no evidence that the contaminated groundwater is migrating off the BFC. There are no groundwater targets on or within a one-mile radius of the Site, and the groundwater pathway is not considered to be complete.

- Groundwater (Building 4). It appears that a release of metals and polynuclear aromatic hydrocarbons (PAHs) may have occurred from a source in the vicinity of Building 4. Groundwater flow in the area is not fully defined, but appears to be toward Indian Creek. Data are insufficient to evaluate whether contaminated groundwater in this area is migrating off the BFC. However, there are no groundwater targets on or within a one-mile radius of the site, and the groundwater pathway is not considered to be complete.

- Surface Water. Historically releases have been documented to Indian Creek through the Outfall 003 storm sewer system. Contamination with PCBs and CVOCs has been documented in the storm sewer along Freedom Drive (which discharges at Outfall 003), including evidence of source material infiltrating the storm sewer at Manhole C30R-01. Surface water leaving the Site is discharged to Indian Creek, which flows into the Blue River, and ultimately enters the Missouri River more than 22 river miles from the Site. Potential targets within the 15-mile target distance include recreational fishing and wetland habitats. No drinking water sources are located within the 15-mile target distance. However, because the storm sewer has been lined, the surface water pathway associated with the storm sewer is no longer complete. The extent of groundwater contamination with metals and PAHs in the vicinity of Building 4 has not been defined sufficiently to evaluate whether this could be impacting Indian Creek.

- Soil. On the basis of site conditions, the *current* direct soil exposure pathway is considered incomplete. However, a release of PCBs to soil has occurred in the area of the high voltage line and *future* direct exposure to soil contaminated with PCBs in excess of residential and non-residential TLs is possible in this area.

- Air. Potential sources of contaminants to air associated with current uses are limited to diesel fuel storage and miscellaneous small quantities of chemicals used for cleaning and maintenance, including Freon used in the heating, ventilation, and air conditioning system. In general, usage and storage of chemicals observed during the PA/SI are in compliance with current regulations and are not considered to be concern. The primary air pathway of concern at the Site is the indoor inhalation of vapor emissions from CVOCs detected in soil and groundwater. The air exposure pathway off the Site is not considered to be a concern on the basis of the depth at which contaminants have been detected in soil and the extent of the groundwater contaminant plume, as well as the land use in the area immediately surrounding the Site, which is predominantly commercial and industrial.

RECOMMENDATIONS

The following recommendations are made with respect to the GSA-managed BFC PA/SI:

- Although the groundwater pathway is not complete, it is recommended that annual groundwater monitoring be conducted in the vicinity of Building 50 to evaluate changes in contaminant concentrations over time. This should be coordinated with DOE groundwater monitoring to ensure that contaminants are not migrating off the BFC. It is also recommended that the source and extent of the metals and PAHs detected in groundwater in the vicinity of Building 4 be further evaluated. Although the groundwater pathway is incomplete, it should be confirmed that contaminants are not migrating off the BFC and impacting surface water in Indian Creek.

- Although the surface water pathway is no longer complete, it is recommended that the source of the contaminants entering Manhole C30R-01 be identified, if possible. No source material was identified on Site during extensive hydraulic probing and test pit excavation in the vicinity of the former USTs, Building 50, the former unit substation, and the storm sewer itself. The only indication of a potential source in this vicinity was the relatively high concentration of PCBs detected in a soil sample in one of the probes along the abandoned high voltage line south of the former unit substation. Additional investigation of this line is recommended.

- On the basis of the preliminary screening of concentrations of CVOCs detected in soil and groundwater in the vicinity of Building 50, it is recommended that assessment of the indoor inhalation of vapor emissions pathway be conducted following EPA protocols. Neither Building 50 nor Building 52 has a basement. However, the source of the contamination in this area appears to be next to or under Building 50 and a sensitive population (children) occupies Building 52. Air monitoring is recommended in both these buildings. The need for further source delineation in the area of Building 50 should be assessed after the results of the air monitoring have been reviewed.

ADDENDUM NUMBER 1

At the request of GSA, SCS developed *Addendum Number 1 to the Site Inspection Work Plan* (SI WP Addendum 1) in October 2007 to specify sampling activities to be performed to address the last two recommendations in the preceding section. Excavation in the vicinity of the former high voltage line was conducted in October 2007 and air monitoring was performed in Buildings 50 and 52 in January and March 2008. The results of those investigations are included in Appendix J to this PA/SI Report. On the basis of those results, no further action with respect to the former high voltage line is recommended at this time, but it is recommended that additional investigation be conducted in the future, if planned demolition or construction activities would result in subsurface disturbance in the area of Building 50 or the storm sewer in Freedom Drive. Also on the basis of those results, no further action is recommended regarding potential vapor intrusion associated with the contaminated groundwater in the vicinity of Buildings 50 and 52.

1.0 INTRODUCTION

SCS Engineers (SCS) has been retained by the U.S. General Services Administration (GSA) to complete a combined Preliminary Assessment (PA) and Site Inspection (SI) for the GSA-managed portion of the Bannister Federal Complex (BFC). More than half of the BFC is managed by the Department of Energy (DOE) as the Kansas City Plant (KCP). The allocation of the property between GSA and DOE is shown on the BFC Land Use map (Ref. 1 and Appendix B).

The history of the BFC and the current allocation of the property are complex. The following portions of the BFC are *excluded* from this PA/SI:

- The DOE-managed portion of the property as shown on the BFC Land Use map. These areas continue to be investigated and remediated by DOE under the Resource Conservation Recovery Act (RCRA) corrective action program (Ref. 2). Relevant history of the overall BFC and current DOE actions relevant to the GSA PA/SI are included in this report.

- GSA-managed property to the east of Garfield Avenue, including the National Archives and Records Administration (NARA)/Internal Revenue Service (IRS) building at 2306/2312 East Bannister Road and the former landfill south of the building. The NARA/IRS building was never used for aircraft engine manufacturing or KCP operations, and a recent Phase II Environment Site Assessment of this property is presented in a separate report dated June 2007. The former landfill is being investigated and monitored by the U.S. Army Corps of Engineers (USACE) (Ref. 3).

- The Kansas City Power and Light (KCPL) substation on the west side of the BFC.

The term "Site," as used throughout this report, refers specifically to the GSA-managed portion of the BFC, excluding the DOE and KCPL properties and the NARA/IRS property.

This work has been performed under Schedule Contract Number GS-10F-037K in general accordance with the following U.S. Environmental Protection Agency (EPA) guidance documents:

- *Guidance for Performing Preliminary Assessments Under* the *Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)*, EPA/540/G-91/013, September 1991 (Ref. 4).

- *Guidance for Performing Site Inspections under CERCLA*, EPA/540-R-92-021, Interim Final, September 1992 (Ref. 5).

- *Improving Site Assessments: Combined PA/SI Assessments*, Office of Solid Waste and Energy Response (OSWER) Directive 9375.2-10FS, October 1999 (Ref. 6).

1.1 OBJECTIVES AND SCOPE OF THE PA/SI

The objectives of this PA/SI include the following:

- Characterize and evaluate significant site sources.
- Characterize and evaluate significant pathways.
- Evaluate releases and targets exposed to contamination.
- Collect sufficient field data to support Hazard Ranking System scoring and completion of an EPA Preliminary Ranking Evaluation Scope (PREscore) at a later date, if appropriate.

The BFC is located in Kansas City, Missouri, as shown in Figure 1. A Site plan is presented on Figure 2. The decision to perform the PA/SI was based on historical use of the property as an aircraft engine manufacturing facility and on the need to further characterize areas of contamination identified during previous investigations.

The PA/SI included review of site historical data and reports, initial site assessment visits, compilation of pathway and target population information, preparation of a site inspection work plan, collection of SI environmental samples, and preparation of this report. Sampling results from the SI and previous investigations have been integrated into the PA throughout the report. Previous investigations are discussed in Sections 2 and 4 and the SI investigation is discussed in Sections 3 and 4. Results from all investigations are also integrated into the subsequent pathway discussions, as applicable.

Because of their integrated history, environmental evaluations of the GSA and DOE portions of the BFC cannot be completely isolated from each other. However, a complete history of investigation and remediation activities on the DOE-managed property, which has been conducted for decades and has generated thousands of documents, is beyond the scope of the GSA PA/SI. Therefore, DOE environmental information sources have been referenced and summarized in this report as they have been deemed applicable to the GSA PA/SI. Readers are referred to the EPA Region 7 RCRA corrective action files on the BFC for further information.

1.2 ORGANIZATION OF THE PA/SI REPORT

The PA/SI report has been organized in accordance with the referenced guidance documents and to incorporate the analytical data generated during the SI, as follows:

- Section 1, Introduction. This section presents the objectives and scope of the PA/SI and the organization of the report.
- Section 2, Site Description and History. This section includes a description of current Site use, the history of site development and operations, and a summary of previous reports relevant to the GSA-managed western portion of the BFC.

- Section 3, SI Field Activities. This section presents the SI field investigation, including the samples collected, the data quality review, and regulatory target levels used for screening and discussion.
- Section 4, Potential Contaminant Sources and Waste Characteristics. This section discusses the potential sources of contamination identified and the nature of contamination. Waste quantities and characteristics are discussed, as feasible.
- Section 5, Groundwater Pathway. This section presents an evaluation of the groundwater pathway and targets, including discussions of geology, hydrogeology, investigation results, and groundwater use.
- Section 6, Surface Water Pathway. This section presents the surface water pathway and targets, including discussions of topography, surface water flow and collection, investigation results, and surface water discharges.
- Section 7, Soil Pathway. This section presents the soil pathway and targets, including discussions of soil characteristics and investigation results.
- Section 8, Air Pathway. This section discusses the air pathway and potential targets based on meteorology and contaminant characteristics and distribution.
- Section 9, Conclusions and Recommendations. This section summarizes the results of the PA/SI.

Electronic files of the references, with the exception of readily available publications, are included on the compact disk in Appendix A, Hard copies of selected figure references are included in Appendix B. Boring logs, well development, and physical soil data are included in Appendix C, investigation waste disposal documentation is provided in Appendix D, laboratory analytical data are included in Appendix E, photographs are provided in Appendix F, well registry information is provided in Appendix G, the heritage report is provided in Appendix H, and population statistics are provided in Appendix I.

2.0 SITE DESCRIPTION AND HISTORY

The Bannister Federal Complex is located at 1500 East Bannister Road, Kansas City, Jackson County, Missouri 64131. As previously discussed, the Site consists of the GSA-managed western portion of the BFC. The original BFC development included the KCP, which was established in 1942 to build aircraft engines for the U.S. Navy. After World War II, manufacture of aircraft engines continued on the west side of the complex until the 1960s, while manufacture of non-nuclear components for nuclear weapons began at the KCP on the east side in 1949. The KCP continues to manufacture non-nuclear components and to machine electrical, electromechanical, mechanical, and plastic components (Ref. 7).

Activities conducted by the DOE at the KCP under the RCRA corrective action program have included remediation of soil contaminated with polychlorinated biphenyls (PCBs), chlorinated volatile organic compounds (CVOCs), and petroleum hydrocarbons; lining of storm sewers to reduce PCB discharges to surface water; and collection and treatment of groundwater contaminated with CVOCs .

2.1 SITE LOCATION

The Site is located in Section 28, Township 48 N, Range 33 W, Jackson County, Kansas City, Missouri, latitude 38°57'50", longitude 94°34'00", and is generally bounded by Santa Fe Trail to the north, East Bannister Road to the south, Troost Ave. to the west, and the levee and Blue River to the east (Figure 1). The Site is isolated from the KCP portion of the BFC by fences and by walls and doors between the Main Manufacturing Building and GSA Building 1. The doors allow emergency access, but alarms will be activated if the DOE KCP is entered from GSA areas (Ref.8).

2.2 SITE DESCRIPTION

As shown on the BFC Land Use Map, the Site consists of an irregular shaped parcel. The west portion is highly developed with parking lots, buildings, and a few landscaped areas (Figure 2). The west Site structures include Buildings 1-4, 6-8, 28, 50, 52, and 60. Small landscaped areas of grass with some trees and bushes are located south of Building 2, on the west side of Building 1, along Troost Avenue, and north and northeast of Building 52. The northeast area contains a parking lot, but is mostly unoccupied, with large open areas that are mowed and contain small concentrations of trees and shrubs. Each of the west area structures and related features are discussed in the remainder of this section. The northeast area of the site is discussed separately at the end of the section.

2.2.1 Building 1

This is the largest structure, but only the GSA-managed west portion of the building is part of the Site. This portion represents less than half of the of the 4 million square feet of floor space contained in Building 1.The building is concrete masonry construction with concrete floors and brick facing. The interior is well-maintained and is in excellent condition. As previously discussed, a permanent wall separates the GSA portion of the building from the DOE side. The building consists of one above-ground story of warehouse and office space, with a subsurface story consisting of a single wide corridor with meeting rooms, offices, and utility rooms adjacent to and accessed from the corridor.

The north ground level of Building 1 houses Department of Commerce (DOC) weather equipment repair and logistics; numerous maintenance and heating, ventilation, and air conditioning (HVAC) rooms; a computer and emergency generator room; and warehouses for a number of federal departments and agencies. Warehousing includes Department of Agriculture emergency response equipment, Defense Finance and Accounting Services computer and miscellaneous storage, and GSA furniture and miscellaneous storage. Loading docks and abandoned railroad tracks are located along the west side (within the building structure), and a small exterior loading dock is located on the north side. Stained soil was observed along the railroad tracks during the site visit.

A new 3,000-gallon above-ground diesel storage tank is located in a concrete masonry building constructed on the west side of Building 1 in 2006. The fuel is used to power the emergency generator that is located inside Building 1. The generator has a 400-gallon storage tank. The tanks are in compliance with current oil storage and spill protection regulations [40 Code of Federal Regulations (CFR) 112].

There are a number of other areas in Building 1 that store or use chemicals requiring provision of Material Safety Data Sheets (MSDS). These include a hazardous material storage area and battery charging room for the DOC near the northwest corner of Building 1, Nuclear Regulatory Commission (NRC) equipment testing rooms, GSA mechanical contractor maintenance areas, and janitor shop areas. Small quantities of chemicals observed during the site visit were stored properly.

Meeting rooms, records storage, the mail room, a cafeteria, and office space are accessed from the corridor on the lower level of Building 1. In addition, mechanical rooms off the corridor provide access to sanitary, water, electrical, and HVAC systems. These include eight sewer ejectors consisting of sumps and pumps for sanitary sewage. A janitor's room in the northeast corner of the basement contains a sink and storage area.

Building 1 has an unusual "flat" roof structure of undulating curves covered by a membrane system. The division of the GSA and DOE portions of the property continues with fencing on the roof. HVAC equipment is located on the GSA portion, which also contains small masonry structures housing transformers and other equipment.

Utility tunnels under Freedom Drive connect Building 1 to Building 50 and the West Boiler House. The tunnel to the West Boiler House is part of the DOE KCP and is not included in the PA/SI.

2.2.2 Building 2

Building 2 is a three story building attached and connected to the south side of Building 1. It is currently and has always been used for offices and administration. The construction is concrete block masonry, with brick facing. There are a sanitary sewer ejector pump and an elevator pit in the basement of Building 2. The front (south) section consists of two above-ground stories of office space.

2.2.3 Building 3

This is a one-story office building with a basement containing a mechanical room for air handling equipment. It is located on the southwest corner of Building 1. The construction is concrete block masonry, with brick facing.

2.2.4 Building 4

This is a one-story, slab-on-grade office building located just north of Building 3. The construction is concrete block masonry, with brick facing. The building has a crawl space, which can be accessed via a hinged metal cover beneath the carpet on the northeast corner of the building. The crawl space is connected to a tunnel to Building 3. A stained area was observed in the crawl space during the site visit.

2.2.5 Building 6

This is a two-story, slab-on-grade office building located north of Building 4. The construction is concrete block masonry, with brick facing.

2.2.6 Building 7

This is a small office building of concrete block masonry construction with brick facing. It is located between the west side of Building 1 and Freedom Drive. Building 7 houses an office and a tunnel to access Building 1.

2.2.7 Building 8

This is a small concrete masonry building with brick facing. It houses the credit union and serves as the north entrance to Building 1 and contains an entrance-way and stairs to the lower level.

2.2.8 Building 28

This is a metal building just north of Building 3 that is used for record storage. There is a large sump and floor drain located in the southeast corner of the building.

2.2.9 Building 50

This building is concrete block masonry construction with brick facing and is located northeast of Building 1 on the north side of Freedom Drive. It houses a maintenance shop area for the GSA mechanical contractor on the south side, with offices for Field Office personnel on the north side. The building is slab-on-grade, but is connected to Building 1 by a utility tunnel. There is a locked room in the southwest corner that is used to store Freon for the air conditioning systems and is equipped with air monitoring devices. There is also an enclosed lean-to addition on the east side that is used to store furniture. A metal building west of Building 50 is used for storage of miscellaneous supplies and equipment.

2.2.10 Building 52

This one story, slab-on-grade structure is a child care facility that is located north of Building 50 on the west side of Freedom Drive. It is concrete block masonry construction with brick facing and has always been used as a child care facility. A fenced playground is located to the north of the building.

2.2.11 Building 60

This is a metal building that is located just south of the West Boiler House. It has been used relatively recently for covered equipment storage, but is currently a basketball court.

There are no buildings on the GSA-managed property on the northeast corner of the BFC. This area contains a parking lot, but the majority of the area is grass-covered, with trees along the railroad tracks. This northeast area continues to be investigated and remediated by DOE under the RCRA corrective action program and contains extraction wells and an interceptor trench associated with the groundwater recovery and treatment system (Ref. 2).

2.2.12 Northeast Area

The northeast portion of the site consists of the GSA-managed property north of the NARA/IRS Building (2306/2312 East Bannister Road) and northeast of Building 1, including areas surrounding Liberty Drive and the railroad tracks north of Santa Fe Trail (Figure 2). This area is less developed than the west portion of the Site. There is a relatively large unused parking lot on the southwest corner of the area, but most of the area is covered with grass and some small trees and shrubs. A sanitary sewer pump station is located on the northernmost tip of the area, the Outfall 001 Raceway flows through the center of the area, and DOE extraction wells and an interceptor trench are installed in the depression north of the NARA/IRS Building on the east side of the area. DOE also operates a sub-drain collection system for groundwater seeps in the vicinity of the Outfall 001 Raceway, located between the railroad tracks.

2.3 SITE HISTORY

The intent of this section is to present a focused discussion of the history of the Site, with particular reference to uses that could pose environmental risks. It presents information from various historical documents that have been made available through EPA, DOE, and GSA, including drawings and photographs. As previously stated, this section is not intended to provide a comprehensive history of the BFC. The historical documents referenced in this section are included in Appendix A. Hard copies of selected referenced figures are included in Appendix B.

2.3.1 Bannister Federal Complex in General and the Kansas City Plant

Building Number 1 was constructed in 1942-1943, and aircraft engine manufacture by Pratt and Whitney Corporation began in 1943. Before 1942, the property use was agricultural, except for a brief period during which a portion was used an automobile race track. Following World War II, the property was declared excess to Defense requirements and was turned over to the War Assets Administration. In 1948, the facility was acquired by the Department of the Navy, which leased the main building to the Westinghouse Corporation, which continued to operate a jet engine plant until its lease was terminated in 1961. Meanwhile, the Atomic Energy Commission selected the Bendix Corporation to operate the KCP for production of non-nuclear components of nuclear weapons. Production of these components began at the KCP on the east side of the property in April 1949 (Ref. 9). When the Main Manufacturing Building was originally used for manufacturing aircraft engines, the ground floor was open, and you could see from one end of the building to the other (Ref. 8).

As previously stated, activities conducted by DOE at the KCP under the RCRA corrective action program have been ongoing since 1983 and have included remediation of soil contaminated with PCBs, CVOCs, and petroleum hydrocarbons; lining of storm sewers to reduce PCB discharges to surface water; and collection and treatment of groundwater contaminated with trichloroethylene (TCE) and associated CVOCs (Ref. 7). Forty-three SWMUs are identified on the KCP on a 2003 DOE drawing (Ref. 10 and Appendix B). Because of the relevance to GSA property, particularly to the PCB and TCE investigations in the vicinity of Building 50, some of the sources of these contaminants on the DOE portion of the property are discussed below.

2.3.2 PCBs at the Kansas City Plant

The main use of PCBs at the DOE KCP was in heat transfer fluids in Department 26, Department 27, and Building 15. From 1963 through 1974 these systems used an oil containing Aroclor 1242. From 1974 through 1979, and again in 1983, these systems were drained and refilled until testing indicated that the systems contained less than 50 milligrams per kilogram (mg/kg) PCBs (Ref. 11).

Other SWMUs identified with PCB releases at the DOE KCP include the North Lagoon, the Outfall 001 Raceway, Substation 18, the South Lagoon, the Old 002 Outfall, the Former Sales Building, the Building 16 Underground Pit, the Oil House, the East Boiler House, and the Vehicle Repair Shop Lift Pump (Ref. 11). PCB-contaminated sites as of 1990 are shown on the figure included in the DOE *Summary Analysis of History of PCB Data for the Kansas City Plant* (Ref. 11 and Appendix B). As previously stated, these areas are being addressed under a RCRA corrective action, and many of the SWMUs have been remediated. The PCB SWMU closest to the western portion of the GSA-managed property is Department 27. The Outfall 001 Raceway is located on the northeast portion of the GSA-managed property. High concentrations of petroleum hydrocarbons were also detected in the vicinity of the latter SWMU.

Various electrical equipment (transformers, switches, and small capacitors) on the KCP that contained Aroclor 1260 have been replaced over time. A Missouri Department of Natural Resources (MDNR) representative also told GSA personnel that buried high voltage lines have been found to be a source of PCBs on the BFC.

2.3.3 TCE Sources at the Kansas City Plant

Multiple sources of TCE contamination have been identified at the DOE KCP. Most of these sources have been remediated under RCRA corrective action. (Ongoing groundwater corrective action is discussed in Section 2.4.4.) The TCE Still Area incorporates nine SWMUs that were identified as contributing to soil and groundwater contamination by VOCs. The TCE Solvent

Recovery Still was used to recycle solvents by distillation recovery and was located on a raised platform in the northeast corner of the Main Manufacturing Building (Ref. 12). Other TCE release sources include the underground tank farm, the northeast area, abandoned fuel lines, and the vehicle repair shop lift sump. TCE-contaminated sites as of 1994 are shown on the figure in the DOE *TCE Still Area RCRA Facility Investigation Report* (Ref. 12 and Appendix B).

The two TCE Still Area SWMUs closest to the western GSA-managed portion of the facility are the former sales building and the former aluminum chip handling facility. According to DOE, the 95th Terrace Site is the only SWMU contributing to the Indian Creek Groundwater Flow System (ICGFS) that is still under active corrective action. The ICGFS includes the west GSA-managed portion of the property, including the vicinity of Building 50.

DOE managed SWMUs are sources of groundwater contamination with CVOCs on the GSA-managed northeast area. These include the Old Ponds, the former North Lagoon, and the North Lagoon Trench Area located on the DOE managed portion of the BFC. Groundwater beneath the northeast area is part of the Blue River Groundwater Flow System (BRGFS). Groundwater seepage has been found to be a source of surface water contamination in this northeast area, particularly to the Outfall 001 Raceway (storm sewer). In 1993 a sub-drain system was constructed to prevent this seepage. However, in 2005, additional seepage of groundwater containing detectable levels of PCBs and CVOCs was identified in the area between the railroad tracks. A similar capture system was proposed to address this seepage (Ref. 2).

2.3.4 Site (GSA-Managed Property)

In the early 1960s, the GSA began warehouse operations in the western portion of the BFC. Before that, the west portion of the property had been used for aircraft and jet engine manufacturing. A 1961 General Development Map prepared for the Department of the Navy documents conditions on the BFC as of December 31, 1960 (Ref. 13 and Appendix B). This map identifies the following "buildings" on the Site as government owned:

- 1, Manufacturing Building.
- 2, Office Building.
- 3, Personnel Building.
- 4, Garage.
- 7 and 8, Employee Entrances.
- 17 Yard Master's Office*
- 21, Water Storage Tank.*
- 25, Gas Station and Tanks.*
- 29, 30, 31, 56 Guard Houses.*
- 44, Gas Meter House.*
- 45, 58, Pedestrian Bridge/Underpass.

The map also identifies the following buildings on the Site as Westinghouse Electric Company owned:

- 41, Cooling Tower and Basin.

- 48, Gas Cyclone Manifold Station.*
- 49, Cooling Tower.*
- 50, Fuel Components Lab.
- 51, Unit Substation.
- 52, Tank Farm.
- 53, Pump House.*
- 57, Pipe Tunnel – Low Power Lab (Building 50).

The structures identified with an asterix are no longer present on the property. The drawing also identifies an un-numbered GSA pump house (Sanitary Sewer Pump House, SWMU 34 on Figure 3.1, Ref. 10) on the northeast portion of the Site.

The following sections discuss available information regarding the history of specific buildings and areas on the Site. The discussions are divided into the west and northeast site areas.

2.3.4.1 West Site Area

All the structures are or were located on the west portion of the Site, except 17 Yard Master's Office and the un-numbered GSA pump house. Each of the west area structures and related areas are discussed below.

Building 1

During World War II, all of Building 1 was used to manufacture aircraft engines and, from 1949 to 1961, the now GSA-managed portion of Building 1 was used to manufacture jet engines. No historical description of the manufacturing processes in the aircraft engine manufacturing plant has been located.

A description of current jet engine manufacturing identifies the following raw materials: titanium (alloyed with other metals such as nickel and aluminum), aluminum, ceramic coatings, fiberglass, and Kevlar (only recently). It also identifies the following processes: hot pressing of molten metal, machine cutting, heating, stamping, powder metallurgy (only recently), casting of molten metal in ceramic molds, oven heating, wax molding, machine shaping, spark erosion, welding, and manual assembly.

It is unknown how many of these processes were performed in Building 1 and what contaminants they produced. However, the use of PCB-containing oil during metal cutting and solvents for degreasing are likely. The building originally had wood block floors. These floors have been removed during remodeling of the building over time. During more recent remodeling (since 1990), the blocks were tested before disposal. Some of the blocks contained PCBs (Ref. 14).

In the 1942 plan drawings, the western half of what is now the GSA-managed portion of the building appears to be allocated for storage. These drawings show major manufacturing operations in what is now the DOE-managed portions of Building 1. These include plating, heating, and test cells. Oil separators, oil storage, degreasers, and oil sparge equipment are also shown on the DOE side of the building (Ref. 15).

Potential areas of concern noted on the GSA-managed portion of the building in the 1942 drawings include a pipe running along the north side of the building and identified as oil for reuse at the West Power House on the first floor mechanical plan (Ref. 15). It is not known if the exterior piping was above or below grade. The utility tunnel between Building 1 and the West Boiler House is part of the DOE KCP and was not investigated under the PA/SI. The basement plan for Building 1 also shows multiple underground storm sewers discharging to oil separator basins on the northwest and southwest exterior of the building.

Potential historical uses and events of potential concern identified during interviews and the site visit include a former photo developing center, a leaking transformer on the roof, possible chemical discharges to the sanitary sewer in a janitorial room, and a sewer ejector overflow. Rooms near the south end of the main lower level corridor previously housed the photo developing center, which was used throughout the 1980s and 90s (Ref. 8 and 16). Transformers are located in structures on the roof of the building. One transformer containing PCBs leaked over time. The spill was cleaned up and the floor of the structure was sealed (Ref. 8). The janitorial room in the basement of Building 1 was previously a carpenters' shop. According to an interview, various chemicals may have been discharged to the sink drain in this room (Ref. 16). According to GSA personnel, at one time the sewer ejector room located near column K8 had a pump malfunction and the entire ejector room/locker room filled with sewage to the ceiling. The area has since been sanitized and is currently functioning properly (Ref. 16).

Three underground storage tanks (USTs) located near Building 1 have been documented as closed[1]. These include the following:

- An 8,000-gallon gasoline tank located on the west side of the building opposite Building 4. This tank was closed in place in 1993. Concentrations of analytes in closure samples were below current Missouri Risk Based Corrective Action (MRBCA) storage tank default target levels (DTLs), and MDNR approved the tank closure in a letter dated February 17, 1994 (Ref. 17 and 18).

- A 3,000-gallon diesel tank on the west side of the building toward the northwest corner. This tank was removed in 1999. Concentrations of analytes in closure samples were below current MRBCA storage tank DTLs, and MDNR approved the tank closure in a letter dated February 24, 2000 (Ref. 19 and 20).

- A 1,000-gallon tank (unknown contents) on the west side of the building south of Building 7. This tank was closed in place in 2000. Concentrations of analytes in closure samples were below current MRBCA storage tank DTLs, and MDNR approved the tank closure in a letter dated May 15, 2001 (Ref. 21 and 22).

Buildings 2, 3, and 6

Buildings 2, 3, and 6 have always been used for offices. Building 2 is integral to Building 1 and housed administrative offices for the manufacturing plant. Building 3 is identified as the Personnel Building on both the 1942 Plot Plan and the 1961 General Development Map. Both

[1] USTs have been included in the PA/SI at the request of GSA, although they are not included under CERCLA.

Buildings 2 and 3 were part of the original 1943 plant construction, but Building 6 was constructed sometime after 1990 and before 1994, based on historical aerial photographs[2] (Ref. 23, 24, 25, 26, 27, and 28).

Building 4

Building 4 housed the main mechanical shop for several decades. All types of automotive repair took place in this building (Ref. 16), and gas pumps were located on the east side of the building. The 8,000-gallon UST on the opposite side of Freedom Drive provided the gasoline for the pumps. Fuel lines under the street connected the tank to the pump island in front of Building 4.

A floor pit once existed near the southeast corner of the building and was used as part of the washout bay. This may have been connected to the storm sewer system. The pit has been filled, and the building has been remodeled and currently contains offices. An open grate once was located on the east side of the building and provided access to the crawl space, which is connected to a tunnel to Building 3. The grate has been replaced with a metal lid with hinges and has been covered with carpet (Ref. 16).

Buildings 7 and 8

Buildings 7 and 8 were part of the original manufacturing plant construction. Both are small buildings with limited office space that provide access to Building 1.

Building 28

Building 28 is a metal building that is currently used for record storage. It is not shown on either the 1942 Plot Plan or the 1960 General Development Map, but it is shown on the 1986 Plate 2. Location of Waste Sites 1 through 6, C-4, C-5 (Ref. 9). Previously, the east side of the building had several rows of lead-acid batteries that provided backup power to the Federal Aviation Administration radar scopes. A large sump with a floor drain is located in the southeast corner of the building. The concrete slabs that the batteries sat on are still present.

Building 50

Documents variously refer to Building 50 as a fuel test lab, fuel components laboratory, low power components development laboratory, and engine testing facility during the period that aircraft/jet engines were manufactured at the plant. The building was constructed with concrete walls and blast-away ceilings and required large refrigeration units that were powered by a unit substation (Ref. 29). No additional information was found regarding the uses of the building. Engine testing would be expected to use relatively large volumes of petroleum products (consistent with the USTs adjacent to Building 50) and potentially solvents for degreasing.

Building 50 is not shown on the original 1942 Plot Plan for the Aircraft Engine Plant. The first drawing that was identified for the building was the 1956 Sub-surface Piping Plan of Building 50 (Ref. 29 and Appendix B). This drawing shows waste oil gutters in six areas inside the building, with waste oil collection pipes that discharged to a waste oil storage tank (referenced on another

[2] Building 6 does not show up on the 1990 aerial photograph, but does show up on the 1994 aerial photograph.

drawing sheet, which was not available) to the west. The waste oil pipe is shown with an outer casing. A waste oil tank is shown on a 1984 drawing for removal of fuel oil tanks (Ref. 30 and Appendix B).

The plan also shows down spouts connecting to storm drains flowing north-south on either side of the building. Both storm drains are shown discharging to the 36-inch storm sewer in Freedom Drive. There are fire protection system deluge drains on either side of the building that discharge to two subsurface "deluge water waste" tanks southeast and southwest of the building. No historical reference was found to any fires occurring in Building 50.

At least one of the deluge tanks (west side) is still present. The structure is approximately 8 feet deep and constructed of concrete with an interior baffle. The Allied Bendix Aerospace Underlying Utility Lines Outlying Areas drawing 16900, sheet C30 (Ref. 31 and Appendix B), identifies the east deluge tank as abandoned. The deluge tank effluent is shown on the Sub-surface Piping Plan as flowing into the storm sewer that collects water from the down spouts and discharges to the 36-inch storm sewer in Freedom Drive (Ref. 29).

The Sub-surface Piping Plan also shows collection piping in the center of the building that was connected to a cooling tower return sump on the northwest corner of the building. A utility tunnel on the south side of the building appears to have contained piping to and from the cooling tower and pump station on the south side of Freedom Drive. This utility tunnel is still present. Floor drains in the north end of the building discharged to the sanitary sewer. A 6-inch storm drain from the unit substation is shown connecting to the storm drain on the east side of Building 50 (Ref. 29).

A 1961 photograph of the BFC shows two above-ground storage tanks on the northeast side of the building during a flood (Ref. 32). No information was found regarding the contents of these tanks.

Other Structures in the Vicinity of Building 50

The 1961 General Development Map identifies several structures in the vicinity of Building 50, including the unit substation to the northeast, the tank farm with six (underground storage) tanks to the west, the pipe tunnel under Freedom Drive, and the pump station and cooling tower on the south side of Freedom Drive (Ref. 13). The 1961 photograph shows the unit substation to the northeast and the pump house and cooling tower on the south side of Freedom Drive (Ref. 32). The unit substation is present on subsequent aerial photographs through 1994, but is not present on the 1997 photograph. UST pads show up on the aerial photograph in 1985, but are not present in the 1988 photograph (Ref. 23, 24, 25, 26, 27, and 28).

Removal and closure of the USTs is not documented, but a drawing from 1984 provides specifications for removal of six fuel oil storage tanks (including a waste oil tank), and capping and abandoning in place of some of the associated piping (Ref. 30). In a letter dated June 3, 2002, the MDNR stated that "the residual soil contamination in the vicinity of BH4 and BH5 shall be left in-place to naturally remediate and no further sampling or corrective action is required at this time" (Ref. 33).

Historical drawings show various underground utilities associated with the unit substation that may be of interest with regard to potential contaminant migration from this area to the storm sewer. These include an abandoned high voltage line running north-south parallel to Building 50 and south of the unit substation, a water line running north and south on the east side of the substation, and a fire protection water line running east to west into Building 50. All of these utilities are shown on unverified field drawings (Ref. 31).

The 1956 drawing shows a 6-inch storm sewer that flows west from the substation to intersect a storm sewer that flows south along the east side of Building 50. The 1984 tank removal drawing also shows a 10-inch water line running north-south in the parking lot west of Building 50. A more recent drawing (1989) shows a sanitary sewer flowing from the northwest corner of the substation west to about the center of the north side of Building 50, where it appears to flow south into Building 50 and connect with the sanitary sewer in that building. The sanitary sewer then flows diagonally southwest and turns south in the open areas east of the West Boiler House to eventually connect with the east-west sanitary sewer from the West Boiler House (Ref. 34 and Appendix B).

Building 60

This building is a metal building historically used for storage. It is not shown on either the 1942 Plot Plan or the 1960 General Development Map, but it is shown and identified as "Sale Barn" on the 1986 Plate 2. Location of Waste Sites 1 through 6, C-4, C-5 (Ref. 9).

Storm Sewers

Storm water collected on the BFC currently discharges at four permitted outfalls. The storm sewer basins discharging to each of the permitted outfalls are shown in a drawing from the *City Water and Sewage System Evaluation and Computer Mapping* (Ref. 34 and Appendix B). Storm water from the western area of the Site discharges to Outfalls 003 and 004. The area of Building 50 discharges to Outfall 003 via the storm sewer that flows west and then south along Freedom Drive. Storm water from GSA areas to the north and east of Building 50, as well as some DOE-managed areas (both to the east of Building 50 and to the west of the West Boiler House), discharge to Outfall 004 via a storm sewer that flows east to west to the north of Building 52 and then north to south on the west side of the West Boiler House.

Historical storm water collection and discharge systems were somewhat different. The 1942 plan drawings (Ref. 15) indicate that the storm sewer north of Building 52 and associated Outfall 004 were not present at that time. All the storm water in the areas designated as ST-3 and ST-4 on the 1989 drawing (except for a small area on the far west of the Complex) was collected in the storm sewer along Freedom Drive and discharged at the Outfall 003 location, according to the 1942 plans.

The MDNR issued a National Pollution Discharge Elimination System (NPDES) permit for the plant in 1982. Storm water discharges include HVAC condensate, fire protection water test flows, and rain event run-off through the four previously identified outfalls under Missouri Operating Permit # MO-0004863. The permit requires periodic monitoring of the four outfalls and six surface water sites on the Blue River and Indian Creek (Ref. 2).

PCBs in Storm Water

Storm sewer discharges of PCBs from the plant were documented before 1982, and exceedances of the discharge limit have been documented since the NPDES permit was issued. These have occurred and continue to occur primarily at Outfall 002, which discharges storm water collected from the central southern part of the BFC, all within DOE portions of the property.

No PCBs were detected in discharges from Outfall 003 prior to 2000. In 2000, PCBs were detected above the discharge permit level four times at this outfall. Aroclor 1260 was detected at 1.1 micrograms per liter (µg/L) on May 10, 1.8 µg/L on May 17, 2.7 µg/L on October 25, and 1.0 µg/L on December 6 (Ref. 36). PCBs were also detected in sediment samples collected from the storm sewer and in samples of expansion joint material from the main collector line.

In 2001, DOE removed over 80 tons of contaminated sediments from Outfall 003 and from an inverted siphon (sag pipe) in the main storm sewer that discharges at that outfall. The sag pipe is located downstream of Manhole C30R-01, west of the Building 1. The DOE also cleaned and lined 2,065 feet of the storm sewer that discharges at Outfall 003. The sag pipe and storm sewers are shown on Ref. 36, which is included in Appendix B. The sewer was lined using Insituform® tubes to minimize potential infiltration of contaminants from the surrounding soil (Ref. 37 and 38). Insituform® linings consist of felt tubes with a polyethylene coating that are installed using a thermosetting resin that binds the lining to the pipe (Ref. 38).

After PCBs were detected in Manhole C30R-01 in August 2004 (Ref. 39), DOE removed the sediment from the manhole and sealed the manhole. The liner with the top cut out was removed and the ends sealed at the line entry and exit points in the manhole. No PCBs were detected in the surface water sample from Outfall 003 in 2005 (Ref. 2).

Chlorinated VOCs in Storm Water

The NPDES permit requires quarterly monitoring for TCE, 1,2-dichloroethylene (DCE), and vinyl chloride (VC) There are no discharge limits, but a notification limit of 100 µg/L has been established. Although the notification limit has never been exceeded, CVOCs have been detected at the outfalls. Low levels of DCE were detected twice at Outfall 003 and TCE was detected once at Outfall 004. No VOCs were detected at either outfall during sampling conducted in 2005 since Manhole C30R-01 was cleaned and sealed and the liner repaired (Ref. 2).

2.3.4.2 Northeast Site Area

This area consists of the GSA-managed property north of the NARA/IRS Building and northeast of Building 1, including the parking lot and areas surrounding Liberty Drive and the railroad tracks (Figure 2). Only limited development appears to have occurred on the northeast area. The only structures shown on historical drawings are the Yard Master's Office and GSA pump house shown on the 1961 General Development Map (Ref. 13). The Blue River channel included a meander that looped through this area until the channel was straightened in 1967. A dike was also constructed at that time to provide flood control (Ref. 41).

In 1993 GSA removed a 500-gallon heating tank from the area of the former Yard Master's Office. Concentrations of analytes in closure samples were below current MRBCA storage tank

DTLs, and MDNR approved the tank closure in a letter dated November 23, 1993 (Ref. 42 and 43).

All other investigation and remediation activities in this area have been conducted by DOE under the RCRA corrective action. Areas investigated in the northeast area include an Oil Sludge Disposal Area identified during historical employee interviews, the former North Retention Pond where Outfall 001 used to discharge, the Sanitary Sewer Overflow Station (GSA pump station), and the Outfall 001 Raceway. In addition, the previously identified Old Ponds, the North Lagoon, and the North Lagoon Trench on the DOE KCP are sources of groundwater contamination with CVOCs beneath the GSA northeast area property (Ref. 2, 10 and 41).

The Oil Sludge Disposal Area was suspected to be located on the west side of the unused parking area. However, DOE investigations failed to locate such a disposal area, and petroleum hydrocarbons likely to be associated with such a disposal area have not been detected in groundwater samples from monitoring wells downgradient of this area. Benzene and CVOCs identified in the subsurface during investigation of the parking lot area (Ref. 44) are being addressed as a groundwater issue (Ref. 40).

PCB Aroclor 1260 and some metals were detected in the area of the Sanitary Sewer Overflow Station (Ref. 44). However, concentrations were either below background levels or current MRBCA DTLs. No further action was recommended for this area and incorporated in the RCRA 3008(H) order on consent between EPA and DOE (Ref. 40). PCB Aroclor 1248 was detected in a few sediment samples from the former North Retention Pond at concentrations slightly above the current MRBCA DTL (Ref. 44). However, it was determined that this area did not require corrective action, which determination was approved by EPA (Ref. 40).

Remediation efforts are ongoing in the vicinity of the Outfall 1 Raceway and have been directed primarily at eliminating groundwater seeps that are believed to be causing discharges of CVOCs at Outfall 001. The highest concentrations and most frequent detections of VOCs at the any of the outfalls have been of DCE at Outfall 001 (Ref. 2). This outfall collects storm water from the northeast portion of the BFC, from both DOE and GSA-managed property. Groundwater contamination on the northeast portion of the Site is being controlled and remediated under the RCRA corrective action through the use of extraction wells and an interceptor trench installed to the north of the NARA/IRS building (Ref 2).

As previously stated, two SWMUs are also located on the GSA-managed property: the Sanitary Sewer Pump Station and the Outfall 001 Raceway (Ref. 10).

The northeast portion of the Site is not considered to warrant further assessment or investigation under the PA/SI for several reasons:

- *With respect to the closed UST, the concentrations detected in the closure samples are below current MRBCA storage tank DTLs, and the MDNR approved closure of the tank.*

- *EPA has agreed to no further action with respect to the Sanitary Sewer Overflow Station and the North Retention Pond.*

- *Contaminated groundwater beneath the northeast area and groundwater surface seeps in the area of the Outfall 001 Raceway are being investigated and remediated with EPA and MDNR oversight under the DOE RCRA corrective action.*

2.3.4.3 Building 41 Underground Structure

In 2005, GSA investigated and closed in place an underground structure located in the parking area adjacent to Building 41, northeast of Building 1. The structure is shown on a historical drawing as an oil separator north of the High Power Components Development Lab. Concentrations of total petroleum hydrocarbon (TPH)-gasoline range organics (GRO) and TPH-diesel range organics (DRO); TPH-oil range organics (ORO); benzene, toluene, ethyl benzene, and xylenes (BTEXs); oxygenates; polynuclear aromatic hydrocarbons (PAHs), and lead in soil and groundwater samples collected around the structure were all below MRBCA storage tank DTLs. The liquid in the structure was disposed of as a nonhazardous waste and the structure was filled with inert material (Ref. 45 and 46). Since the structure was determined to be an oil/water separator, no closure report was submitted to the MDNR. *On the basis of the investigation and closure of this structure, no further assessment or investigation of this unit is warranted.*

2.4 PREVIOUS INVESTIGATIONS

This section focuses on investigations conducted on the GSA-managed BFC, including four soil and groundwater investigations between May 2001 and September 2002; storm sewer monitoring in 2000 and 2001; sampling of sediment and liquid from Manhole C30R-01, the utility tunnel, and the west deluge tank in August 2004; ongoing DOE semiannual groundwater monitoring; and four UST closures. Figures incorporating relevant data from these investigations are included in Appendix B.

2.4.1 Building 50 Soil and Groundwater Investigations

The four soil and groundwater investigations that have been conducted in the immediate vicinity of Building 50 include:

- Limited soils investigation by DOE in May 2001 to evaluate whether Building 50 could be a source of contamination detected in storm water discharges at permitted Outfalls 003 and 004. This investigation focused on the six former USTs (Ref. 47).

- Site characterization conducted by Kingston Environmental Services, Incorporated, for GSA, February 2002, to investigate TCE detected during the DOE investigation (Ref. 48).

- Limited subsurface site investigation by Terracon for GSA, September 2002, to further evaluate TCE contamination in the vicinity of Building 50 (Ref. 49).

- TCE source investigation report by SCS for GSA, draft October 2004, to evaluate possible TCE sources near Building 50 (Ref. 50).

2.4.1.1 DOE Limited Soils Investigation

The report titled *Limited Soils Investigation at the Building 50 Parking and Storage Area, Bannister Federal Complex, Kansas City, Missouri*, prepared for DOE by Honeywell Federal Manufacturing & Technologies, June 2001 (Ref. 47), documents the environmental investigation conducted in May 2001. This investigation was intended to gather preliminary information on whether the Building 50 area was a source of contamination observed in two permitted storm discharge systems. As part of the investigation, eight probe locations were advanced west of Building 50, primarily in the area of the former USTs. Soil samples were collected at 5, 10, 15, and 20 feet below ground surface (bgs) and at the bottom of the probe. Soil samples were analyzed for petroleum hydrocarbons, PCBs, and CVOCs. Groundwater samples were collected from two of the boreholes and analyzed for gasoline range hydrocarbons and CVOCs.

PCBs were not detected in any soil samples. Petroleum hydrocarbons (both gasoline and diesel) were detected in five of the eight sample locations. The most frequent detections and highest concentrations of petroleum hydrocarbons were detected in the borings in the immediate vicinity of the former USTs. CVOCs, particularly TCE and its degradation products, were also detected in soil samples from five of the eight boring locations. TCE concentrations in soil ranged from below analytical detection limits to 2.9 mg/kg at a depth 15 feet in boring BH-2. The highest concentrations of TCE and its degradation products were detected in soil samples from BH-1 and BH-2, which were located west of the former USTs. These were the only borings in which TCE and DCE were detected above the MDNR Cleanup Levels for Missouri (CALM) Soil Target Concentrations (STARC)[3] for leaching to groundwater [0.1 mg/kg for TCE, 0.5 mg/kg for cis-1,2-DCE (CDCE) and 1.0 mg/kg for trans-1,2-DCE (TDCE)]. Other detected CVOCs include 1,1-DCE, 1,2-dichlorobenzene, and 1,4-dichlorobenzene. No CVOCs were detected in borings BH4, BH5, and BH7, which were in the immediate vicinity of the former USTs, and which were the borings where the highest concentrations of petroleum hydrocarbons were detected.

Groundwater samples were collected from borings BH5 and BH6, both of which were in the vicinity of the former USTs. Gasoline-range petroleum hydrocarbons were below detection limits in both groundwater samples. CVOCs were also not detected in the groundwater sample from BH6. The CVOCs detected in the groundwater sample from BH5 were 410 µg/L tot-1,2-DCE and 100 µg/L VC. Both these concentrations are above the CALM groundwater target concentrations (GTARC) of 70 µg/L for CDCE, 100 µg/L TDCE, and 2 µg/L VC (Ref. 47).

2.4.1.2 GSA Site Characterization

This GSA investigation is documented in the *Site Characterization Report-Chlorinated Solvents West of Building 50*, prepared for GSA by Kingston Environmental Services, March 11, 2002 (Ref. 48). As part of this investigation, nine soil probes were advanced, and monitoring well MW3 was installed west of Building 50. The soil samples were field screened using detector tubes to analyze soil head space vapors. Soil samples for chemical analysis were collected below 20 feet at all ten locations. Shallower samples were collected from probes P1, P3, P5, and P7. Reported TCE concentrations in soil ranged from below analytical detection limits to 2.031

[3] Because these investigations pre-dated MRBCA, these discussions reference CALM that were applicable at the time.

mg/kg in the 20-25 foot sample from probe P6. Probes P4 (southwest side of building), P7 (northwest side of Building 50), and P9 (west of covered storage area) contained the highest concentrations of TCE. CDCE, TDCE, and toluene were also detected in some soil samples at concentrations below their respective STARC leaching to groundwater limits.

GSA had previously installed groundwater monitoring wells MW1 and MW2. Analytical results of groundwater samples from these wells, as well as from MW3 are reported in the *Site Characterization Report.* TCE and its degradation products were detected in groundwater samples from all three monitoring wells. TCE concentrations ranged from 1,420 µg/L in monitoring well MW3 to 2,688 µg/L in MW2. VC, CDCE, and TDCE were also detected above their respective GTARC limits in one or more of the monitoring wells (Ref. 48).

2.4.1.3 GSA Limited Subsurface Site Investigation

This investigation is presented in *Limited Subsurface Site Investigation-Building #50 TCE Investigation Bannister Complex, Jackson County, Missouri,* prepared for GSA by Terracon, October 2002 (Ref. 49). The investigation consisted of advancing thirteen probes in the area surrounding Building 50. Soil samples collected from various depths in the probes were analyzed for VOCs. Piezometers were installed in probes P1-P4, and one soil sample was collected from 0-5 feet in each of these probes. TCE was only detected in the soil sample from P2, at a very low concentration (0.00510 mg/kg).

Two soil samples were collected from various depths at the remaining probe locations. A photoionization detector (PID) was used to screen the soil samples. However, the only elevated PID readings detected were in probe P9. Soil samples for chemical analysis were collected from 10-15 feet and 15-20 feet in this probe, because these intervals exhibited the highest PID readings. Soil samples in the remaining probes were collected from 0-5 feet and just above the capillary fringe (20-25 feet in seven of the probes). TCE was detected in six out of 18 of these samples. The highest concentration detected, and the only concentration in excess of the STARC leaching to groundwater criterion, was 0.440 mg/kg in the 10 to 15 foot sample from P9. P9 was located near the West Boiler House on the far west of Building 50.

In addition, groundwater samples were collected from the four piezometers and analyzed for TCE. Groundwater analytical results from these four locations indicate concentrations of TCE ranging from below analytical detection limits to 2,170 µg/L in P2, on the southeast corner of Building 50 (Ref. 49).

2.4.1.4 TCE Source Investigation Building 50

During the most recent investigation, eight probe locations were advanced for the collection of soil and groundwater samples to attempt to identify and delineate TCE source(s) in the vicinity of Building 50. In addition, groundwater was sampled from three previously installed monitoring wells in close proximity to Buildings 50 and 52. Air samples were also collected in Buildings 50 and 52 to evaluate vapor intrusion into the buildings.

TCE was detected in soil samples from three sample locations at concentrations below CALM STARC for leaching to groundwater. CDCD, TDCE, and VC were not detected above analytical detection limits in any of the soil samples.

TCE was detected in probe groundwater samples from five locations at concentrations above CALM GTARC screening levels and at one location below CALM GTARC screening levels. The highest concentration (19,000 µg/L) was detected in the sample from probe SP3 on the northeast corner of Building 50. Relatively high concentrations were also detected in probes south of SP3 on the east and west sides of the building (3,600 and 3,500 µg/L, respectively). CDCE was also detected in groundwater samples from these three locations at concentrations above CALM GTARC screening levels, as well as at two additional locations below CALM GTARC screening levels. VC was not detected above analytical detection limits in any of the probe groundwater samples.

TCE was detected in groundwater samples from all three monitoring wells at concentrations above CALM GTARC screening levels. CDCE was detected in the groundwater samples from monitoring wells MW2 and MW3 at concentrations above CALM GTARC screening levels and below CALM GTARC screening levels in monitoring well MW1. TDCE was detected in the groundwater sample from monitoring well MW3 at a concentration above CALM GTARC screening level and below the CALM GTARC screening level in the groundwater sample from monitoring well MW2. VC was detected in groundwater samples from monitoring wells MW2 and MW3 concentrations above CALM GTARC screening levels (Ref. 50). Refer to additional discussion of the groundwater monitoring well samples in Section 4.12.3.

In addition to direct exposure to soil and groundwater, vapor intrusion into the buildings is also a potential exposure route for volatile contaminants. On the basis of the detected TCE concentrations in soil and the depth to groundwater observed in the vicinity of the buildings, this was not anticipated to be a concern at the site. However, because of the potential risk of exposure to children and workers in the buildings, air monitoring was conducted inside both buildings by GSA. Samples were collected using an SKC Organic Vapor Passive Sampler over a period of approximately 4 days. The samples were analyzed for TCE and DCE. Neither compound was detected in either sample above the detection limits of 0.048 mg/m^3 for TCE and 0.035 mg/m^3 for DCE. However, these detection limits exceed the current MRBCA target levels for residential indoor air. The TCE detection limit also exceeds the current MRBCA target level for non-residential indoor air.

The draft report has not been finalized; however, information and data from the investigation are incorporated in this report. The analytical data and boring logs are included in Appendix A, Ref. 50, and the data are summarized on Ref. 50 Figures 3 and 4 in Appendix B. The report recommended additional investigation in the vicinity of SP3 northeast of Building 50 to attempt to further delineate the potential source in that area.

2.4.2 DOE Storm Sewer Monitoring

After PCBs were detected above the NPDES discharge limits at Outfall 003, DOE conducted several monitoring events to collect water and a few sediment samples from the storm sewers that discharge to this outfall. The PCB data from these sampling events are presented on the DOE Storm Sewer Sample figure (Ref. 51, Appendix B). PCBs were not detected in the one sediment sample and eight out of nine water samples from the manhole northeast of the West Boiler House. PCBs were detected at a concentration of 0.22 µg/L in the water sample collected from the manhole on 5/10. This is the first manhole downstream of Building 50 that was sampled, and the location where the highest concentrations of TCE were detected. No PCBs were detected in the single water and sediment samples collected from the drop inlet south of Building 50.

The highest concentrations of PCBs were detected in samples of sediment from the sag pipe east of the West Boiler House. 110 mg/kg and 190 mg/kg were detected in the north and south pipe samples, respectively. No PCBs were detected in the water samples collected during the same event at these locations. All concentrations of PCBs detected in water samples from all the storm sewer monitoring events (excluding the outfall itself) were less than 1.0 µg/L, with the exception of one sample from the first manhole south of the sag pipe (1.1 µg/L on 05/23/01). Fifty-seven out of 72 water samples from the outfall contained PCB concentrations less than 1.0 µg/L. All concentrations of PCBs from all storm sewer water samples were less than 6.0 µg/L.

The highest concentrations of TCE and its degradation products detected in the 003 storm sewer, which collects storm water from the area of Building 50, were detected in water samples from the manhole at the northeast corner of West Boiler House. This manhole is downstream from Building 50, but also collects storm water from other areas in the vicinity. 71.0 µg/L TCE and 54.0 µg/L DCE were detected in the water sample collected on 6/22. Much lower concentrations (7.5 µg/L TCE and 1.0 µg/L DCE) were detected in a water sample from a manhole further downstream on this same date. The storm sewers have been cleaned and lined since these samples were collected.

2.4.3 DOE 2004 Sampling

The DOE collected and analyzed samples of sediment and liquid from Manhole C30R-01, the utility tunnel, and the deluge tank in August 2004, after an inspection identified an oily substance leaking into the manhole from between the sewer pipe and the liner. The substance was observed on the entrance to the downstream pipe on the west side of the manhole. The bottom of the pipe is 8.5 feet bgs. The analytical data from the various samples discussed below are included in Appendix A (Ref. 39).

Not only were PCBs detected in the August 11 samples from the manhole; but TCE, several chlorobenzenes, and some PAHs were also detected. Aroclor 1260 was detected at a concentration of 3,500 µg/L in the water sample and 1,500 mg/kg in the sediment sample. TCE was detected at a concentration of 1,700 µg/L in the water sample. 1,2,4-Trichlorobenzene (TCB) was detected at a concentration of 2,000 µg/L in the water sample and 290 mg/kg in the sediment sample.

A water sample was collected from the utility tunnel on the south side of Building 50 on August 17, 2004. The sample was analyzed for VOCs and PCBs. No compounds were detected in the sample. Water and sediment samples were collected from the west deluge tank on August 25. Aroclor 1260 was detected in the sediment sample at a concentration of 3.8 mg/kg. Methylene chloride detected at a low concentration in this sample is probably a laboratory contaminant. No other compounds were detected in either sample.

2.4.4 DOE Groundwater Monitoring and Corrective Action

DOE has been conducting groundwater sampling and monitoring at the BFC since 1987. Current monitoring consists of semiannual groundwater monitoring to meet requirements of the facility's Missouri Hazardous Waste Management Facility permit (MO980010524) issued October 6, 1999. The most recent report available for review at the time of preparation of the SI work plan was the *Groundwater Corrective Action Report for Calendar Year 2005*, prepared for DOE by Honeywell Federal Manufacturing & Technologies, March 2006 (Ref. 2). Under the RCRA corrective action, groundwater is collected from ten extraction wells, a sump at Outfall 001, footing tile drains under Building 1 and the West Power House, and baseflow at storm water Outfall 002. The collected groundwater is treated at a groundwater treatment system located at the KCP industrial wastewater pretreatment facility (Ref. 2).

The BFC monitoring well network is used to evaluate performance of groundwater remediation systems and to determine potential movement of contamination along the perimeter of the plume. Groundwater on the GSA-managed area on the west portion of the BFC that is a concern with respect to contamination identified in the vicinity of Building 50 is part of the ICGFS. This system would normally flow toward Indian Creek, but the flow direction has been modified by the building tile drain and Outfall 002 collection systems. On the GSA portion of the facility, much of the groundwater flow is captured by the tile drains under the West Power House (Ref. 2).

Most of monitoring wells consist of dual upper and lower completions. The upper completions monitor the water table, while the lower completions are designed to monitor the basal gravel. Concentrations of CVOCs have typically been higher in groundwater samples from the lower completion wells. Drawings showing the TCE plume based on the most recent concentrations detected in the upper and lower ICGFS completion wells is included in Appendix A (Ref. 2).

The 2005 Corrective Action Report states that the West Boiler House footing tile drains are effectively capturing the chlorinated solvent plume in this area. The report also states that the distribution of TCE, DCE, and VC in the contaminant plume in this area is characteristic of a recent TCE source, which the report attributes to the Building 50 area. The report references a sample from the West Boiler House footing tile drain sump that contained 140 µg/L of TCE and 51.0 µg/L of DCE to support this assessment. The more mature contaminant plume on the east side of the facility reflects higher concentrations of the TCE degradation products (DCE and VC) than of TCE itself (Ref. 2).

2.4.5 UST Closures

GSA has closed four USTs on the Site. Each of these is discussed in the following subsections.

Building 4 UST Closure

The 8,000-gallon gasoline UST located east of Building 4 was closed in place in 1993, as reported in *MDNR Closure Report Parts A and B, for Underground Storage Tank, Contents: Gasoline, 8000 Gallon Capacity, Owner General Services Administration* (Ref. 17). According to the closure report, closure included washing and rinsing the tank, filling the tank with clean sand, and plugging the vent and both ends of the fuel line with concrete. Concentrations of petroleum hydrocarbons and BTEXs detected in soil samples were below cleanup levels required at the time (Ref. 17) and also below current MRBCA DTLs. The closure was approved by MDNR (Ref. 18).

Building 17 UST Closure

The 500-gallon heating oil UST in the area of former Building 17 was removed in 1993, as reported in *MDNR Closure Report Underground Storage Tank Removal for General Services Administration, 1500 E. Bannister Road, Kansas City, Missouri 64131* (Ref. 42). The tank was recycled. Concentrations of TPH and BTEXs in soil samples from below the tank and the sidewall were below cleanup levels required at the time and also below current MRBCA DTLs. The closure was approved by MDNR (Ref. 43).

Building 1 UST Closure

The 3,000-gallon diesel UST on the northwest corner of Building 1 was removed in 1999, as reported in *Closure Report for Removal of Underground Storage Tank General Services Administration Bldg. 1, 1500 E. Bannister Road, Kansas City, Missouri 64131* (Ref .19). Approximately 200 gallons of product and water were removed from the tank and disposed of by energy recycling. One 55-gallon drum of sludge was disposed of as a RCRA hazardous waste. The tank was recycled and fuel lines and vent pipes were removed and disposed of. No TPH-gasoline, TPH-diesel, BTEXs, or MTBE was detected in any of the soil samples from the excavation. The closure was approved by MDNR (Ref. 20).

Building 7 UST Closure

The 1,000-gallon UST located south of the Building 7 was closed in place in 2000, as reported in *Underground Storage Tank Closure Assessment Report, Bannister Federal Complex, Building 7, 1500 E. Bannister Road, Kansas City, Missouri 64131-3088* (Ref. 21). No VOCs (with the exception of acetone), PAHs, TPH, or PCBs were detected in the soil and groundwater samples collected around the tank. TPH and PCBs were detected in the tank contents. Tank liquid was disposed of as a non-hazardous waste, while sludge was disposed of as a RCRA hazardous waste. The tank was cleaned and backfilled. Its use was not determined, but piping appeared to be connected to the building floor drains (Ref. 21). The MDNR approved closure of the tank (Ref. 22)[4].

[4] This structure was closed in accordance with UST regulations, but on the basis of the drain connection, it may have been an oil/water separator. However, its location does not match either of the oil/water separator locations shown on the 1942 drawings.

On the basis of sampling results and MDNR approval of the tank closures, none of the closed USTs are considered to warrant further investigation. It is recommended that the UST in-place closures be recorded in property deed notice in accordance with MRBCA storage tank guidelines and MDNR solid waste regulations.

Building 41 Oil/Water Separator

The 2005 investigation and proposed closure of this unit are presented in the *Investigation Report for the Bannister Complex Building 41 Site* (Ref. 45). As previously discussed, on the basis of historical drawings, this underground structure was identified as an oil/water separator located north of the former High Power Components Development Lab located in Building 41 on DOE-managed property. The liquid in the structure was determined to be non-hazardous, and soil and groundwater samples from around the structure did not detect contaminants in excess of MRBCA storage tank DTLs. The liquid was disposed of as a non-hazardous waste, and the structure was filled with inert material (Ref. 45 and 46). *On the basis of the investigation and closure of this tank, no further assessment or investigation of this unit is warranted.*

2.4.6 Possible Contaminant Sources

The following areas of potential environmental concern warranting investigation were identified from historical sources, interviews, and the site visit. This information provided the rationale for the SI, as documented in the *Site Inspection Work Plan, GSA-Managed Property, Bannister Federal Complex*, prepared for GSA, October 2006 (Ref. 52).

2.4.6.1 Building 1

- The former photo developing center in the basement of Building 1. Photo developing requires the use of chemicals, particularly silver, that may be of environmental concern. Other chemicals typically used in photo developing include hydroquinone, bromide, and sodium sulfite.

- The janitorial room in the basement of Building 1 that was previously a carpenters' shop. According to an interview, various chemicals may have been discharged to the sink drain in this room. However, it was determined during the SI that the sink had been replaced since these discharges took place, so this area was not investigated.

- Area where a transformer leaked on the roof of Building 1. Transformers are located in structures on the roof of the building. One transformer containing PCBs leaked over time. The spill area was cleaned, and the floor of the structure was sealed.

- Stained soil along the railroad tracks. Railroad tracks were previously present on the north and west sides of the building. Remnants of the tracks remain, and stained areas were observed along the abandoned railroad tracks along the west side of the building during the site visit.

- Stains and spills in a battery storage area. A battery storage and charging area and with a trench floor drain is located on the north side of the building. Stains and small spills or leaks were observed on the floor during the site visit.

- The utility tunnel between Buildings 1 and 50. No contaminants were identified in a water sample collected from this tunnel by DOE in 2004, but it may warrant further investigation.

- Oil separator basins identified in the 1942 drawings. These were located on the northwest and southwest sides of Building 1 and collected water from storm sewers in the basement of the building. (The Building 7 UST closure may be relevant to investigation of these structures. Refer to footnote 3).

2.4.6.2 Building 4

Vehicle maintenance in the area of this building may have resulted in the release of petroleum hydrocarbons.

2.4.6.3 Building 28

Battery storage could have resulted in the release of contaminants, particularly lead.

2.4.6.4 Building 50

Contamination with PCBs and CVOCs has been documented in the vicinity of this building in previous reports. The source and extent of this contamination have not been determined. On the basis of historical information and previous reports, the following potential sources were identified in the vicinity of Building 50:

- Leaks or discharges from the waste oil collection system in Building 50 (PCBs and CVOCs).

- Solvent spills during operations in Building 50 (CVOCs).

- Discharges from Building 50 via the deluge tank system (PCBs and CVOCs).

- Leaks from the former USTs, including the waste oil storage tank (PCBs).

- Spills or releases from the above ground storage tanks shown in the historical aerial photographs (CVOCs and PCBs).

- Releases from electrical equipment associated with the unit substation (PCBs).

- Releases from the high voltage line (PCBs).

Two of these potential sources have been eliminated from further investigation during the SI for the following reasons:

- The former USTs in the vicinity of Building 50 were investigated by the DOE in 2001, and soil samples from the vicinity of the tanks were analyzed for PCBs. PCBs were not detected in any of the samples, including those where petroleum products were observed and detected. Although TPH contamination has been identified in the vicinity of the former tanks, it has been sufficiently characterized for MDNR to issue a letter indicating that no further sampling or corrective action is required (Ref. 33). Finally, although CVOC contamination of soil and groundwater has been detected in the vicinity of the USTs, contaminant concentrations are not consistent with a source in this area.

- The remaining deluge tank connected to the storm sewer was sampled by DOE in 2004, and a water and sediment sample were analyzed for VOCs and PCBs. The only contaminant detected was Aroclor 1260 at a low concentration in the sediment sample. On the basis of these results, the deluge tank system is not considered to be a potential source of contamination.

3.0 SI FIELD ACTIVITIES

The original SI field work was conducted between October 30 and November 15, 2006, generally as specified in the SI Work Plan (Ref. 52, Appendix A), to evaluate the possible contaminant sources identified in the preceding section. After the initial work was performed, GSA requested additional field activities, which were performed from February 14 through February 17, 2007, and on April 26 and 27, 2007, in accordance with scopes of work and specifications prepared for those activities.

The initial October-November 2006 field work included the following activities:

- Hydraulic probing to evaluate CVOCs northeast of Building 50 and to assist in locating monitoring wells MW5 (source) and MW6 (background).
- Hydraulic probing to assess potential PCB contamination in the vicinity of the former unit substation.
- Monitoring well installation in the vicinity of Building 50 to delineate and monitor the chlorinated solvent groundwater contaminant plume in this area.
- Groundwater sampling from new and existing GSA monitoring wells.
- Hydraulic probing to investigate the PCB source material near the storm sewer. Since it appeared likely that the source material was migrating in the pipe bedding, it was thought that it might be feasible to back-track to the source.
- Hydraulic probing to evaluate potential petroleum hydrocarbon contamination in the vicinity of Building 4.
- Hydraulic probing to evaluate potential contamination in the vicinity of the oil/water separator basins on the west side of Building 1.
- Wipe sampling to evaluate current conditions in the PCB spill area in Building 1.
- Sediment, soil, dust sampling in the battery charging area in Building 1, the railroad tracks in Building 1, the trench drain and sump in Building 28, and the utility tunnel between Buildings 1 and 50. A water sample was collected from the drain trap beneath the sink in the photo lab in Building 1.

The February 2007 field work involved excavation and sampling of test pits in selected areas along the storm sewer and near the unit substation in the continued effort to identify the source of the PCBs in the storm sewer. The test pits were initiated after hydraulic probing failed to provide any evidence of PCB contamination, and it appeared that probing might not be effective in identifying a localized source in these areas.

The April 2007 field work involved additional probing along a water pipeline and along the former high voltage line. The water pipeline, which runs north-south across Freedom Drive (Figure 3) is scheduled for replacement and sampling was conducted to evaluate potential contamination that might lead to construction worker exposure. Since the line is perpendicular to the storm sewer line in Freedom Drive, the results are considered relevant to the SI. The probing along the high voltage line was conducted to further investigate the possibility that this line is the source of the PCBs in the storm sewer.

The sample locations are shown on Figures 3 and 4 and deviations from the SI Work Plan are summarized in Table 1.

Table 1. Deviations from SI Work Plan

Location	Change	Reason
Test pit excavation.	Added scope. Methodology described in Section 3.10.	Previously recommended as a better way to evaluate the presence of source material.
Probes along water pipeline.	Added scope. Methodology as specified in SI work plan for other probes and Section 3.11.	Requested by GSA to evaluate potential worker exposure.
Probes along former high voltage line.	Added scope. Methodology as specified in SI work plan for other probes and Section 3.11.	Recommended based on MDNR comments regarding such lines being PCB sources.
New monitoring wells.	10/20 silica used for filter pack.	Considered less likely to infiltrate the well.
MW4	Moved northeast.	Vegetation interfered with access to original location.
MW5	Moved northwest.	Underground utilities present at original location.
MW6	Moved northeast.	Location adjusted to assure upgradient location based on probe field screening results.
MW9	Soil samples not collected for analysis.	Adequate characterization of soil in this area and no occupied buildings nearby.
All monitoring wells.	Developed by bailing rather than pumping.	Consistency with previous GSA investigations.
SP20A.	New probe location.	Refusal at 7.5 feet bgs in SP20.
Building 1 carpenters' sink.	No sample collected.	New sink and trap installed.

The various field activities are discussed in the remainder of this section. Boring logs and well construction diagrams are included in Appendix C. Unless otherwise noted, investigation activities were performed as specified in the SI Work Plan. Only activities that deviated from or that were not addressed in SI Work Plan are described in detail.

3.1 HYDRAULIC PROBES NORTHEAST OF BUILDING 50

Six hydraulic probes were pushed northeast of Building 50 to evaluate CVOCs in the area. The probes were continuously sampled, logged, and field screened using a PID. Probes SP9, SP13, SP16[5], and SP17 were terminated at 28 feet, SP-10 at 28.5 feet, SP-11 at 30 feet. Because no VOCs were detected by the PID in soil above 15 feet bgs, no soil samples were collected for VOC analysis (as specified in the SI Work Plan).

Groundwater samples were collected from each of the probes using a bladder pump in accordance with procedures specified in the SI Work Plan. A head space evaluation was conducted on groundwater samples from all six probes using the Color-tec screening method specified in the SI Work Plan. The following concentrations were detected in the headspace: SP10—100 parts per million (ppm), SP9—4 ppm, SP11—21 ppm, SP16—5 ppm, and SP17—0 ppm. Duplicate groundwater samples for laboratory analysis for VOCs by SW-846 Method 8260 were submitted from probes SP10, SP9, SP11, and SP17. Probes SP13, SP16 and SP17 were added on the basis of the field screening results (in accordance with the SI Work Plan) to delineate the extent of TCE contamination in groundwater in this area[6].

3.2 HYDRAULIC PROBES IN THE VICINITY OF THE FORMER UNIT SUBSTATION

Five probes (including previously discussed probes SP13 and SP16) were pushed in the area of the former unit substation to evaluate the presence of contaminants from possible sources associated with that building. The probes were continuously sampled, logged, and field screened using a PID. As discussed in the preceding section, probe SP16 was completed to 28 feet on the basis of the headspace results from probes SP9, SP10, and SP11. Remaining probes SP12, SP14, and SP15 were pushed to 15 feet. Because no VOCs were detected by the PID and no visible evidence of contamination was observed, soil samples were collected in all five probes for PCB analysis only by SW-846 Method 8082, as specified in the SI Work Plan. Soil samples were collected at 8 feet bgs in probes SP12 and SP14, at 7 feet in SP15, 6-7 feet in SP16, and 9-10 feet in SP13.

3.3 MONITORING WELLS IN THE VICINITY OF BUILDING 50

Five new permanent monitoring wells were installed in the vicinity of Building 50. The locations of several of the wells were adjusted in the field on the basis of the results of the previously discussed probing and field observations. Monitoring wells MW4 and MW5 had to be adjusted

[5] Probes SP13 and SP16 were also utilized for the evaluation of PCB contamination in the vicinity of the Former Unit Substation (Section 3.2).

[6] The headspace screening results for SP13 and SP16 may be biased high, because tubing was inadvertently re-used in conducting the test on these samples.

for access and utility considerations. MW4 was moved slightly northeast and MW5 was moved slightly northwest. Monitoring well MW6 was moved slightly north and west across Freedom Drive to ensure that it was located far enough upgradient to represent background conditions. Monitoring well MW7 was moved further east to provide data representative of contaminant concentrations entering the area from the DOE KCP. Monitoring well MW8 was moved southeast to provide a better distribution of downgradient data points (i.e., not so close to monitoring wells MW2 and MW3).

The well borings were continuously sampled and screened with a PID. Soil samples were collected for analysis by SW-846 Method 8260B from 3 to 5 feet and 8 to10 feet bgs in monitoring wells MW4 and MW5, as specified in the SI Work Plan. Soil samples were not collected from MW9, because soil conditions in this area appeared to have been well enough characterized in previous investigations, and because the absence of occupied structures in the vicinity minimizes potential health risks from vapor intrusion. The soil sample for grain size analysis was collected from unsaturated clay from the boring for monitoring well MW8. The sample was analyzed by American Society of Testing and Materials (ASTM) standard D422-63 and classified as brown fat clay, with 97.2 percent passing the No. 200 sieve. The grain size analysis is included in Appendix C.

The wells were installed as specified in the SI Work Plan, with the exception that 10/20 silica was used in the filter pack. This coarser material was considered less likely to infiltrate into the screened interval than the 45/55 silica sand specified for the DOE wells.

The wells were developed by bailing rather than pumping for consistency with previous well development and sampling of GSA wells. Both existing and new wells were developed on November 6, 2006. Well development data are presented in Table C-1 in Appendix C.

3.4 GROUNDWATER SAMPLING NEW AND EXISTING GSA MONITORING WELLS

Groundwater levels were measured on November 6, 2006, November 9, 2006, and June 15, 2007. Water level measurements are summarized in Table 2. Groundwater elevation contours based on the 6/15/07 water level measurements are presented on Figure 5.

Table 2. Water Levels and Elevations

Monitoring Well Designation	Top of Well Casing Elevation[7]	Depth to Water 11/06/06	Relative Elevation 11/06/06	Depth to Water 11/09/06	Relative Elevation 11/09/06	Depth to Water 6/15/07	Relative Elevation 6/15/07
MW1	798.90	7.33	791.57	7.64	791.26	7.25	791.65
MW2	797.23	9.05	788.18	8.91	788.32	9.39	787.84
MW3	797.80	9.00	788.8	10.50	787.3	10.05	787.75
MW4	800.85	8.27	792.58	8.57	792.28	8.91	791.94
MW5	799.31	7.70	791.61	7.94	791.37	7.38	791.93
MW6	800.06	5.23	794.83	5.75	794.31	7.61	792.45

[7] Elevations are relative. DOE benchmark number 4 had been removed, so the foundation at that location was used as a temporary benchmark. The DOE benchmark elevation was used as the reference elevation (797.58).

Monitoring Well Designation	Top of Well Casing Elevation[7]	Depth to Water 11/06/06	Relative Elevation 11/06/06	Depth to Water 11/09/06	Relative Elevation 11/09/06	Depth to Water 6/15/07	Relative Elevation 6/15/07
MW7	798.09	6.65	791.44	6.75	791.34	6.52	791.57
MW8	798.32	8.52	789.8	9.50	788.82	9.19	789.13
MW9	798.01	NM	-	6.84	791.17	6.72	791.29

All the wells were purged and sampled on November 9, 2006. The samples were submitted for analysis for VOCs by SW-846 Method 8260B.

3.5 HYDRAULIC PROBES IN THE VICINITY OF THE STORM SEWER

The objective of SI investigation activities in the vicinity of the storm sewer was to identify the source of the contamination in the manhole. Because of characteristics of the material and the manner in which it was entering the manhole between the downstream pipe and the liner, it was thought that the material must be infiltrating the sewer pipe relatively close to the manhole. It was also thought that the material was likely to be migrating in the pipe bedding material from the original source and that, if so, it would be readily observable. Therefore, it was hoped that probes (and, subsequently, test pits) would locate the material, and that it would be possible to determine the direction it was coming from and trace it back to the source.

Eight hydraulic probes were initially pushed in the vicinity of storm sewer Manhole C30R-01 to evaluate the presence and potential source of PCBs detected in the manhole. Probe SPMH01 was pushed to refusal at 9 feet bgs and SPMH01A was pushed to 15 feet. All remaining probes were pushed to 10 feet bgs. The probes were continuously sampled, logged, and screened with a PID. In accordance with the SI Work Plan, all probes were pushed in all four quadrants surrounding the manhole, because no evidence of contamination was observed in any of the probes. One soil sample was collected for analysis of PCBs only by SW-846 Method 8082 from each probe, because no VOCs were detected by the PID. Soil samples were collected at the following depths: SPMH01—8.5 feet, SPMH01A—9 feet, SPMH02—8 feet, SPMH02A—9 feet, SPMH03—9 feet, SPMH03A—8.5, SPMH04—8.5 feet, SPMH04A—8.5 feet.

3.6 HYDRAULIC PROBES IN THE VICINITY OF BUILDING 4

Three hydraulic probes were pushed in the vicinity of Building 4 to evaluate potential contamination with petroleum hydrocarbons resulting from previous vehicle maintenance and fueling activities at this building. Probe SP18 and SP19 were pushed to 25 feet bgs. Refusal was encountered at 7.5 feet in SP20. Probe SP20A was offset 7 feet to the west and pushed to 30 feet bgs. The probes were continuously sampled, logged, and screened with a PID. Since no VOCs were detected by the PID and no visible contamination was observed, one soil sample was collected from the vadose zone in each probe at 7-9 feet in SP18, 8-10 feet in SP19, and 10-12 feet in SP20A. Groundwater samples were collected from the probes in the same manner as those in the vicinity of Building 50. The soil and groundwater samples were submitted for VOC and TPH-GRO analysis by SW-846 Method 8260B, PAH selective ion monitoring (SIM) and TPH-DRO/ORO analysis by Method 8270C, and RCRA metals by Method 6010B.

3.7 HYDRAULIC PROBES IN THE VICINITY OF THE OIL SEPARATORS

An attempt was made to locate the oil/water separators shown on the 1942 drawings through the presence of manholes or other evidence of installation. Since no evidence of the structures was observed, the locations were approximated on the basis of dimensions estimated from the drawings. The two probes were pushed to 10 feet and continuously sampled and logged. Soil samples were collected at 7 feet in probe SP21 and 8 feet in probe SP22 for analysis for TPH-DRO/ORO by Method 8270B and PCBs by Method 8082.

3.8 WIPE SAMPLE

In several areas, the SI Work Plan specified collection of sediment samples unless insufficient solid material was present, in which case wipe samples were to be collected. Because sufficient solid material was available in most of the areas specified for wipe samples, only one wipe sample was collected. This sample was collected from the sealed floor where PCBs were spilled on the roof of Building 1. The sample was submitted for analysis for PCBs by Method 8082.

3.9 SEDIMENT, SOIL/DUST, AND WATER SAMPLES

Sediment/soil/dust samples were collected from the floor and trench drain in the Building 1 battery charging area, the sump in the former battery storage area in Building 28, the railroad track in Building 1, the stained area in the Building 4 crawl space, and the utility tunnel between Buildings 1 and 50. A water sample was collected from the Building 1 photo lab sink drain trap, because water (but no sediment) was present. That sample was submitted for analysis for silver by Method 6010B. The samples from the battery charging area in Building 1 and the sump in Building 28 were submitted for analysis for lead by SW-846 Method 6010B; the railroad track for TPH-DRO/ORO Method 8270 and PCBs by Method 8082; the stained area in Building 4 for TPH-DRO/ORO and RCRA metals by Methods 6010/7000; and the utility tunnel for TPH-DRO/ORO and PCBs.

3.10 TEST PITS

When no contamination was observed and no PCBs detected in the probes pushed in the vicinity of the storm sewer and the former unit substation, GSA requested that test pits be excavated in these areas to attempt to locate the source of the PCBs in Manhole C30R-01. The proposed scope of work included up to four test pits along the storm sewer and up to two test pits in the vicinity of the former unit substation. Each test pit excavation was anticipated to be approximately 3 to 4 feet wide, 4 to 6 feet long, and approximately 8.5 feet deep. The depth was based on the depth of the bottom of the storm sewer pipe at the manhole. Test Pit logs are included in Appendix B. Soil samples were collected from the excavator bucket to minimize trench safety issues associated with personnel entering the excavation. Dry decontamination was performed on the excavator bucket between test pits.

The test pits were excavated using a backhoe with an 18-inch bucket. The surface asphalt and concrete were saw-cut before beginning excavation. In addition, because of the thickness of the concrete in Freedom Drive, a hydraulic breaker was used to break up the street surface. Test Pit 1 was excavated February 14, 2007, to the northwest of Manhole C30R-01, as shown on Figure 2. The excavation was 3 feet by 6 feet and 8.5 feet deep. Excavation was continued until granular bedding material was observed, at which point a small amount of water began infiltrating the excavation. No evidence of contamination was observed in the test pit. A soil sample was collected at the base of the excavation.

Test Pit 2 was excavated on February 15 on the east side of the catch basin northwest of the manhole. This catch basin is south of the parking lot where the former USTs were located west of Building 50. The pipe also collects storm water from a catch basin inside the parking lot. Test Pit 2 was 5 feet by 5 feet and approximately 6.5 feet deep. This depth corresponded to the depth of the bottom of the clay pipe exiting the catch basin to the storm sewer. Some soil discoloration, but no odor or oil was observed in the test pit. A soil sample was taken at the base of the excavation from the discolored material.

Test Pit 3 was excavated on the north side of the storm sewer, approximately 110 feet west of the manhole. This test pit was approximately 3 feet wide by 9 feet long. The first two feet bgs were filled with gravel, with two feet of clay and fill below that. Pieces of wood were encountered at several depths. Bedding material was encountered at 8 feet bgs and the excavation was terminated at 8.5 feet, when water began entering the excavation. A soil sample was collected from the bottom of the excavation. No evidence of contamination was observed.

Test Pits 4, 5, and 6 were excavated on February 16. Test Pit 4 was excavated on the southeast side of the manhole at the recommendation of GSA. It was 3 feet by 8 feet and 9.5 feet deep. Water began entering the excavation at 8.5 feet, and the soil sample was collected from this depth. Fill material and wood were also observed in this test pit.

Test Pit 5 was oriented from northeast to southwest to the southwest of the former unit substation. The location was based on the locations of former subsurface utilities that were believed to be potential conduits for source material from this area. The test pit was approximately 3 feet by 8 feet and 8 feet deep. No contamination was observed, and the soil sample was collected from the bottom of the excavation.

Test Pit 6 was oriented from east to west within the footprint of the former unit substation on the recommendation of GSA. The test pit was approximately 3 feet by 8 feet and 5 feet deep. The excavation was terminated above the target depth, because granular fill material began caving into the test pit. No contamination was observed, and the soil sample was collected from the bottom of the excavation. A test pit log was not completed for this excavation.

All the soil samples were submitted for analysis for PCBs by SW-846 Method 8082 and VOCs by Method 8260B. Soil sampling and other field procedures were as specified in the original work plan. The test pits were backfilled with clean crushed limestone fines, and the paving repaired to match the existing surface.

3.11 HYDRAULIC PROBES IN THE VICINITY OF THE WATER LINE AND ABANDONED HIGH VOLTAGE LINE

Six shallow probes were pushed along the 10-inch water line and ten probes were pushed along the abandoned high voltage utility line, as shown on Figure 2. All field activities were conducted in accordance with procedures specified in the SI Work Plan. As previously stated, GSA wished to evaluate potential soil contamination relevant to worker exposure during replacement of the water line, and the high voltage line had been identified by MDNR as a potential PCB source.

The probes near the water pipeline were pushed to a depth of 8 feet bgs (top of the existing water pipe), because GSA wishes to install the new line above the storm sewer that flows east to west along Freedom Drive. The storm sewer is a 36-inch pipe with an 8.5-foot invert depth below the ground surface (bgs) at the manhole. The probes were located as close to the pipeline as possible based on a utility locate performed by DOE. Probe SB206 had to be offset slightly to the northeast because of the presence of other utilities.

On the basis of previous investigations in the area, PCB and CVOCs were identified as the contaminants of concern for worker exposure. Petroleum hydrocarbons (gasoline and diesel) have also been detected in the vicinity of the former USTs east of Building 50. However, the area of the former USTs where the petroleum hydrocarbons were detected is north and west of the water line.

The probes along the water line were sampled continuously, screened with a PID, and logged. The probes were all pushed to a depth of 8 feet bgs. Probes SB202, SB203, SB204, and SB205 were sampled from 4 to 5 feet bgs, probe SB201 was sampled from 6 to 7 feet bgs, and probe SB206 was sampled from 3 to 4 feet bgs. Staining was noted near a piece of wood from 6-7 feet in SB201. Since no evidence of contamination was noted in the remaining probes, the sample depth was based on the presumed depth at which the replacement water line will be installed. The soil samples were analyzed for PCBs by SW-846 Method 8082 and VOCs by Method 8260B.

The probes in the vicinity of the high voltage line were all pushed to 3 feet bgs. The abandoned high voltage utility line ran from the south side of the former unit substation (Building 51) to the south, as shown on Figure 2. The cable location was approximated by measurements from Building 50 using the historical drawings. It is shown ending at a manhole just north of Building 1 on DOE-managed property. The cable is shown on the drawing as being at a depth of 1 foot bgs. No additional information about this line has been identified.

No contamination was observed in any of the probes along the high voltage line. Probes SB101, SB102, SB103, and SB105 were sampled from 1 to 2 feet bgs, probe SB104 was sampled from 1.5 to 2 feet bgs, and probe SB106 was sampled from 1 to 1.5 feet bgs. All the samples were analyzed for PCBs by Method 8082.

3.12 INVESTIGATION DERIVED WASTE

Storage, sampling for waste characterization, disposal of investigation-derived waste, is discussed in this section. Wastes included soil from probes and borings; water from well development, purging, sampling, and decontamination; and soil from test pit excavation. Waste disposal documentation is included in Appendix C.

Water from investigation activities was stored in six 55-gallon drums on the GSA parking lot on the northeast portion of the Site. On the basis of the analytical data, the water was determined to be a characteristic hazardous waste. The drums of water were shipped off-site for treatment by Waste Express. Soil from probing and drilling was stored in 21 55-gallon drums. The drummed soil was disposed of as a special waste at a solid waste landfill by Waste Express. The material excavated from the test pits was initially stockpiled on and covered with 6 mil poly liners in the parking lot northeast of Building 50.The material was subsequently loaded into rolloff containers, after MDNR expressed concerns regarding runoff and the proximity of the Child Care Facility. The material was tested for PCBs and TCLP VOCs, SVOCs, and metals for characterization for waste disposal. Ten tons of material were disposed of as a special waste at the Allied Waste Courtney Ridge solid waste landfill.

3.13 DATA QUALITY REVIEW

The investigation was performed following procedures specified in the SCS Quality Assurance Plan (QAP), the SCS Kansas Office standard Quality Assurance Project Plan (QAPP), and generally accepted standard operating procedures such as those of the EPA Environmental Response Team (ERT) and applicable equipment manufacturers. Laboratory QA/QC procedures are specified in the analytical methods and in the Pace Analytical QAP.

Standard data quality documentation is provided for the analytical data from this investigation. Analyses followed EPA-approved procedures and method-specific QA. Laboratory documentation includes sample data summary sheets and surrogate spike, laboratory control sample (LCS), method blank (MB), and matrix spike/matrix spike duplicate (MS/MSD) results required by the analytical method.

Data quality documentation provided by Pace Analytical was reviewed for conformance with guidelines established in *USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review*, 1999 (Ref. 53), and *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*, 2004 (Ref. 54). Since the data packages were not complete CLP packages, the following elements were reviewed: holding times, preservation, MB, LCS, and MS/MSD. On the basis of this review, the overall quality of the data relative to the contaminants of concern is acceptable.

A few specific data quality issues are discussed below:

- Method reporting limits (MRLs) with respect to a few contaminants of concern were above MRBCA DTLs. Specifically, the MRL of 1 µg/L for benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, and dibenzo(a,h)anthracene is above their respective DTLs in the groundwater samples from probes SP17, SP18, SP19, and SP20A. Since the investigation was conducted for screening purposes in this area and since several of these compounds were detected in groundwater from probes SP18 and SP20A, the MRLs for these compounds in groundwater do not affect the overall usability of the data.

- Groundwater samples from probes SP9, SP10, SP11, SP17, SP18, and SP20A were mistakenly preserved to a basic pH as specified for MRBCA storage tank TPH-GRO and oxygenates analyses, rather than the acidic pH specified for general VOCs by Method 8260B. However, since the relative concentrations in SP9, SP10, and SP11 are consistent with screening data and since the other VOCs of concern are CVOCs, the pH does not affect the overall usability of the data.

- Recoveries of the surrogate dibromofluoromethane were below the acceptable range in a number of the soil samples. The laboratory attributed this to the sodium tribasic preservative used on the soil samples collected for volatile analysis. Recoveries in the quality control samples were acceptable and all other volatile surrogate recoveries were within range. Since the VOCs of concern were CVOCs and petroleum hydrocarbons, this does not affect the overall usability of the data.

- Recoveries of surrogates in a few samples were outside control limits as a result of sample dilution. These results do not affect the overall usability of the data.

- The relative percent difference (RPD) between the MS and MSD results for chromium and PCB 1260 in QC samples associated with Pace Project Number 6015760 (Bldg57/50tunnel, etc.) were above the acceptable limit, and the MS and MSD recovery for arsenic in one of these QC samples was low. This may reflect matrix interference. Since LCS recoveries were within range, these results do not affect the overall usability of the data.

- Chlorobenzene, n-propylbenzene, and tert-butylbenzene LCS recoveries were above the control limits in the QC sample associated with the groundwater samples from the monitoring wells. Since none of these compounds were detected in the samples from the wells, these results do not affect the usability of the data.

- MS/MSD results were not provided for all the QC samples because of insufficient sample volume. Since LCS data were provided and MS/MSD results are available for most of the samples, this does not affect the overall usability of the data.

- A trip blank was unintentionally omitted with the groundwater samples from the monitoring wells. Since VOCs were not detected in all the samples, no cross contamination is indicated.

3.14 REGULATORY SCREENING LEVELS

Regulatory screening levels used for the preliminary evaluation of analytical data from the SI are primarily MRBCA TLs. In most instances, the MRBCA DTLs are used for the initial screening (Ref. 55). However, in instances where these levels are not applicable (e.g., for sediment samples collected inside a building, where the soil DTL is based on leaching to groundwater) or where other exposure pathways are a concern (e.g., vapor intrusion), MRBCA Tier 1 Target Levels for Residential Land Use for Soil Type 1 (Sandy)[8] are used (Ref. 55). Subsequent pathway discussions also reference Tier 1 TLs for Non-residential Land Use for Soil Type 1 (Sandy) in some instances. In a few instances, local sewer ordinances are referenced. The selected screening levels were intentionally selected to be conservative, since they have been used for preliminary identification of areas that could pose a human health or environmental risk and that may require additional investigation.

[8] Since a MRBCA Tier 1 Risk Assessment is not being conducted as part of this PA/SI, the selection of Soil Type 1 is an intentionally conservative choice to represent variable media.

4.0 POTENTIAL SOURCE AREAS AND WASTE CHARACTERISTICS

As identified in Section 1, the following areas of potential environmental concern warranting investigation were identified from historical sources, interviews, and the site visit:

- Building 1: former photo developing center.
- Building 1: roof transformer PCB leak.
- Building 1: stained soil along the railroad tracks.
- Building 1: battery storage area.
- Building 1: utility tunnel.
- Building 1: oil water separators.
- Building 4: crawl space
- Building 4: former vehicle maintenance.
- Building 28: former battery storage.
- Building 50: documented TCE contamination.
- Building 50: documented PCB contamination in storm sewer.
- Building 51: former unit substation and associated abandoned high voltage line.

Each of these areas is discussed in the remainder of this section.

4.1 BUILDING 1: FORMER PHOTO DEVELOPING CENTER

Several small rooms near the south end of the main lower level corridor housed the former photo developing center. According to information sources, it was used throughout the 1980s and 1990s. A metal sink that was presumably used for photo developing is still present and stains are visible on the shelf under the sink. The room is currently carpeted and clean. Based on the single sink and limited space, photo developing was a relatively small operation.

The water sample from the drain trap under the sink was analyzed for silver as an indicator of potential contamination from photo developing activities. 108 µg/L of silver were detected in the sample. This concentration is above the MRBCA groundwater lowest DTL of 78.1 µg/L, which is based on drinking water. However, water from the sink would historically have discharged to the sanitary sewer system (refer to pathway discussion). The concentration in the water sample is below the City of Kansas City, Missouri, Sewer Use Ordinance Section 60-121 maximum total concentration of 5 mg/L for silver. The daily and total quantity of water discharged during use of the photo developing center is not known. *Since the concentration detected is below the Sewer Use Ordinance maximum total concentration and no current discharges are occurring, further discussion, investigation, or remediation of this potential source is not warranted*[9].

[9] Analytical data from samples from potential source areas identified in this section as not warranting further discussion, investigation, or remediation are not included in subsequent exposure pathway discussion in Sections 5.0, 6.0, 7.0, and 8.0.

4.2 BUILDING 1: ROOF TRANSFORMER PCB LEAK

Transformers are located in structures on the roof of Building 1. One transformer leaked over time, and the spill was cleaned up and the area sealed. GSA requested the area be wipe-sampled for PCBs to verify the effectiveness of the seal. Since no PCBs were detected in the wipe sample collected from the roof surface in this area, it appears that the sealant is effectively containing any PCBs remaining on the surface. *On the basis of these results, no further discussion, investigation, or remediation of this potential source is warranted. It is recommended that a plan be implemented to ensure that the seal is maintained properly.*

4.3 BUILDING 1: STAINED SOIL ALONG FORMER RAILROAD TRACKS

A surface soil sample and duplicate were collected from stained soil observed along the former railroad tracks on the west side of Building 1. Concentrations of analytes detected in these samples are summarized in Table 3.

Table 3. Concentrations of Analytes Detected in Samples from the Railroad Track (mg/kg)

Analyte	RR Tracks Primary	RR Tracks Duplicate	TL Surface Soil (Type 1)	DTL
Aroclor 1260	1.070	0.597	NA	1.11
Arsenic	**4.8**	**5.4**	3.89	NA
Barium	414	134	15,000	NA
Cadmium	5.8	2.1	16.8	NA
Chromium	83.4	98.9	74,600	NA
Lead	123	120	260	
TPH-DRO	1,010	1,490	NA	125,000
TPH-ORO	7,140	11,400	NA	124,000

NA – Not applicable
4.8 Concentration exceeds TL or DTL.

Because the discolored soil is located in a covered area, the detected concentrations of metals were compared to MRBCA residential TLs for surface soil Type 1, rather than the DTLs, some of which are based on leaching to groundwater. These TLs are included in Table 3 for comparison. The concentrations of arsenic are above the MRBCA TL of 3.89 mg/kg, but the concentrations of all other metals are below the respective TLs. PCB Aroclor 1260, TPH-ORO, and TPH-DRO were detected below the MRBCA DTLs in both samples. Selenium and other PCB Aroclors were not detected in the sample.

The USACE conducted a study of soil background concentrations in the Kansas City area documented in the *Blue Valley Industrial Corridor Soils Background Study Report, Brownfields Showcase Project*, February 2003. That report documented soil arsenic concentrations ranging from 0.647 to 18 mg/kg. The report recommended a background level of 24 mg/kg. *The detected arsenic concentrations only slightly exceeded the TL and are well below the USACE recommended background level. In addition, no other potential contaminants were detected* *above MRBCA target levels. Therefore, it is concluded that further evaluation of this potential source area is not warranted.*

4.4 BUILDING 1: BATTERY STORAGE AREA

Solid samples were collected from a stained area on the floor and from a trench drain in the battery storage area and analyzed for lead. Building 1 trench drains discharge to the sanitary sewer by the sewer ejector pumps in the basement of the building. Since the floor and drain are concrete and discharge to the sanitary sewer, the detected concentrations were compared to the MRBCA residential TL for surface soil Type 1, rather than the DTL, which is based on leaching to groundwater. Lead was detected in both samples: below the target level of 260 mg/kg for combined exposure to surface soil (all types) under residential land use in the floor sample (49.8 mg/kg) and above that target level in the drain sample (784 mg/kg).

The City of Kansas City, Missouri, Sewer Use Ordinance Section 60-121 maximum total concentration is 5 mg/L for lead. *It is recommended that steps be taken to minimize lead discharges from the battery storage area. However, because the drains discharge to the sanitary sewer and the quantity of sediment observed was minimal, this potential source area does not warrant further discussion or investigation under CERCLA.*

4.5 BUILDING 28: FORMER BATTERY STORAGE AREA

A sediment sample from the sump in the former battery storage area in Building 28 also contained lead above the target level of 260 mg/kg for combined exposure to surface soil under residential land use. The concentration of lead detected in this sample was 595 mg/kg. Only an extremely small quantity of sediment was present in the sump, and this area is no longer used for battery storage. The sump historically discharged to the sanitary sewer, but it is no longer used. *Although it is recommended that the area be cleaned to minimize future exposure, additional assessment and investigation of this area is not considered warranted under CERCLA.*

4.6 BUILDING 4: CRAWL SPACE

A solid sample was collected from a stained area in the Building 4 crawl space and analyzed for RCRA metals and TPH-ORO/DRO. Arsenic and lead were detected at concentrations of 13.1 mg/kg and 7,190 mg/kg, respectively. Since the crawl space is constructed of concrete, the detected concentrations were compared to the MRBCA residential TLs for surface soil Type 1. Both metals were detected above their respective TLs of 3.89 mg/kg and 260 mg/kg, respectively. Selenium and TPH-DRO were not detected. TPH-ORO and all other metals were detected below their respective DTLs. This area is not occupied, so exposure potential is limited to maintenance and construction workers. The area of contamination and the quantity of contaminated material is small. Although it is recommended that the area be cleaned to minimize future exposure, additional assessment and investigation of this area is not considered warranted.

4.7 BUILDING 1: UTILITY TUNNEL

A sediment sample was collected in the utility tunnel between Building 1 and Building 50 and analyzed for PCBs and TPH-ORO/DRO. PCB Aroclor 1260 was detected at a concentration of 1.89 mg/kg, above the DTL of 1.11 mg/kg (based on residential exposure to surface soil), but below the TL for non-residential exposure to surface soil of 7.34 mg/kg. No other PCBs were detected. TPH-ORO and DRO were detected below their DTLs (refer to Table 3) at 1,190 mg/kg and 211 mg/kg, respectively. Although the concentration of Aroclor 1260 exceeds the DTL, this area is not occupied, so exposure potential is limited to occasional maintenance and construction workers. In addition, the area of contamination and the quantity of contaminated material is small and the tunnel is constructed of concrete, which limits migration potential. *Although it is recommended that the area be cleaned to minimize future exposure, additional assessment and investigation of this area is not considered warranted.*

4.8 BUILDING 1: OIL/WATER SEPARATORS

Although the oil/water separators shown on the 1942 drawings could not be located, shallow hydraulic probes were pushed adjacent to the locations of these structures as approximated from dimensions on the drawings. No evidence of contamination was observed during probing. Soil samples were collected from 7 feet bgs in probe SP-21 and 8 feet bgs in SP-22. Both soil samples were analyzed for PCBs and TPH-ORO/DRO. No PCBs were detected in either sample. Low levels of TPH-ORO/DRO were detected in both samples. TPH-ORO was detected at 67.1 mg/kg in SP-21 and 37.3 mg/kg in SP-22. TPH-DRO was detected at 88.9 mg/kg in SP-21 and 82.4 mg/kg in SP-22. Both TPH concentrations were well below their respective DTLs (refer to Table 3). *On the basis of these results and the results from closure of the Building 7 UST, which is a suspected oil water separator, further evaluation of the oil water separators as potential sources is not considered warranted.*

4.9 BUILDING 4: FORMER VEHICLE MAINTENANCE

Three probes were pushed in the vicinity of Building 4 to evaluate potential contamination from vehicle maintenance activities in this area. Probes SP18 and SP19 were pushed to 25 feet bgs and probe SP20A was pushed to 30 feet bgs. Soil samples were collected at 7-9 feet in SP18, 8-10 feet in SP19, and 10-12 feet in SP20A. Groundwater samples were also collected from the probes. The soil and groundwater samples were submitted for analysis for VOCs, TPH-GRO, PAH-SIM, TPH-DRO/ORO, and RCRA metals. Analytes detected in the soil and groundwater samples from the three probes are summarized on Tables 4 and 5 and compared to the respective DTLs. Concentrations exceeding the DTLs are highlighted in bold.

Table 4. Detected Concentrations in Soil in the Vicinity of Building 4

Analyte	Concentrations in mg/kg			
	SP18	SP19	SP20A	DTL
Arsenic	**5.9**	3.4	**4.5**	3.89
Barium	220	212	120	2,040
Cadmium	1.1	1.1	0.65	9.31

Analyte	Concentrations in mg/kg			
Chromium	23.2	23.0	21.4	74,600
Lead	**11.4**	**12.3**	**6.3**	3.74
Selenium	<1.6	<1.6	<1.6	6.27
Benzo(a)anthracene	0.0062	<0.0042	<0.0042	6.12
Benzo(b)fluoranthene	0.0132	<0.0042	<0.0042	6.19
Benzo(a)pyrene	0.005	<0.0042	<0.0042	0.620
Benzo(g,h,i)perylene	0.0044	<0.0042	<0.0042	1,720
Chrysene	0.0081	<0.0042	<0.0042	599
Fluoranthene	0.0233	<0.0042	<0.0042	2,280
Phenanthrene	0.0075	<0.0042	<0.0042	158
Pyrene	0.0178	<0.0042	<0.0042	1,500
Acetone	0.0287	0.0382	0.0208	4.2

Arsenic was detected in the soil samples from SP18 and SP20A above the DTL of 3.89 mg/kg, while lead was detected in the soil samples from all three probes above the DTL of 3.74 mg/kg (based on soil leaching to groundwater). The concentrations of arsenic detected in the soil samples are well below the previously discussed recommended background level. The lead concentrations are also below the previously discussed lead TL of 260 mg/kg for combined exposure to surface soil under residential land use. With the exception of selenium in the sample from SP20A, all the metals were detected in all the groundwater samples from all the probes in excess of their respective DTLs.

Several PAHs were detected in the soil sample from SP18, but all of the concentrations were well below the respective DTLs. Several PAHs were also detected in the groundwater sample from SP20A, and one PAH was detected in the groundwater sample from SP19. However, only the concentrations of benzo(a)anthracene and benzo(b)fluoranthene in the groundwater sample from SP20A exceeded their DTLs of 0.103 and 0.0627 µg/L, respectively.

Table 5. Detected Concentrations in Groundwater in the Vicinity of Building 4

Analyte	Concentrations in µg/L			
Analyte	SP18	SP19	SP20A	DTL
Arsenic	**1,090**	**695**	**493**	10.0
Barium	**3,960**	**11,400**	**5,480**	2,000
Cadmium	**413**	**251**	**146**	5.0
Chromium	**399**	**658**	**438**	100
Lead	**2,670**	**1,550**	**1,350**	15.0
Selenium	**192**	**192**	16.0	50.0
Benzo(a)anthracene	<1.0	<1.0	**1.1**	0.103
Benzo(b)fluoranthene	<1.0	<1.0	**1.7**	0.0627
Chrysene	<1.0	<1.0	1.1	10.3
Fluoranthene	<1.0	1.1	3.6	164
Phenanthrene	<1.0	<1.0	3.2	75.0
Pyrene	<1.0	<1.0	2.3	96.1

With the exception of low concentrations of acetone below the DTL in all the soil samples, no VOCs or TPH-DRO/ORO/GRO were detected in any of the soil or groundwater samples.

It is recommended that further investigation be conducted to evaluate the source and extent of the metals and PAHs detected in the groundwater samples in the vicinity of Building 4. In the absence of TPH in the samples, it is unclear if the metals and PAHs are associated with the vehicle maintenance or fuel use at Building 4, or whether there is some other potential source.

4.10 BUILDING 50: DOCUMENTED PCBS IN THE STORM SEWER

The history and characterization of PCBs detected in the storm sewer, storm sewer outfalls, and more recently Manhole 3COR-01 are presented in detail in Section 2.0. In 2004 an oily substance was identified leaking into Manhole 3COR-01 from between the sewer pipe and the liner. PCBs, TCE, several chlorobenzenes, and some PAHs were also detected in samples from the manhole. Aroclor 1260 was detected at a concentration of 3,500 µg/L in the water sample and 1,500 mg/kg in the sediment sample. TCE was detected at a concentration of 1,700 µg/L in the water sample. 1,2,4-Trichlorobenzene (TCB) was detected at a concentration of 2,000 µg/L in the water sample and 290 mg/kg in the sediment sample. Sampling of a Building 50 deluge tank and the utility tunnel between Building 50 and Building 1 by DOE in 2004 did not identify the source of the material entering the manhole. Historical data from this and previous storm sewer sampling are included in Appendix A.

The objective of the probes (SPMHO1 through SPMH04A) and test pits (Test Pits 1 through 4) in this area was to locate source material and trace it back to the source. As previously stated, no indication of the black oily source material was observed in any of the probes or test pits, although a small area of discolored soil was observed in Test Pit 2. One soil sample was collected from between 8 and 9 feet in each of the eight probes and from the bottom of each test pit. The samples from the probes were analyzed for PCBs only, while the samples from the test pits were also analyzed for VOCs. With the exception of 0.0554 mg/kg of Aroclor 1260 in Test Pit 2, no PCBs were detected in any of the samples from either the probes or the test pits. Test Pit 2 was located near the catch basin south of the parking lot where the former USTs were located. As previously stated, slight soil discoloration, but no odor or oil was observed in the sample location. The concentration of Aroclor 1260 is below the MRBCA DTL of 1.11 mg/kg. Acetone was also detected at a concentration of 0.0423 mg/kg in the sample from this test pit.

TCE and CDCE were detected in the soil samples from Test Pits 1 and 4. TCE was detected at a concentration of 0.210 mg/kg in Test Pit 1 and 0.0738 mg/kg in Test Pit 4. The concentration detected in the sample from Test Pit 1 exceeds the MRBCA DTL of 0.141 mg/kg for TCE in soil. CDCE was detected at a concentration of 0.0124 in Test Pit 1 and 0.0131 mg/kg in Test Pit 4. Neither of these concentrations exceeds the MRBCA DTL of 0.521 mg/kg. The detection of these compounds is consistent with documented groundwater contamination in the area and the water observed infiltrating the test pits at the bottom of the excavation.

The samples collected along the water pipeline are also relevant to this area. Those samples were collected primarily to evaluate potential worker exposure during pipeline replacement and were analyzed for PCBs and VOCs. Acetone was detected in almost all the samples below the

MRBCA DTL of 4.20 mg/kg. No other compounds were detected in any of the samples, with the exception of 0.058 mg/kg of TCE (below the DTL of 0.141 mg/kg) in the sample from SB205 and 0.55 mg/kg Aroclor 1260 in SB206 (below the DTL of 1.11 mg/kg). *Construction worker exposure should not be a concern in this area, provided excavation is above the water table. No evidence of a potential PCB source was observed in the probes along the water line.*

4.11 BUILDING 51: FORMER UNIT SUBSTATION AND HIGH VOLTAGE LINE

The former Unit Substation located east of Building 50 and identified on historical drawings as Building 51, has been suggested as a potential source of PCB contamination in the storm sewers, because of the likely use of PCBs in electrical equipment. The abandoned high voltage line running to the south from that building was also identified as a potential source of PCBs. As previously discussed, several investigation activities were implemented to investigate these areas, including hydraulic probing and test pits.

Five probes (SP12 through SP16) were pushed in the area of the former unit substation to evaluate the presence of contaminants from possible sources associated with that building. As discussed in Section 3.2, because no VOCs were detected by the PID and no visible evidence of contamination was observed, soil samples were collected between 6 and 10 feet bgs in all five probes for PCB analysis. No PCBs were detected in any of the samples.

Since no evidence of PCBs was observed in the soil probes, two test pits (Test Pits 5 and 6) were excavated in the area of the former substation at the same time as the test pits along the storm sewer. Because no evidence of contamination was observed during excavation, one sample was collected from the bottom of each test pit and submitted for analysis for PCBs and VOCs. No PCBs or VOCs were detected in either sample.

Ten shallow probes (SB101 through SB110) were also pushed along the high voltage line south of the former unit substation. Since no evidence of contamination was observed during probing, one soil sample was collected from between 1 and 2 feet bgs in each of the probes and submitted for analysis for PCBs. PCB Aroclor 1260 was detected in the samples from probes SB104, SB105, SB106, and SB108. Concentrations detected in probes SB105 (0.479 mg/kg), SB106 (0.0397 mg/kg), and SB108(0.0953 mg/kg) were all below the MRBCA DTL for Aroclor 1260 of 1.11 mg/kg. The concentration of 293 mg/kg detected in the sample from SB104 was over the DTL. No PCBs were detected in the soil samples from SB101, SB102, SB103, SB107, SB109, and SB110.

The abandoned high voltage line extends south from the former unit substation into the portion of the facility north of Building 1 that is managed by DOE. It is likely that a junction box is located on the DOE property. *On the basis of the relatively high concentration of PCBs detected in the soil sample from SB104, SCS recommends that further investigation of the line be conducted.* However, prior to excavating or cutting into the conduit, it should be verified that the line is disconnected. If there is a junction box on the DOE property, it should be possible to check the condition of the line at that point.

4.12 BUILDING 50: CVOC CONTAMINATION

Contamination with TCE and its degradation products has been documented in the vicinity of this building in previous reports. Concentrations of these compounds detected during previous investigations are presented on the figures in Appendix B and in the reports included in Appendix A. Six hydraulic probes pushed during this investigation were used to further delineate the extent of contamination and to locate permanent monitoring wells northeast of Building 50. Other monitoring wells were installed east, south, and west of the building to provide a total of six new and three existing wells to monitor VOC contamination in the vicinity of Building 50. The following sections discuss the results of laboratory analysis of soil and groundwater samples from the probes and new and existing groundwater monitoring wells.

4.12.1 Soil Samples for VOC Analysis

Soil samples were collected for analysis by SW-846 Method 8260B from 3 to 5 feet and 8-10 feet bgs in the borings for monitoring wells MW4 and MW5. These samples were collected to document concentrations in shallow soil in the vicinity of the source area (MW4) and also to evaluate concentrations in shallow soil in close proximity to Building 50 (MW4) and Building 52 (MW5) to screen for potential vapor intrusion.

No chlorinated VOCs were detected in either of the soil samples from the boring for monitoring well MW4. This is consistent with the results of previous soil sampling in the vicinity of Building 52. Acetone was detected in the shallow sample from this boring at a concentration of 0.0332 mg/kg, below the MRBCA DTL of 4.20 mg/kg.

No VOCs were detected in the shallower soil sample from the boring for monitoring well MW5, but TCE was detected at a concentration of 0.0279 mg/kg in the deeper sample. This concentration is below the MRBCA DTL of 0.141 mg/kg for TCE in soil.

4.12.2 Groundwater Samples from Hydraulic Probes for TCE Analysis

Groundwater samples were collected from each of the probes using a bladder pump in accordance with procedures specified in the SI Work Plan. A head space evaluation was conducted on groundwater samples from all six probes using the Color-tec screening method specified in the SI Work Plan. The following concentrations were detected in the headspace: SP10—100 parts per million (ppm), SP9—4 ppm, SP11—21 ppm, SP16—5 ppm, and SP17—0 ppm.

Duplicate groundwater samples for laboratory analysis for VOCs were submitted from probes SP9, SP10, SP11, and SP17 for comparison with Color-tec screening results. The CVOC concentrations detected in groundwater samples from this investigation are presented on Figure 6, and a summary of CVOCs detected in groundwater samples from all the investigations in the vicinity of Building 50 is provided in Table 6. Table 6 also includes MRBCA DTLs, as well as residential TLs for indoor inhalation of vapor intrusion (Soil Type 1), for comparison

CVOCs were detected in the groundwater samples from SP9, SP11, and SP10. TCE was detected at a concentration of 11.8 µg/L in SP9, 1,330 µg/L in SP11, and 43,300 µg/L in SP10. These concentrations are lower than the concentrations detected using the Color-tec method (4, 21, and 100 ppm, respectively), but the relative magnitude of the concentrations to each other reflect the same order (i.e., SP9<SP11<SP10). This is consistent with earlier indications that the source is near (and possibly under) the northeast corner of the building. All the detected concentrations are above the MRBCA DTL of 5 µg/L, which is based on residential drinking water. No CVOCs were detected in the sample from SP17; however, the detection limits (10.0 µg/L) were above the DTLs for TCE and VC in this sample.

No other CVOCs were detected in the groundwater samples from SP9 or SP10; however, the sample from SP10 was diluted by a factor of 500. CDCE was detected above the DTL of 70 µg/L at a concentration of 238 µg/L in the sample from SP11. 1,2,4-Trimethylbenzene was detected below the DTL of 7.06 µg/L at a concentration of 2.4 µg/L in the groundwater sample from SP10.

4.12.3 Groundwater Samples from New and Existing Monitoring Wells in the Vicinity of Building 50

Groundwater samples were collected from nine new and existing monitoring wells in the vicinity of Building 50. No VOCs were detected in either monitoring well MW6 or MW7 during this monitoring event. Both wells were intended as upgradient/background monitoring wells. VOCs were also not detected in the groundwater sample from MW4, which is located north of Building 50 and southeast of Building 52.

Consistent with previous results, the highest concentration of TCE (43,100 µg/L) was detected in the groundwater sample from monitoring well MW5 on the northeast corner of Building 50. No DCE or VC was detected in the sample from this well; however, the detection limits for these compounds exceeded their respective DTLs. Trichlorofluoromethane was detected at a concentration of 162 µg/L in the sample from this well, below the DTL of 698 µg/L. Trichlorofluoromethane was used as a refrigerant. Production was stopped in 1995, because of the compound's ozone depletion potential. No other VOCs were detected in this sample.

Lower concentrations of TCE, CDCE, TDCE, 1,1-DCE, and VC were detected in the remaining monitoring wells, which are all downgradient of Building 50. TCE was detected at concentrations above the DTL of 5 µg/L in all the remaining monitoring wells: 577 µg/L in MW1, 864 µg/L in MW9 and 914 µg/L in MW9D, 59.7 µg/L in MW2, 7.7 µg/L in MW8, and 2,570 µg/L in MW3. CDCE was detected above the DTL of 70.0 µg/L in all the remaining wells except MW1: 201 µg/L in MW9 and 205 µg/L in MW9D, 9,360 µg/L in MW2, 319 µg/L in MW8, and 572 µg/L in MW3. TDCE was not detected above the DTL of 100 µg/L in any of the wells. 1,1-DCE was detected in MW3, MW9 and MW9D, and MW2, but only above the DTL of 7.0 µg/L at 14.2 µg/L in MW2. VC was detected above the DTL of 2.0 µg/L in all the remaining monitoring wells except MW1: 28.0 µg/L in MW9 and 27.6 µg/L in MW9D, 3,960 µg/L in MW2, 7.2 µg/L in MW8, and 73.9 µg/L in MW3.

Table 6. CVOCs Detected in Groundwater Sample from the Area of Building 50

November 2006 Chlorinated Solvent Concentrations (µg/L)																
	MW1	MW2	MW3	MW4	MW5	MW6	MW7	MW8	MW9	MW-9D	SP9	SP10	SP11	SP17	DTL†	TL*
TCE	577	59.7	2570	<1.0	43100	<1.0	<1.0	7.7	864	914	11.8	43300	1330	<10.0	5.00	1600
CDCE	<5.0	9360	572	<1.0	<25.0	<1.0	<1.0	319	201	205	<5.0	<500	238	<10.0	70.0	6550
TDCE	<5.0	17.7	50.9	<1.0	<25.0	<1.0	<1.0	3.6	2.8	2.3	<5.0	<500	<50.0	<10.0	100	6240
VC	<5.0	3960	73.9	<1.0	<25.0	<1.0	<1.0	7.2	28.0	27.6	<5.0	<500	<50.0	<10.0	2.00	111
Historical Chlorinated Solvent Concentrations (µg/L)																
2004	MW1	MW2	MW3	SP1	SP2	SP3	SP4A	SP5	SP6	SP7	SP8					
TCE	830	51	780	<1.0	<1.0	19000	3600	290	3500	420	0.5					
CDCE	3.7	1200 0	1800	<1.0	<1.0	73	110	18	220	14	<1.0					
TDCE	<5.0	72	110	<1.0	<1.0	<1.0	<20.0	<1.0	<20	<2.0	<1.0					
VC	<5.0	2600	140	<1.0	<1.0	<1.0	<20.0	<1.0	<20	<2.0	<1.0					
2002	MW1	MW2	MW3	P1	P2	P3	P4									
TCE	1070	2688	1420	<2.0	2170	2.9	<2.0									
CDCE	10.0	2320	1145													
TDCE	0.74	26.7	123													
VC	ND	373	3.9													
2001	BH5	BH6														
TCE	<20. 0	<1.0														
DCE	<20. 0	<1.0														
VC	100	<1.0														

† Lowest Default Target Level for all soil types and pathways – Missouri Risk-Based Corrective Action, Technical Guidance

* Tier 1 Risk-Based Target Levels for Residential Land Use, Soil Type 1 (Sandy), Indoor Inhalation of Vapor Emissions for Groundwater Pathway – Missouri Risk-Based Corrective Action, Technical Guidance

No consistent trends in concentration are observable based on analytical data from groundwater samples collected in 2002, 2004, and this sampling event in monitoring wells MW1, MW2, and MW3. The TCE concentration in MW1 has decreased slightly from event to event. CDCE was detected previously in this well, but the concentrations detected in 2002 and 2004 were below the reporting limit resulting from dilution of the sample during the current investigation. Overall concentrations of TCE have decreased, and DCE and VC have increased in MW2 since 2002. The pattern in MW3 is less consistent, with a decrease in TCE and an increase in DCE and VC between 2002 and 2004, but an increase in TCE and a decrease in DCE and VC between 2004 and 2006. The variations in MW2 and MW3 may reflect the fact that the concentrations detected in samples from these wells are influenced by sources from both Building 50 and the DOE portion of the BFC.

The only other compound detected in the groundwater samples was 1,2-dichlorobenzene below the DTL of 600 µg/L at 2.6 µg/L in MW3.

A specific source of the CVOCs in the soil and groundwater in the vicinity of Building 50 has not been identified. On the basis of the numerous probes around the building, the source is located near the northeast corner of the building, either just outside or beneath it. The most likely sources are the above-ground tanks shown in this general area on the 1961 photograph or releases via waste collection systems in the building itself. *On the basis of the pathway analyses and recommendations, further source delineation may not be necessary. It is recommended that a decision on this be postponed until after an evaluation of the indoor air inhalation pathway has been completed (Refer to Section 8.0).*

The pathway discussions in the following sections address the potential for contaminant migration from sources identified in this section. These discussions do not incorporate the sources and areas that have been eliminated from further assessment and investigation in this and previous sections. Therefore, the evaluations focus on pathways associated with the west portion of the GSA-managed BFC property.

5.0 GROUNDWATER PATHWAY

Most of the general information relating to the overall site groundwater pathway is based on information collected during extensive DOE RCRA corrective actions on the BFC. The results of investigations on the GSA managed portion of the property have been incorporated as applicable, most specifically in the investigation results and conclusions.

5.1 SITE GEOLOGY

5.1.1 Soils

Alluvium at the BFC is approximately 40-45 ft thick and includes a continuous upper layer of bedded clayey silt, with minor amounts of sand and a basal gravel within a sand-silt-clay matrix. The basal gravel ranging in thickness from a few inches to 8 feet, consists of fragments of eroded bedrock in a sand-silt-clay matrix and is likewise continuous throughout the site. All three layers transmit water and constitute the alluvial aquifer (Ref. 2).

The Soil Survey for Jackson County classifies the BFC as Urban Land (69A), 0 to 3% slopes. However, the surrounding area in the Indian Creek and Blue Creek floodplains is classified as Kennebec Silt Loam and Udifluvents. Kennebec silt loam is a nearly level, well drained soil, adjacent to stream channels. Typically, the surface layer is 9 inches of dark silt loam and the subsurface layer is about 30 inches with the upper portion being a brown silt loam and the bottom portion being a brown silty clay loam. The substratum is generally about 60 inches of silt loam. Udifluvents are nearly level and consist of 2 to 4 feet of manmade and silty soil material (Ref. 56).

5.1.2 Bedrock

The bedrock underlying the Bannister Federal Complex consists of shales and sandstones belonging to the Pleasanton Group. The erosional surface of the Pleasanton Group is in direct contact with the alluvium and slopes gently to the east (Ref. 2).

Bedrock across the central portion of the Bannister Federal Facility consists of Knobtown Sandstone. Knobtown sandstone is fine grained, well sorted, well cemented, and ranges from 5-10 feet thick. Results of thin-section analysis indicate approximately 12% intergranular pore space. The unnamed shales across the facility are dense, indurated shales showing no evidence of secondary permeability (Ref. 2).

5.2 SITE HYDROLOGY

Most of the DOE monitoring wells consist of dual upper and lower completions in the alluvium. The upper completions monitor the water table, while the lower completions are designed to monitor the basal gravel. Constant-rate pumping tests on wells fully screened in the alluvium in the area yielded hydraulic conductivity estimates between 1.1 to 3.0 feet/day. In contrast, constant-rate pumping tests on wells screened in the basal gravel unit showed hydraulic conductivity ranged between 14 to 34 feet/day. Test results measuring the vertical hydraulic conductivity of the olive to blue-green clayey silt unit ranged between 0.26 to 0.34 feet/day. Storativity values from the tests ranged from 2.0 x 10^{-3} to 5.0 x 10^{-4} (Ref. 2).

Hydraulic properties of the existing bedrock indicate very low hydraulic conductivities. Results from Packer tests performed on the Pleasanton Shale indicate that the hydraulic conductivities are below 0.0001 ft/day. Knobtown sandstone hydraulic conductivities range from 0.005 to 0.04 ft./day (Ref. 2).

The shallow Quaternary alluvium and the Knobtown and Hepler sandstones are the three separate aquifers that have been identified on the BFC.

The monitoring wells installed at the Site in the vicinity of Building 50 are installed at depths comparable to the DOE lower completion wells (25 to 35 feet bgs). Depths to groundwater measured in those wells on 6/15/07 ranged from 6.52 to 10.05 feet bgs. The DOE classifies the areas surrounding and including Building 50 as part of the ICGFS. This flow system would ultimately discharge to the Indian Creek, if not influenced by facility development and construction. However, groundwater direction and gradient is influenced by the footing tile drain collection systems in the subbasement of West Boiler House and Building 1, which intercept groundwater flow in the area (Ref. 2). Groundwater flow near Building 50 is from northeast to southwest toward the West Boiler House. On the basis of groundwater level measurements in June 2007, groundwater gradients range from approximately 0.002 to 0.02 across the area near Building 50. The groundwater gradient increases steeply near the West Power House, as a result of groundwater collection in the building footing tile drains.

The area of Building 4 is also part of the ICGFS system. Groundwater flow in this area appears to be toward the southeast on the east side of Building 4 and toward the west-southwest on the west side of Building 4 (Ref. 2). However, there are very few monitoring wells on this part of the facility. It would appear that groundwater in this area is not significantly influenced by the BFC groundwater collection system and ultimately discharges to Indian Creek.

5.3 GROUNDWATER TARGETS

The MDNR and the Kansas Department of Health and Environment (KDHE) were contacted to determine the locations of water wells within the four-mile target distance limit (TDL). Eleven wells were identified; two of these are domestic wells:

- Domestic well located approximately 8,600 feet to the north in Missouri (depth 100 feet).
- Domestic well located approximately 18,000 feet to the northeast in Missouri (depth 310 feet).

The population served by these private, domestic wells is unknown. However, MDNR defines a "domestic" well as one that does not produce more than 70 gallons of water per minute and services no more than three connections (Ref. 57). The average household within the Kansas City Metropolitan Statistical Area consists of 2.51 persons; therefore, each domestic well could serve approximately 8 people.

There are nine other private wells located within the TDL. One of these wells is used for golf course irrigation and the remaining seven are used for heat pumps.

There are no public drinking waters wells or wellhead protection areas located in the TDL. The majority of residents in Jackson County, Missouri, and Wyandotte and Johnson County, Kansas obtain their drinking water from municipal providers. Water District Number 1 of Johnson County obtains its drinking water from surface water intakes and wells along the Kansas and Missouri rivers, which are approximately 13 miles and 17 miles northwest and of the BFC, respectively (Ref. 58). The Board of Public Utilities (BPU, Kansas City, Kansas) and Kansas City, Missouri, obtain their drinking water from surface water intakes and wells along the Missouri River. The City of Independence, Missouri, obtains its water from alluvial wells along the Missouri River. The Kansas City, Missouri, wells and intake are approximately 12 miles north of the BFC (Ref. 59); the BPU intakes and wells are more than 14 miles northwest of the BFC; and the Independence wells are more than 15 miles northeast of the BFC. With the exception of the Independence wells, all the public water supply sources are upstream of the confluence of the Blue and Missouri Rivers. The Independence wells are more than 16 miles downstream of the BFC. All other public water sources on the Missouri River are further downstream than the City of Independence, Missouri, wells.

Based on the above information (see Figure 7):

- No wells are located within a 1-mile radius; the site itself is on municipal water.
- One domestic well, serving up to 8 people, and two heat pump wells are located within a 1 to 2-mile radius.
- One irrigation well and one heat pump well are located within a 2 to 3-mile radius.
- One domestic well, serving up to 8 people, and five heat pump wells are located within a 3 to 4-mile radius.

5.4 INVESTIGATION RESULTS

The investigation results are separated into discussions of the CVOCs detected in the area of Building 50 and the metals and PAHs detected in the area of Building 4.

5.4.1 CVOCs in the Vicinity of Building 50

The results of groundwater investigations in the area of Building 50 (Section 4.12.2 and 4.13.3) indicate that there is a source of CVOCs just outside or underneath the northeast corner of the building. The analytical data from the groundwater sample from monitoring well MW5 indicates that this well is in close proximity to a relatively new source of TCE, because of the high concentration of TCE detected and the lack of degradation products (DCE and VC).

On the basis of analytical results from monitoring wells MW6, and MW7, upgradient sources, including groundwater contamination on the DOE portion of the BFC, are not affecting concentrations detected in groundwater samples on the north side of Building 50, specifically samples from monitoring wells MW5 and MW1. The results from the groundwater sample from monitoring well MW4 confirm previous data indicating that the contaminants originating on the northeast side of Building 50 are not migrating to the northwest and do not present a health risk to the occupants of Building 52, which is a child care facility. The results from MW4, MW6, and MW7 define the extent of groundwater contamination to the north, northeast, and east.

An increase in concentrations of degradation products in downgradient wells, including monitoring wells MW1 and MW9, is consistent with chemical and biological breakdown of compounds further from the source area. It is also likely that concentrations detected in monitoring wells MW8, MW2, and MW3 reflect blending of the contaminants originating from the newer source area at Building 50 with the older groundwater plume from the DOE portions of the facility. The older DOE plume typically contains higher concentrations of degradation products. Because of the blending of the two plumes, the extent of groundwater contamination from the Building 50 source is not defined to the south and southwest. However, the extent of overall groundwater contamination from the BFC to the south, southwest, and west is defined by the DOE groundwater monitoring network, including DOE monitoring wells 10 (northwest of MW9), 135 (southwest of MW2 and MW3 and the West Power House), and 157 and 156 (south of MW8 and Building 50) (Ref. 2).

5.4.2 Metals and PAHs in the Vicinity of Building 4

It appears that there may be a source of metals and PAHs in the vicinity of Building 4. Fuel storage and vehicle maintenance were historically associated with this building. However, no specific source was identified during the SI. Concentrations of metals and PAHs in the shallow soil samples from the probes in the area of Building 4 are not indicative of a potential source.

Concentrations of several metals exceeded the DTLs in all of the probe groundwater samples. The DTLs are based on a residential drinking water pathway. Only two PAHs in one probe (SP20A northeast of the building) exceeded the DTLs.

5.5 CONCLUSIONS

A release of TCE and other CVOCs to groundwater is occurring or has occurred from a source on the northeast corner of Building 50 at the Site. The contaminant plume is commingling with groundwater contamination from the DOE portion of the BFC to the southwest of Building 50. However, on the basis of data collected during the SI and DOE corrective action monitoring, CVOC groundwater contamination on this side of BFC is being captured by the footing tile drain collection system in the subbasement of the West Boiler House, which intercepts groundwater flow in the area. There is no evidence that contaminated groundwater from this area is migrating off the BFC. The collected groundwater is treated at a groundwater treatment system located at the KCP industrial wastewater pretreatment facility.

It appears that a release of metals and PAHs may have occurred from a source in the vicinity of Building 4. Groundwater flow in the area is not fully defined, but appears to be toward Indian Creek. Data are insufficient to evaluate whether contaminated groundwater in this area is migrating off the BFC. However, there are no groundwater targets on or within a one-mile radius of the site, and the groundwater pathway is not considered to be complete. The Site is connected to municipal water supplies, as are the majority of surrounding residences and businesses. Off the Site, only one domestic well was identified within the search radius (located in Missouri between one and two miles distant from the Site).

Although the groundwater pathway is not complete, it is recommended that annual groundwater monitoring be conducted in the vicinity of Building 50 to evaluate changes in contaminant concentrations over time. It is also recommended that the source and extent of the metals and PAHs detected in groundwater in the vicinity of Building 4 be further evaluated. Although the groundwater pathway is incomplete, it should be confirmed that contaminants are not migrating off the BFC and impacting surface water in Indian Creek.

6.0 SURFACE WATER PATHWAY

6.1 SITE CONDITIONS

The BFC receives an average of 39 inches of rainfall a year. The elevation of the BFC is between 790-820 feet above sea level. Portions of the BFC were subject to flooding prior to the construction of the levee system along Indian Creek and the Blue River. The levee system was designed to protect against the 500-year flood (Ref. 2). Sanitary wastewater and treated industrial wastewater is discharged to the Kansas City, Missouri, sanitary sewer system (Ref. 34).

6.2 TARGETS

In excess of 80 percent of the western portion of the Site is covered by paved parking areas, paved access roads and buildings. The remaining area is landscaped with sod, small plants, shrubs and trees.

6.2.1 Surface Water Runoff

Runoff from the western portion of the Site is captured by curbing and gutters and directed to onsite storm water inlets along Freedom Street, parking lots, and laterals off a portion of Building 1. Stormwater is conveyed under Bannister Road near the Freedom Street Entrance. The runoff is then discharged into Indian Creek through Outfalls 003 and 004, located on the southern side of the Site. A small portion of the stormwater that is conveyed through the Outfall 003 network is generated from the east on the DOE portion of the facility (Ref. 60). Stormwater generated from the DOE facility, however, generally is discharged separately through Outfalls 001 (into the Blue River) and 002 (into Indian Creek).

6.3 SURFACE WATER TARGETS

Stormwater entering Indian Creek from the BFC flows into the Blue River and ultimately into the Missouri River (see Figure 8 for the 15-mile target distance limit).

6.3.1 Indian Creek

The primary receiving water for stormwater is Indian Creek. Indian Creek is a meandering stream that flows towards the east and is located south of Bannister Road. It has a mean annual flow rate of 22 cubic feet per second for water years 1963 – 2006 (Ref. 61) at a U.S. Geological Survey gauging station located in Overland Park, Kansas (located approximately 8 river miles upstream of the Site). The most recent value is 13 cubic feet per second on June 15, 2007 (Ref. 61).

Indian Creek is classified as a Class P watercourse by the State of Missouri, and its use designations are livestock and wildlife watering, human health protection associated with fish consumption, whole body contact recreation (swimming), and industrial water supply (Ref.

62)[10]. A three-mile stretch of Indian Creek (from the Missouri state line to its confluence with the Blue River) is on the 303(d) list for fecal coliform bacteria, with the source of impairment being wastewater discharges in Kansas. A wastewater treatment plant is located approximately 4.5 river miles upstream of the Site.

6.3.1.1 Blue River

The confluence of Indian Creek and the Blue River is approximately 2000 feet southeast of the Bannister Federal Complex. The Blue River flows north along the east boundary of the site and eventually flows into the Missouri River, approximately 22 river-miles from the site. The Blue River basin encompasses 280 square miles and roughly one-half of the Kansas City metropolitan area south of the Missouri River (Ref. 61). The average annual flow rate of the Blue River is 92 cubic feet per second for water years 1938 – 2006 (Ref. 61). The most recent value is 77 cubic feet per second on June 15, 2007 at the USGS gage station, which is located less than .5 river miles downstream of the confluence of the Blue River with Indian Creek.

Kansas City relies on a combined sewer system. Approximately 90 percent of the combined sewer overflow outfall points in Kansas City are located within the Blue River Basin (Ref. 61).

For its length from Bannister Road to its confluence with the Missouri River, the Blue River is classified as a Class P watercourse by the State of Missouri, and its use designations are livestock and wildlife watering, human health protection associated with fish consumption, whole body contact recreation (swimming), secondary body contact recreation (boating and canoeing), protection of warm water aquatic life, and industrial water supply (Ref. 62)[10]. A 24-mile stretch of the Blue River is on the 303(d) list for chlordane in fish tissues with the source of impairment being urban non-point sources.

The Oak Ridge National Laboratory's Biological Monitoring and Abatement Program (BMAP) monitored the Blue River watershed in and around the DOE KCP adjacent to the Site to address concerns related to bioaccumulation of PCBs and impacts from chlorine (TRC) releases. The bioaccumulation work occurred from 1991-1993, 1998, and 2002-2003. In the most recent study (2002), PCB concentrations in sunfish and channel catfish near the KCP were low, with many samples having PCB concentrations at or near detection limits. Higher PCB concentrations were found in fish downstream of KCP discharges, but PCBs were also detected in fish collected upstream of the plant. (Ref. 63)

On its way to the Missouri River, the Blue River passes by Swope Park, Brush Creek Park, and Blue Valley Park downstream of the BFC. Fishing is likely at these parks and along the Missouri River. Riparian zones along the rivers downstream of the site consist of thick vegetation. Many different types of wildlife as well as fish are present.

6.3.1.2 Other Surface Water Bodies

Five additional surface water bodies are located near the site:

[10] Class P – Streams that maintain permanent flow even in drought periods.

- Oakwood Country Club: Located 1.3 miles southeast of the Site, this private club includes a lake for fishing (Ref. 64).
- Alex George Park: This park, maintained by Jackson County Parks & Recreation, is located 1.8 miles southeast of the Site and contains an 8-acre lake that is stocked for fishing. (Ref. 65).
- Terrace Lake: This dammed reservoir is located approximately 2.88 miles southeast of the site. It consists of a 5-acre lake with a drainage area of 90 acres (Ref. 66).
- Kernoodle Lakes: These lakes consist of a series of four dammed reservoirs totaling 55 acres with a drainage area of 2,469 acres. The lakes are located approximately 3.25 miles southeast of the Site (Ref. 66).
- Lake of the Woods: This lake is located within Swope Park and lies 3.75 miles northeast of the Site. The lake is approximately 6.5 acres and is stocked for fishing.

6.3.2 Public Drinking Water Intakes

There are no public drinking water surface intakes on Indian Creek or the Blue River. None of the public drinking water surface intakes discussed in Section 5.3 are downstream from the Site. The Independence, Missouri, alluvial wells are downstream of the Site, and this groundwater source is connected to the Missouri River, since the wells are installed in the river alluvium. However, these wells are more than 16 miles downstream of the site.

There were no additional surface water intakes identified for irrigation of commercial food or forage crops, for watering of livestock, or for use in commercial food preparation.

6.3.3 Wetlands

Although the Site is technically in a floodplain, construction of the levee protects the Site from a 500-year flood. There are no wetlands at the Site. Wetlands downstream of the Site are located along Indian Creek and the Blue River for approximately 8 miles of the 15-mile target distance (see Figure 8 and 9). Wetlands consist primarily of Inland Forested Wetlands with limited segments consisting of Inland Herbaceous Wetland and Inland Shrub Swamp.

6.3.4 Sensitive Environments

There are no known threatened or endangered species habitats on Site. The Missouri Department of Conservation has no heritage records within two miles of the site or in the Blue River within 15 miles downstream. Species being tracked by the state, but not on the endangered species list, that occur in the target region include Limestone glade, Auriculate False Foxglove (Agalinis auriculatata), Rock Elm (Ulmus thomasii), Little Blue Heron (Egretta caerulea) and Black-crowned Night-heron (Nycticorax nycticorax). However, the Missouri River and its floodplain are home to a number of species of state and federal concern that travel freely along the river and some distance up tributaries. These species include pallid sturgeon, gray bats, Indiana bats, bald eagles, lake sturgeon, and flathead chubs.

No recreational or commercial fisheries were identified along the 15-mile target distance.

6.4 INVESTIGATION RESULTS

No surface water or surface water sediment samples were collected during this investigation. As discussed in Section 2.0, previous sampling has identified PCBs and TCE in the storm sewer along Freedom Drive and at Outfall 003 on Indian Creek. On the basis of previous investigations and the fact that the majority of the Site is paved, the historical source of the contaminants at Outfall 003 is believed to be subsurface infiltration of contaminants into the storm sewers, not surface runoff. Subsurface infiltration has been minimized, if not eliminated, by lining the storm sewers.

As discussed in Section 5.0, PAHs and metals have been detected in groundwater samples from the vicinity of Building 4. These have not been sufficiently characterized to evaluate whether contaminants are migrating off the BFC property and potentially impacting surface water in Indian Creek.

6.5 CONCLUSIONS

Surface water leaving the Site discharges to Indian Creek, which flows into the Blue River, and ultimately enters the Missouri River more than 22 river miles from the Site. Potential targets within the 15-mile target distance include recreational fishing and wetland habitats. No drinking water sources are located within the 15-mile target distance.

Historically, releases have been documented to Indian Creek through the Outfall 003 storm sewer system. Contamination with PCBs and CVOCs has been documented in the storm sewer along Freedom Drive, including evidence of source material infiltrating the storm sewer at Manhole C30R-01. However, because the storm sewer has been lined, this pathway is no longer complete. DOE continues to monitor Outfall 003 under the KCP NPDES permit. The permit specifies maximum allowable concentrations of specific contaminants and water quality parameters in the discharge.

Although this pathway is no longer complete, it is recommended that the source of the contaminants entering Manhole C30R-01 be identified. No source material was identified on Site during extensive hydraulic probing and test pit excavation in the vicinity of the former USTs, Building 50, the former unit substation, and the storm sewer itself. The only indication of a potential source in this vicinity was the relatively high concentration of PCBs detected in a soil sample in one of the probes along the abandoned high voltage line south of the former unit substation. As stated in Section 4.10, additional investigation of this line is recommended.

In addition, the source and extent of metals and PAHs identified in groundwater samples from the vicinity of Building 4 should be further evaluated to ensure that contaminants are not migrating off the BFC property and potentially impacting surface water in Indian Creek.

7.0 SOIL EXPOSURE PATHWAY

7.1 PHYSICAL CONDITIONS

It is estimated that more than 80 percent of the western portion of the Site is occupied by buildings and paved parking areas and roads. Relatively small landscaped areas are located south of Buildings 2 and 3 and west of Building 1. A larger landscaped area (mainly grass) is located north and northeast of Building 52. A fenced area north of Building 52 is a playground for the child care facility. A ball field is also located northeast of Building 52. The Soil Survey for Jackson County classifies the BFC as Urban Land (69A), 0 to 3% slopes. (Ref. 56).

Access to the exterior portions of the Site is not controlled by fences and gates as it is on the DOE portion. However, the Site is monitored by security personnel, and individuals on the Site are required to have employee, contractor, or visitor badges.

7.2 TARGETS

Soil exposure targets are considered to be limited to the resident population on the Site, because this pathway is based on direct contact with contaminated soil, as opposed to contact via migration pathways such as air, surface water, or groundwater. Since the groundwater pathway has been determined to be incomplete, leaching of soil to groundwater has not been included as a target under this pathway. An evaluation of the soil data with respect to TLs for the indoor inhalation of vapor emissions is included in Section 8.0, Air Exposure Pathway.

The resident population consists of approximately 1,500 office workers, maintenance and security personnel, and children enrolled at the child care center. It is estimated that approximately 80 children are present daily in the child care center. Site trespassers and visitors (including contractors) also may be targets, but the frequency and duration of their exposure would be much less. They are included in the resident populations.

There are no environmental targets due to the fact that the Site is in an urban environment with no known threatened or endangered species habitats on or in close proximity to the Site. Resource targets are also excluded due to the urban environment.

7.3 INVESTIGATION RESULTS

Surface soil samples have not been systematically collected at the Site, because the majority of the Site is covered with buildings and pavement, and no evidence of surface contamination has been observed during investigation (including subsurface borings, hydraulic probes, and test pits) of previously identified subsurface contamination. In addition, CVOCs, which are the primary contaminants in subsurface soil and groundwater on the Site, would not remain in surface soil, because of their volatility. However, subsurface soil represents a potential future exposure pathway in the event of construction. Therefore, results of analyses of subsurface soil samples were compared to MRBCA Tier 1 TLs for Residential and Non-residential Land Use Soil Type 1 Surficial Soil, Ingestion, Inhalation, and Dermal Contact. Only one analyte in one soil sample from the SI investigation[11] was detected in excess of the residential TLs. Arochlor 1260 was detected the sample from SB104 in excess of both the residential (1.1 mg/kg) and non-residential (7.34 mg/kg) TL. TCE, DCE, and VC were not detected above the residential TLs in any of the soil samples from this or previous investigations in the vicinity of Building 50. None of the PAHs detected in the soil samples in the vicinity of Building 4 exceeded the residential TLs.

7.4 SOIL EXPOSURE CONCLUSIONS

On the basis of site conditions, the current direct soil exposure pathway is considered incomplete. A release of PCBs to soil has occurred in the area of the high voltage line and future direct exposure to soil contaminated with PCBs in excess of residential and non-residential TLs is possible in this area. As stated in Section 4.10, additional investigation of this potential source is recommended. Exposure to contaminants in soil via groundwater and surface water migration pathways has been discussed in Sections 5.0 and 6.0, respectively. Exposure to contaminants in soil via the air migration pathway is discussed in Section 8.0.

[11] As previously stated, analytical data from sources eliminated in Section 4.0 were not considered in the pathway discussions.

8.0 AIR EXPOSURE PATHWAY

8.1 PHYSICAL CONDITIONS

The climate in the Kansas City region varies greatly from season to season. Winter temperatures can reach below 0°F and summer temperatures can reach above 100°F. The prevailing wind direction is from the south. However, winter days often have a north wind. The mean wind speed is 10 mph (Ref. 44).

The BFC is located within the city limits of Kansas City, Missouri, which is in attainment with all national and state standards with the exception of ozone. The Site is covered predominately by buildings and paved parking areas. It is used primarily for offices and warehouse storage. Access to Building 1 is controlled on both the GSA and DOE portions of the BFC. As previously discussed, Buildings 1, 2, and 3 have basements, Building 4 has a crawl space, Building 7 is connected to Building 1 by a tunnel, and a utility tunnel is located between Buildings 1 and 50.

8.2 TARGETS

Primary targets for air exposure include workers, visitors, and children at the child care center. Approximately 1,500 people work on the GSA portion of the BFC. Approximately 100 people are present during the day in the child care facility, the majority of whom are children. The majority of the federal workers occupy the complex from 6:00 a.m. to 6:00 p.m., Monday through Friday. Only Buildings 1 and 2 have worker-occupied basements; however, the crawl space, access tunnel, and utility tunnel may be temporarily occupied by maintenance or construction workers doing inspections or repairs (Ref. 8).

Secondary targets include people living and working in areas surrounding the Site. As previously mentioned, the Site is surrounded primarily by commercial and light industrial facilities. The nearest residence is located approximately 400 feet southwest of the southwest corner of the Site. Approximately 121,000 persons live with a 4-mile radius of the Site boundary as follows (Ref. 67, Figure 11):

- 300 persons reside within ¼ mile of the Site.
- 1,000 persons reside between ¼ and ½ mile of the Site.
- 6,000 persons reside between ½ and 1 mile of the Site.
- 22,200 persons reside between 1 and 2 miles of the Site.
- 36,800 persons reside between 2 and 3 miles of the Site.
- 54,600 persons reside between 3 and 4 miles of the Site.

No schools are located within 200 feet of the Site. (Ref. 68). The closest schools include Center Senior High, located 0.7 miles northwest of the Site, and Kansas City College, located 0.8 miles southeast of the site.

According to the Missouri Department of Conservation, there are no species or habitats with federal concerns or state-listed as endangered (Ref. 65). There are wetlands located within a 4-

mile radius of the Site, as shown in Figure 10. These wetlands primarily include inland forested wetlands and inland herbaceous wetlands.

8.3 INVESTIGATION RESULTS

No air samples were collected during this investigation. As discussed in Section 2.4.1, indoor air samples were collected in Buildings 50 and 52 during the previous Building 50 source investigation. TCE and DCE were not detected in those samples, but the detection limits were above MRBCA residential TLs for both compounds in air and above the non-residential TL for TCE in air.

TCE, DCE, and VC were detected in soil and groundwater at concentrations exceeding residential and non-residential TLs for indoor inhalation of vapor intrusion (Soil Type 1) at various locations during this and previous investigations:

- Concentrations of TCE in soil samples P4 30-33', BH2 15' and 20', and BH1 10', 20' and 26' all exceeded the residential TL for TCE of 1.46 mg/kg. None of these exceeded the non-residential TL of 7.68 mg/kg for TCE.
- None of the DCE concentrations in any of the soil samples from any of the investigations exceeded the residential TLs for CDCE or TDCE.
- Concentrations of VC in soil samples BH1 20' and 26' exceeded the residential TL for VC of 0.0322 mg/kg. Neither of these exceeded the non-residential TL of 0.169 mg/kg for VC.
- Concentrations of TCE in groundwater samples from the following locations exceeded the residential TL of 1,600 µg/L: SP3, SP4A, SP6, P2, SP10, MW5, and MW3. Concentrations from SP3, SP10, and MW5 also exceeded the non-residential TL of 8,410 µg/L for TCE.
- Concentrations of CDCE in groundwater have exceeded the residential TL of 655 µg/L, but not the non-residential TL, in MW2 and MW3 only.
- Concentrations of VC in groundwater have exceeded the residential TL of 111 µg/L for VC, but not the non-residential TL, in MW2 and MW3 only.

None of the concentrations of metals or PAHs detected in soil or groundwater in the vicinity of Building 4 exceeded the respective MRBCA residential TLs for indoor inhalation of vapor intrusion (Soil Type 1).

8.4 AIR EXPOSURE CONCLUSIONS

Building uses and descriptions are included in Section 2.0 of this report. Potential sources of contaminants to air associated with current uses are limited to diesel fuel storage and miscellaneous small quantities of chemicals used for cleaning and maintenance, including Freon used in the HVAC system. In general, usage and storage of chemicals observed during the PA/SI are in compliance with current regulations and are not considered to be a concern. Some chemicals were observed that appeared to no longer be used. According to GSA, arrangements are being made to dispose of these chemicals (Ref. 8).

The primary contaminants of concern identified on the Site are PCBs and CVOCs in the vicinity of Building 50 and metals and PAHs in the vicinity of Building 4. Of these, only the CVOCs are a concern with respect to the air pathway. In addition, on the basis of the depths at which the higher concentrations have been detected in soil (below 10 feet bgs) and the presence of groundwater contaminated with these compounds, the air pathway of concern is the indoor inhalation of vapor emissions.

On the basis of the preliminary screening of concentrations detected in soil and groundwater, it is recommended that assessment of this pathway be conducted following EPA protocols for the CVOCs in the vicinity of Building 50[12]*. Neither Building 50 nor Building 52 has a basement. However, the source of the contamination in this area appears to be next to or under Building 50, and a sensitive population (children) occupies Building 52. Air monitoring is recommended in both these buildings.*

The air exposure pathway off the Site is not considered to be a concern on the basis of the depth at which contaminants have been detected in soil and the extent of the groundwater contaminant plume, as well as the land use in the area immediately surrounding the Site, which is predominantly commercial and industrial.

[12] DOE conducted a vapor intrusion assessment of Building 1 in 2007. No evidence of intrusion was noted (Ref. 40).

9.0 CONCLUSIONS AND RECOMMENDATIONS

This section presents the conclusions and recommendations of the PA/SI conducted on GSA-managed property at the BFC.

9.1 CONCLUSIONS

The conclusions are divided into a discussion of sources and pathways.

9.1.1 Source Conclusions

The PA/SI explored a number areas and potential sources that were determined *not* to warrant further evaluation on the basis of information obtained during the PA or data collected during the SI. These are summarized below:

- Four USTs closed in accordance with MDNR storage tank regulations, with closure approved by MDNR. These include the 8,000-gallon gasoline UST east of Building 4, the 3,000-gallon diesel UST on the northwest corner of Building 1, the 1,000-gallon UST south of Building 7, and the 500-gallon heating oil tank at the former Building 17 location (northeast area). On the basis of analytical data and MDNR approvals, these USTs do not warrant further assessment, investigation, or remediation. It is recommended that the UST in-place closures be recorded in property deed notice in accordance with MRBCA storage tank guidelines and MDNR solid waste regulations, if this has not done.

- Northeast area. Remaining sources and contamination identified during the PA in this area are being investigated and remediated with EPA and MDNR oversight under the DOE RCRA corrective action, so no further assessment or investigation of this area is considered warranted under the PA/SI.

- Building 41 underground structure. This structure was determined to be an oil/water separator, and was closed in place. Analytes detected in soil and groundwater outside the structure were below MRBCA DTLs. On the basis of the evaluation of the structure and the analytical data, this unit does not warrant further assessment, investigation, or remediation.

- The USTs in the vicinity of Building 50. These have been eliminated as a potential source of PCBs during previous investigations. In addition, GSA received a letter from MDNR indicating that further investigation or remediation of residual petroleum hydrocarbons in the soil was not required. On the basis of this information, these USTs do not warrant further assessment, investigation, or remediation.

- Building 1, former photo developing center. The concentration of silver detected in water from the sink was below the City of Kansas City, Missouri, Sewer Use Ordinance Section 60-121 maximum total concentration of 5 mg/L. No discharges are currently occurring and past discharges were to the sanitary sewer. On the basis of the analytical data, current use, and historical waste discharge destination, no further assessment, investigation, or remediation of the former photo developing center is warranted.

- Building 1, former carpenters' shop sink. It was determined during the SI that the sink had been replaced since reported chemical discharges took place, so this area was not investigated. The sink discharges to the sanitary sewer.
- Building 1, roof transformer PCB leak. No PCBs were detected in the wipe sample from the sealed area where PCBs were spilled. On the basis of the cleanup and wipe sample analytical data, no further assessment, investigation, or remediation of this area is warranted. It is recommended that a plan be implemented to ensure that the seal is properly maintained.
- Building 1, stained soil along the railroad tracks. Although the concentration of arsenic detected in the soil sample from this area was above the MRBCA residential TL, it was determined to be below background concentrations. Therefore, no further assessment, investigation, or remediation of this area is warranted.
- Building 1, battery storage area. The lead concentration in one of the samples from this area exceeded the MRBCA residential TL. Although it is recommended that steps be taken to minimize lead discharges in this area, it is not considered to warrant further assessment, investigation, or remediation under CERCLA, because the drains discharge to the sanitary sewer.
- Building 1 oil/water separators. These units were shown on the 1942 plans, but could not be located. Soil samples from the approximate locations identified on the plans contained TPH concentrations below MRBCA DTLs. On the basis of these results and the results from closure of the Building 7 UST, which is suspected to have been an oil/water separator, further assessment and investigation of these units is not warranted.
- Building 1 utility tunnel. PCB Aroclor 1260 was detected at a concentration above the DTL, but below the non-residential TL for surface soil. It is recommended that the area be cleaned; however, because of the small size of the stained area, limited exposure, and lack of migration pathways, no further assessment, investigation, or remediation of this area is warranted.
- Building 4 crawl space. The concentrations of arsenic and lead detected in the sample from this area exceeded the MRBCA residential TL, and it is recommended that the area be cleaned. However, because of the small size of the stained area, limited exposure, and lack of migration pathways, no further assessment, investigation, or remediation of this area is warranted.
- Building 28, former battery storage area. The concentration of lead detected in the sediment sample from the sump exceeded the MRBCA residential TL, and it is recommended that the sump be cleaned. However, because of the small quantity of sediment present and the lack of current use, no further assessment, investigation, or remediation of this area is warranted.

- Building 50, deluge tank. This tank was sampled by DOE in 2004, and a water and sediment sample were analyzed for VOCs and PCBs. The only contaminant detected was Aroclor 1260 at a low concentration in the sediment sample. On the basis of these results, the deluge tank system is not considered to be a potential source of contamination.

- Building 51, former unit substation. Observations and soil samples from probes and test pits in the vicinity of this former structure provided no evidence of contamination with PCBs associated with this structure. On the basis of the investigation results, this former structure does not warrant further assessment or investigation.

Sources and potential sources identified as a result of the PA/SI include:

- CVOCs on the northeast corner of Building 50.

- PCBs associated with the former high voltage line on the east side of Building 50.

- Metals and PAHs in the vicinity of Building 4.

These are discussed further in the following pathway conclusions and recommendations sections.

9.1.2 Pathway Conclusions

Conclusions associated with each of the pathways are summarized below:

- Groundwater (Building 50). A release of TCE and other CVOCs to groundwater is occurring or has occurred from a source on the northeast corner of Building 50 at the site. The contaminant plume is commingling with groundwater contamination from the DOE portion of the BFC to the southwest of Building 50, and is being captured by the footing tile drain collection system in the subbasement of the West Boiler House. The collected groundwater is treated at a groundwater treatment system located at the KCP industrial wastewater pretreatment facility. There is no evidence that the contaminated groundwater is migrating off the BFC. There are no groundwater targets on or within a one-mile radius of the Site, and the groundwater pathway is not considered to be complete.

- Groundwater (Building 4). It appears that a release of metals and PAHs may have occurred from a source in the vicinity of Building 4. Groundwater flow in the area is not fully defined, but appears to be toward Indian Creek. Data are insufficient to evaluate whether contaminated groundwater in this area is migrating off the BFC. However, there are no groundwater targets on or within a one-mile radius of the site, and the groundwater pathway is not considered to be complete.

- Surface Water. Historically releases have been documented to Indian Creek through the Outfall 003 storm sewer system. Contamination with PCBs and CVOCs has been documented in the storm sewer along Freedom Drive (which discharges at Outfall 003), including evidence of source material infiltrating the storm sewer at Manhole C30R-01. Surface water leaving the Site is discharged to Indian Creek, which flows into the Blue River, and ultimately enters the Missouri River more than 22 river miles from the Site.

Potential targets within the 15-mile target distance include recreational fishing and wetland habitats. No drinking water sources are located within the 15-mile target distance. However, because the storm sewer has been lined, the surface water pathway associated with the storm sewer is no longer complete. The extent of groundwater contamination with metals and PAHs in the vicinity of Building 4 has not been defined sufficiently to evaluate whether this could be impacting Indian Creek.

- Soil. On the basis of site conditions, the *current* direct soil exposure pathway is considered incomplete. However, a release of PCBs to soil has occurred in the area of the high voltage line and *future* direct exposure to soil contaminated with PCBs in excess of residential and non-residential TLs is possible in this area.

- Air. Potential sources of contaminants to air associated with current uses are limited to diesel fuel storage and miscellaneous small quantities of chemicals used for cleaning and maintenance, including Freon used in the HVAC system. In general, usage and storage of chemicals observed during the PA/SI are in compliance with current regulations and are not considered to be concern. The primary air pathway of concern at the Site is the indoor inhalation of vapor emissions from CVOCs detected in soil and groundwater. The air exposure pathway off the Site is not considered to be a concern on the basis of the depth at which contaminants have been detected in soil and the extent of the groundwater contaminant plume, as well as the land use in the area immediately surrounding the Site, which is predominantly commercial and industrial.

9.2 RECOMMENDATIONS

The following recommendations are made with respect to the GSA-managed BFC PA/SI:

- Although the groundwater pathway is not complete, it is recommended that annual groundwater monitoring be conducted in the vicinity of Building 50 to evaluate changes in contaminant concentrations over time. This should be coordinated with DOE groundwater monitoring to ensure that contaminants are not migrating off the BFC. It is also recommended that the source and extent of the metals and PAHs detected in groundwater in the vicinity of Building 4 be further evaluated. Although the groundwater pathway is incomplete, it should be confirmed that contaminants are not migrating off the BFC and impacting surface water in Indian Creek.

- Although the surface water pathway is no longer complete, it is recommended that the source of the contaminants entering Manhole C30R-01 be identified, if possible. No source material was identified on Site during extensive hydraulic probing and test pit excavation in the vicinity of the former USTs, Building 50, the former unit substation, and the storm sewer itself. The only indication of a potential source in this vicinity was the relatively high concentration of PCBs detected in a soil sample in one of the probes along the abandoned high voltage line south of the former unit substation. Additional investigation of this line is recommended.

- On the basis of the preliminary screening of concentrations of CVOCs detected in soil and groundwater in the vicinity of Building 50, it is recommended that assessment of the indoor inhalation of vapor emissions pathway be conducted following EPA protocols. Neither Building 50 nor Building 52 has a basement. However, the source of the contamination in this area appears to be next to or under Building 50 and a sensitive population (children) occupies Building 52. Air monitoring is recommended in both these buildings. The need for further source delineation in the area of Building 50 should be assessed after the results of the air monitoring have been reviewed.

9.3 ADDENDUM NUMBER 1

At the request of GSA, SCS developed *Addendum Number 1 to the Site Inspection Work Plan* (SI WP Addendum 1) in October 2007 to specify sampling activities to be performed to address the last two recommendations in the preceding section. Excavation in the vicinity of the former high voltage line was conducted in October 2007 and air monitoring was performed in Buildings 50 and 52 in January and March 2008. The results of those investigations are included in Appendix J to this PA/SI Report. On the basis of those results, no further action with respect to the former high voltage line is recommended at this time, but it is recommended that additional investigation be conducted in the future, if planned demolition or construction activities would result in subsurface disturbance in the area of Building 50 or the storm sewer in Freedom Drive. Also on the basis of those results, no further action is recommended regarding potential vapor intrusion associated with the contaminated groundwater in the vicinity of Buildings 50 and 52.

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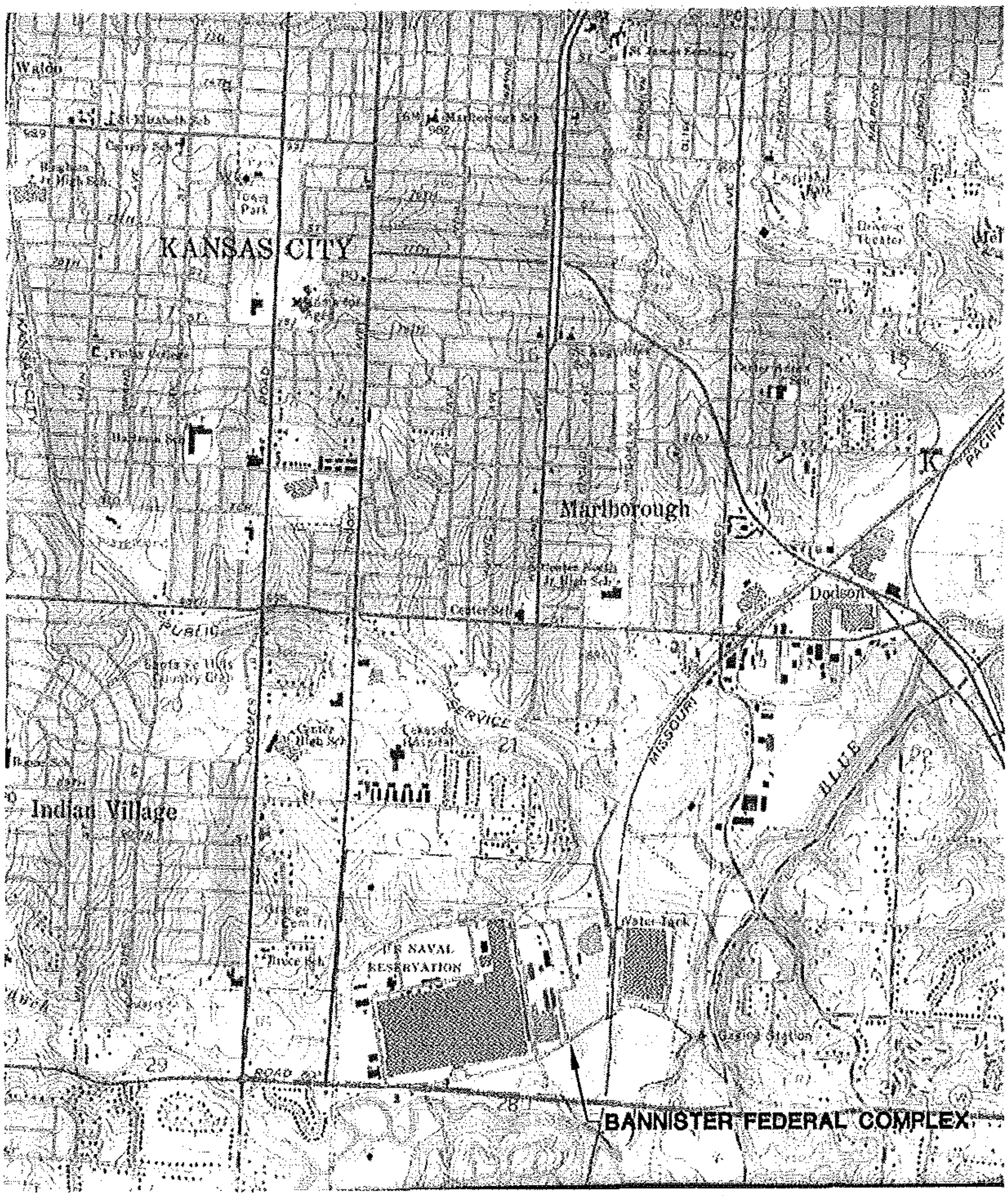
FIGURES



SCS ENGINEERS	BANNISTER FEDERAL COMPLEX	FIGURE 1
DSN. BY D. ENGLISH CHK. BY D. BREWER	GSA PA/SI	SITE LOCATION MAP
DWN. BY R. PHILLIPS REV:	PROJ. NO. 02200070.57 OCTOBER 2006	

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FEBRUARY 14, 1995

LAND USE

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APPENDIX B

REFERENCE DRAWINGS

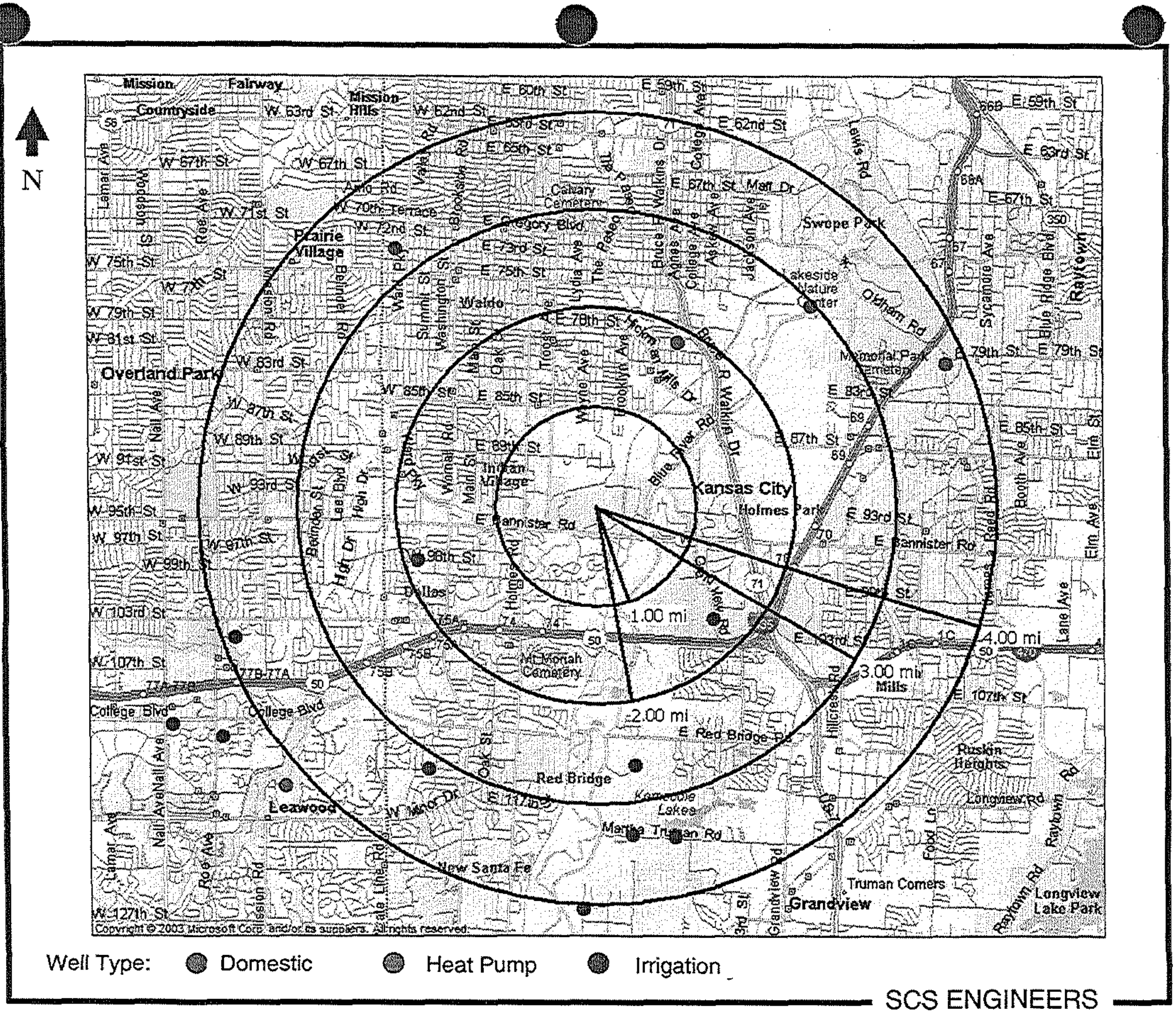


Figure 7
Location of Wells

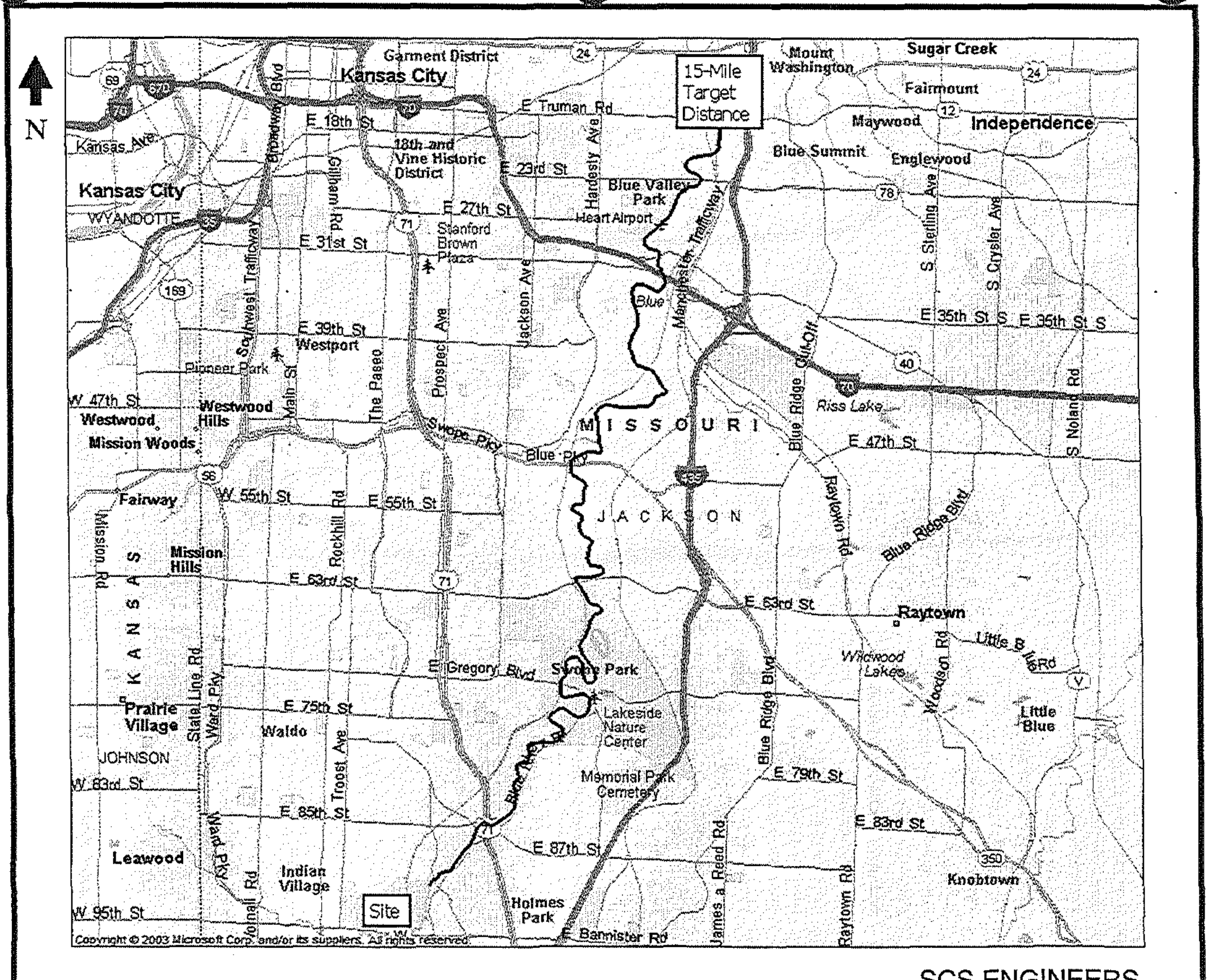


Figure 8
Surface Water: 15-Mile Target Distance Limit

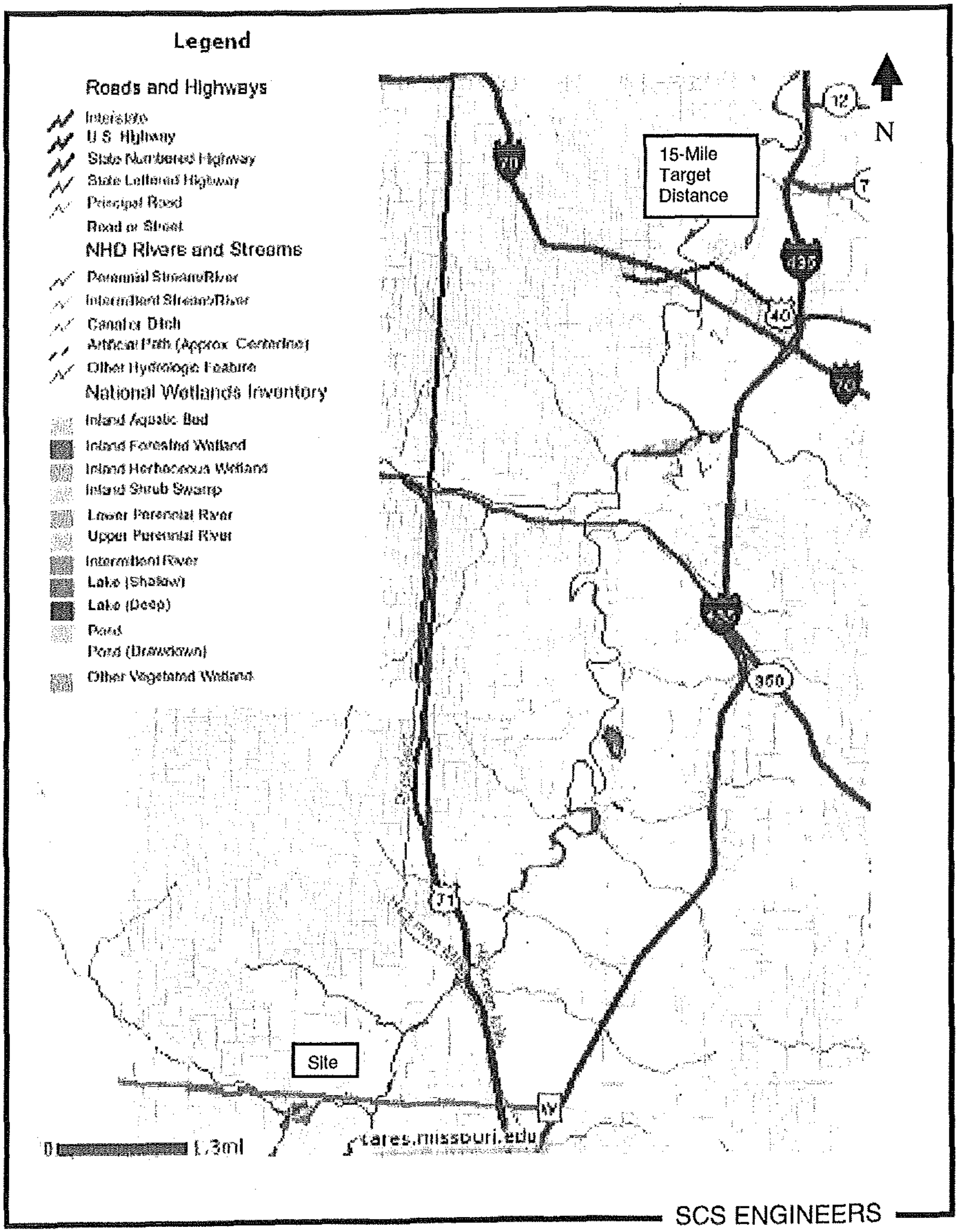


Figure 9
Wetlands Located Within 15-Mile Target Distance

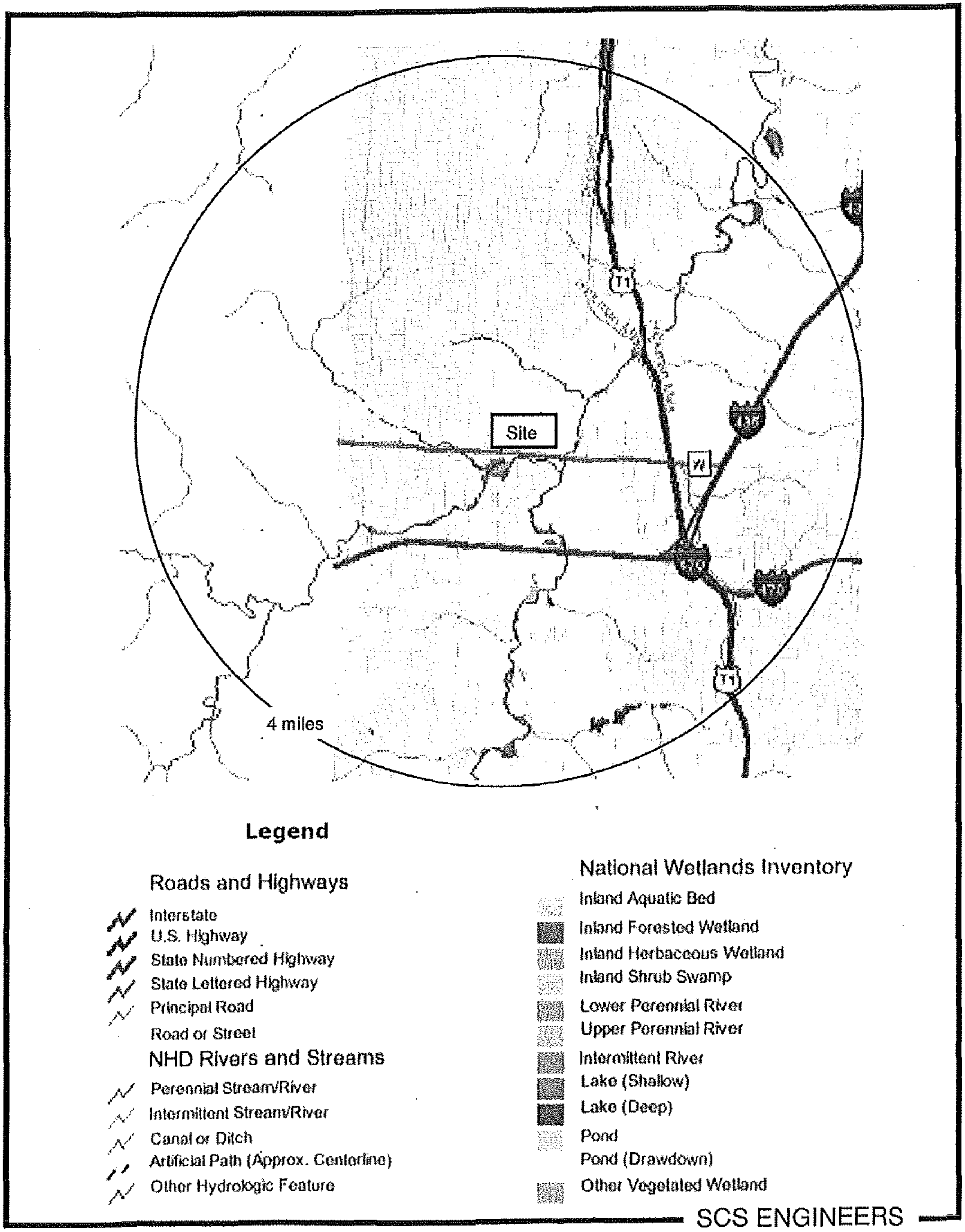


Figure 10
Wetlands Located Within 4-Mile Distance

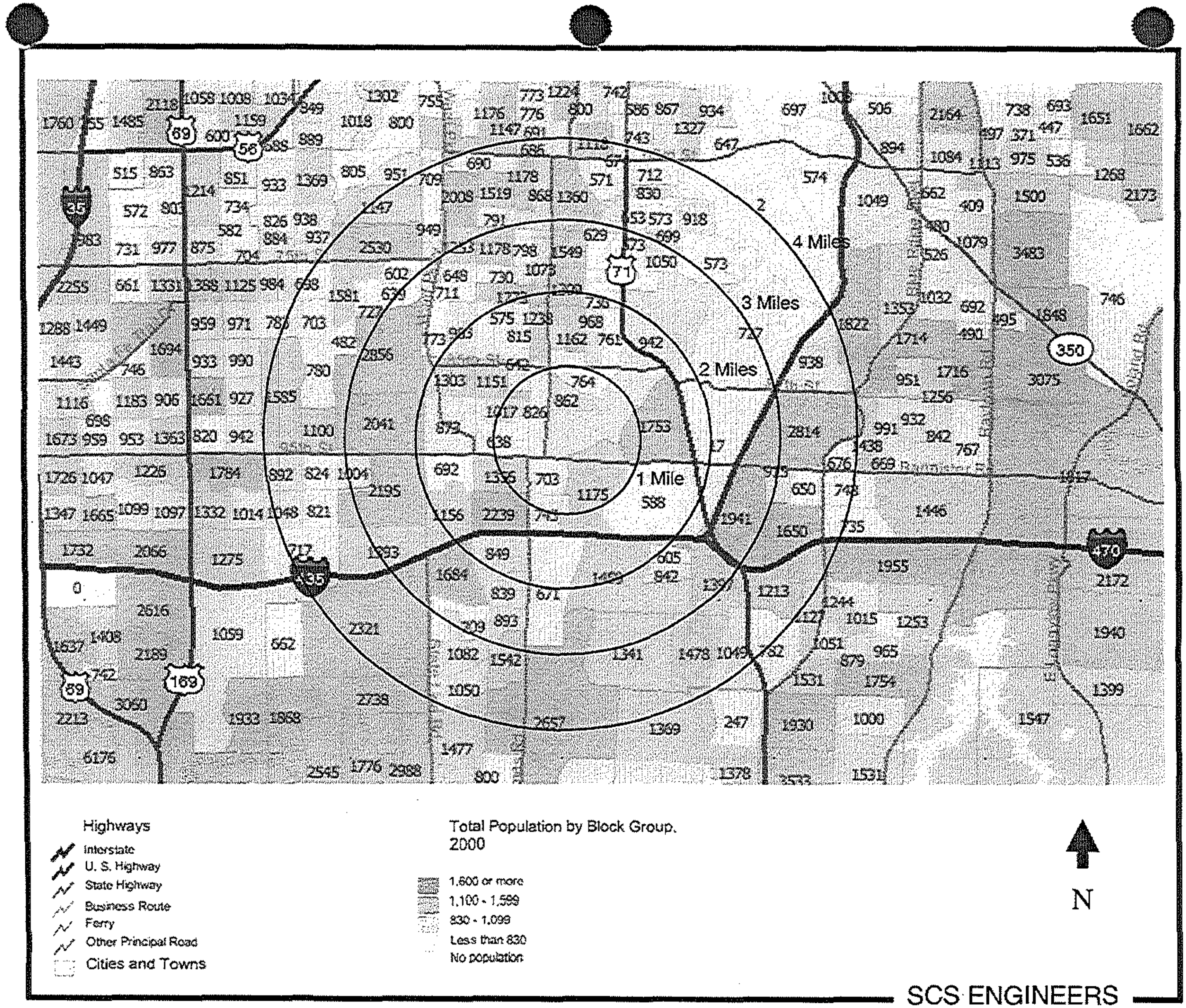


Figure 11
Area Population by Block Group

APPENDICES

APPENDIX A

REFERENCES

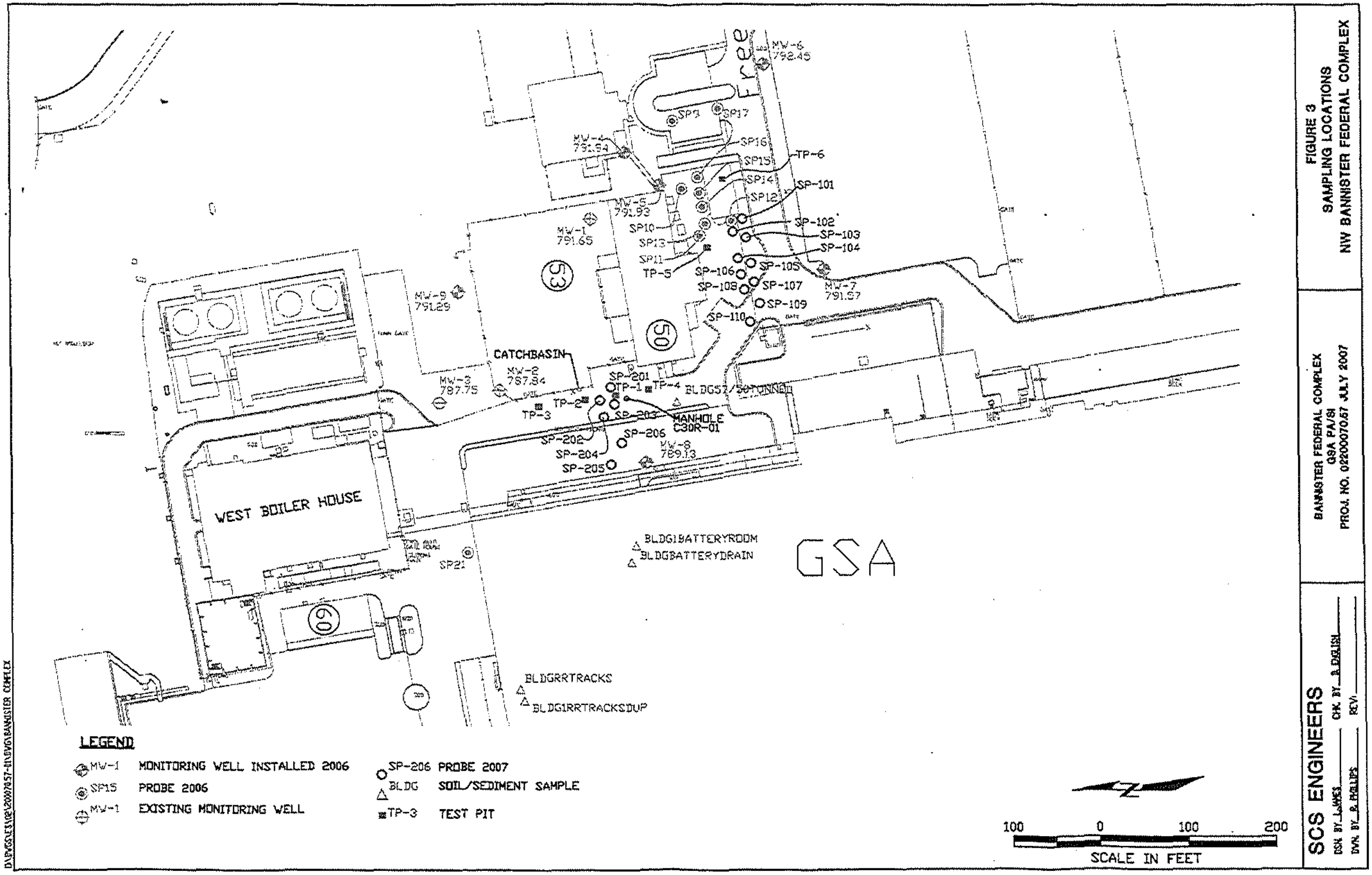
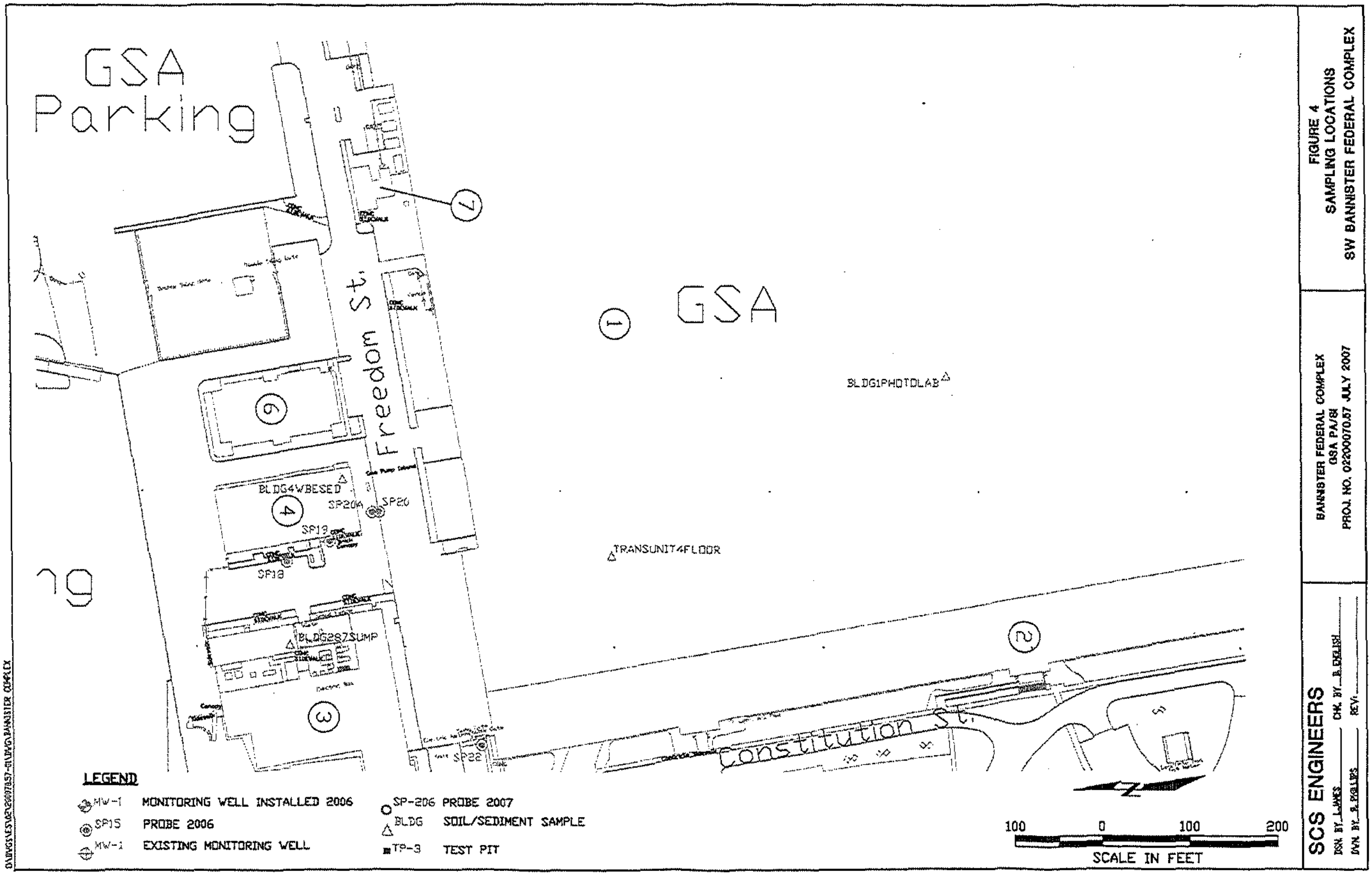


FIGURE 3
SAMPLING LOCATIONS
NW BANNISTER FEDERAL COMPLEX
BANNISTER FEDERAL COMPLEX
GSA PA/SI
PROJ. NO. 02200070.57 JULY 2007
SCS ENGINEERS
GSA
WEST BOILER HOUSE
CATCHBASIN
MANHOLE C30R-01
BLDG57/50TUNNEL
BLDG1BATTERYROOM
BLDGBATTERYDRAIN
BLDGRRTRACKS
BLDG1RRTRACKSDUP
53
50
60
MW-1 791.65
MW-2 787.84
MW-3 787.75
MW-4 791.94
MW-5 791.93
MW-6 792.45
MW-7 791.57
MW-8 789.13
MW-9 791.29
SP9
SP10
SP11
SP12
SP13
SP14
SP15
SP16
SP17
SP21
SP-101
SP-102
SP-103
SP-104
SP-105
SP-106
SP-107
SP-108
SP-109
SP-110
SP-201
SP-202
SP-203
SP-204
SP-205
SP-206
TP-1
TP-2
TP-3
TP-4
TP-5
TP-6
LEGEND
MW-1 MONITORING WELL INSTALLED 2006
SP15 PROBE 2006
MW-1 EXISTING MONITORING WELL
SP-206 PROBE 2007
BLDG SOIL/SEDIMENT SAMPLE
TP-3 TEST PIT
100 0 100 200
SCALE IN FEET


GSA Parking
GSA
Freedom St.
Constitution St.
BLDG1PHOTOLAB
TRANSUNIT4FLOOR
BLDG4WBESED
SP20A
SP20
SP19
SP18
BLDG287SUMP
SP22
LEGEND
MW-1 MONITORING WELL INSTALLED 2006
SP15 PROBE 2006
MW-1 EXISTING MONITORING WELL
SP-206 PROBE 2007
BLDG SOIL/SEDIMENT SAMPLE
TP-3 TEST PIT
100 0 100 200
SCALE IN FEET
FIGURE 4
SAMPLING LOCATIONS
SW BANNISTER FEDERAL COMPLEX
BANNISTER FEDERAL COMPLEX
GSA PA/SI
PROJ. NO. 02200070.57 JULY 2007
SCS ENGINEERS

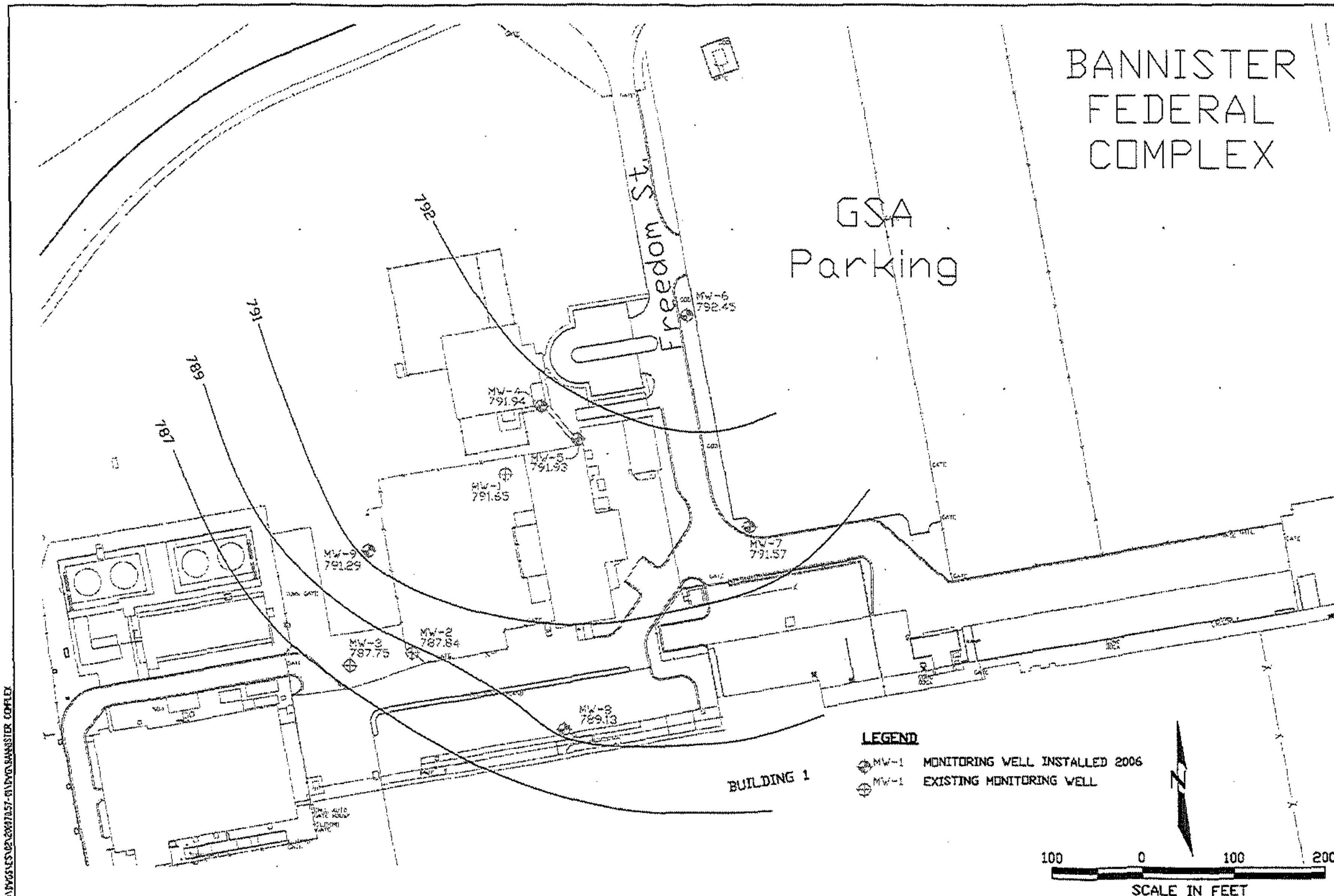
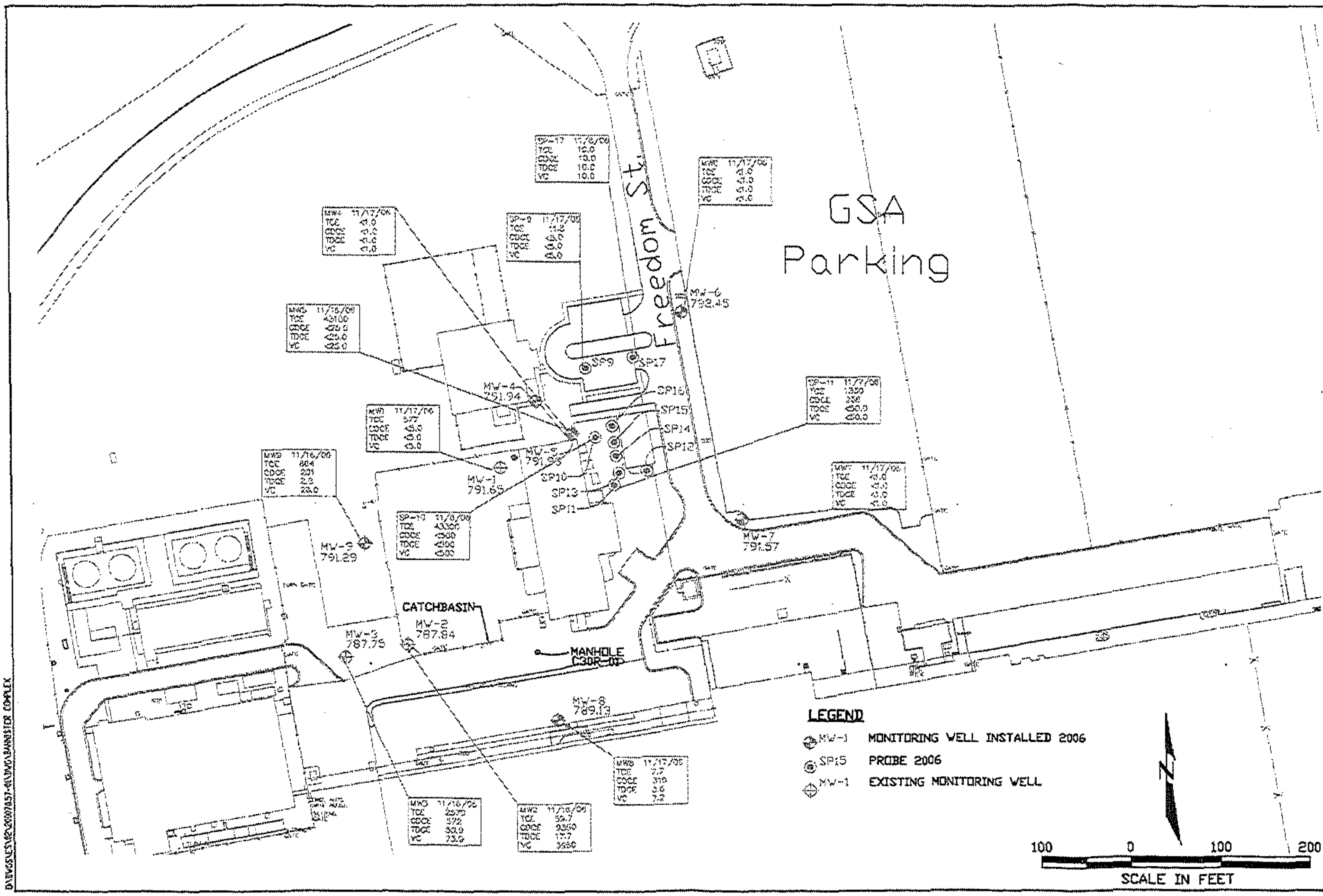


FIGURE 5
GROUNDWATER CONTOUR MAP

BANNISTER FEDERAL COMPLEX
GSA PA/SI
PROJ. NO. 02200070.67 JANUARY 2007

SCS ENGINEERS
DSN BY L. JAMES CK. BY R. MEYER
DWN BY R. PHILLIPS REV.



SCS ENGINEERS

DSN. BY L.JAMES
CHK. BY B.ENGLISH
DWN. BY R.PHILLIPS
REV.

BANNISTER FEDERAL COMPLEX
GSA PA/SI
PROJ. NO. 02200070.57 JULY 2007

FIGURE 6
GROUNDWATER CVOC DATA (ug/l)

D:\EVGS\CS1\02\02007057-01\DWG\BANNISTER COMPLEX

Groundwater Contaminant Plumes
Contour Interval 2ft.
Total VOCs mdl to 50 µg/L
Total VOCs 50 to 1,000 µg/L
Total VOCs 1,000 to 10,000 µg/L
Total VOCs > 10,000 µg/L
Well Legend:
In-Service Monitoring Well Location
In-Service Monitoring Well Location (for static water-level measurement only)
In-Service Pumping Well Location
In-Service Bedrock Well Location
Santa Fe Trail
Liberty Drive
Troost Avenue
Bannister Road
95th Terrace
Garfield Avenue
Blue River
Blue River Road
Indian Creek
IRS BUILDING
MAIN MANUFACTURING BUILDING
BUILDING 13
BLDG 92
FEET
0 125 250 500
0 25 50 100 150
METERS
NNSA

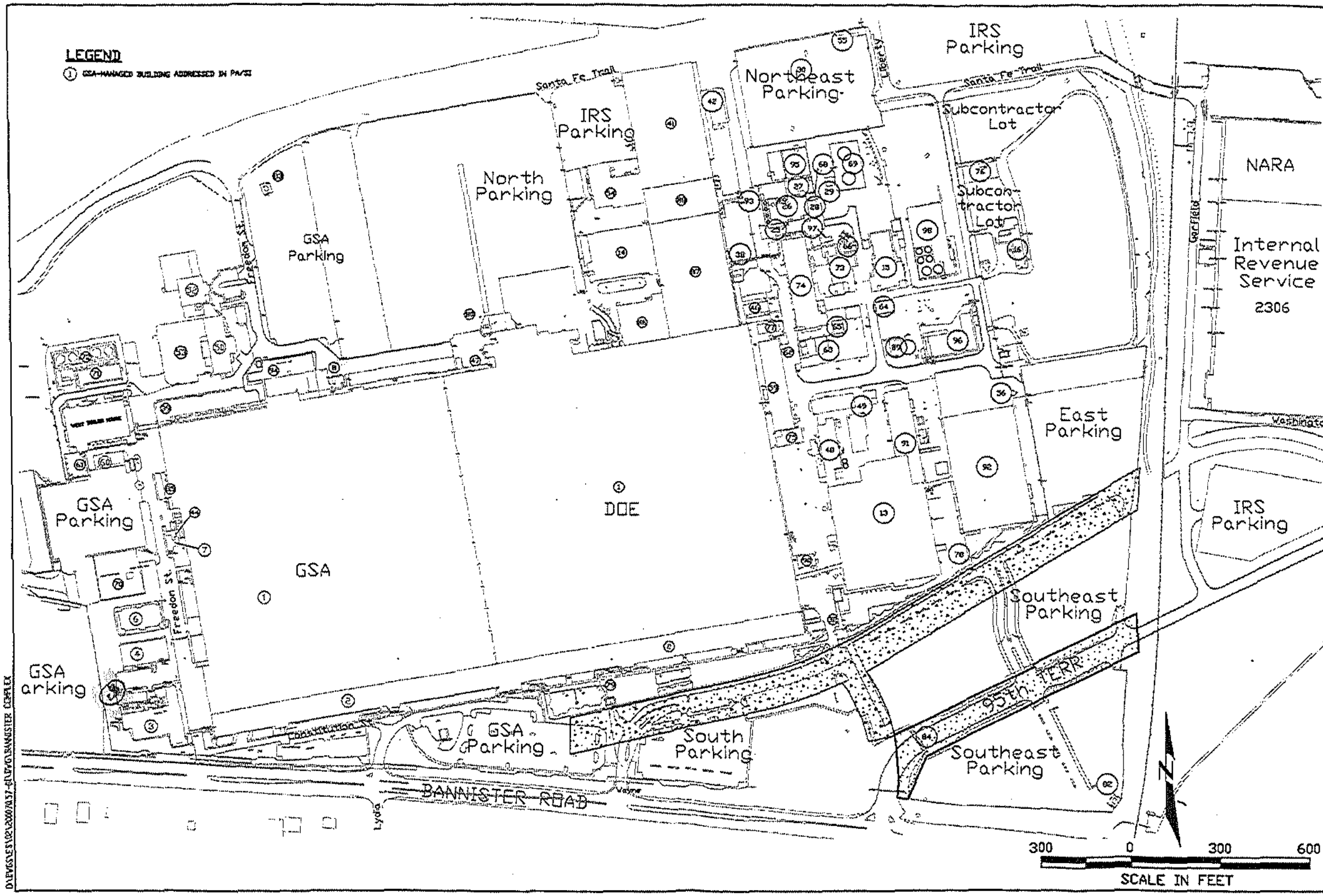
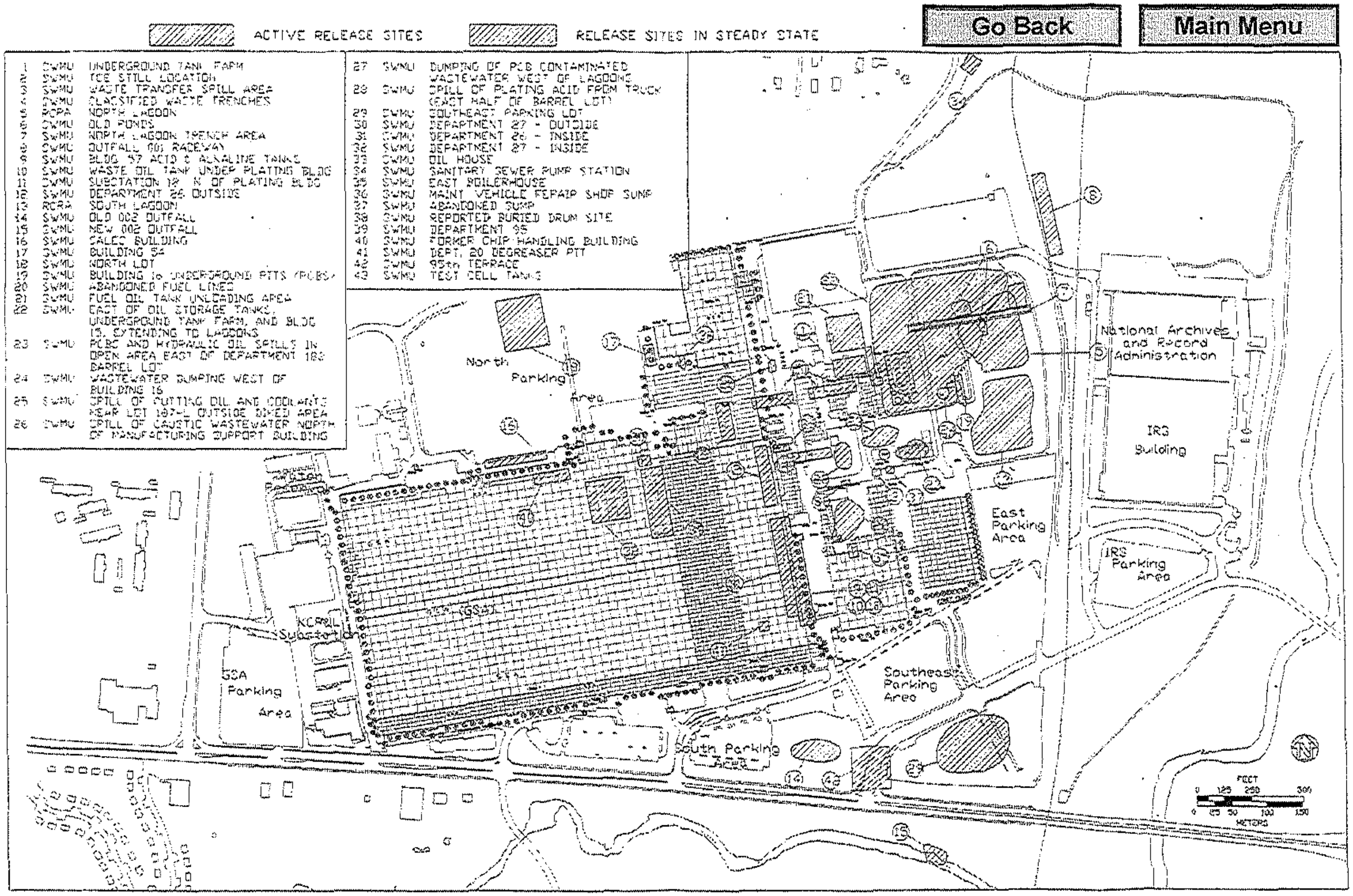


FIGURE 2
SITE PLAN
BANNISTER FEDERAL COMPLEX
REF DWG DOE#9638-C3 5/97

BANNISTER FEDERAL COMPLEX
GSA PA/SI
PROJ. NO. 02200070.57 JULY 2007

SCS ENGINEERS
DSN. BY L.JAMES CHK. BY B.DOLISH
DWN. BY R.PHILLIPS REV.

Go Back
Main Menu



CONSENT ORDER RELEASE SITES

Figure 3.1

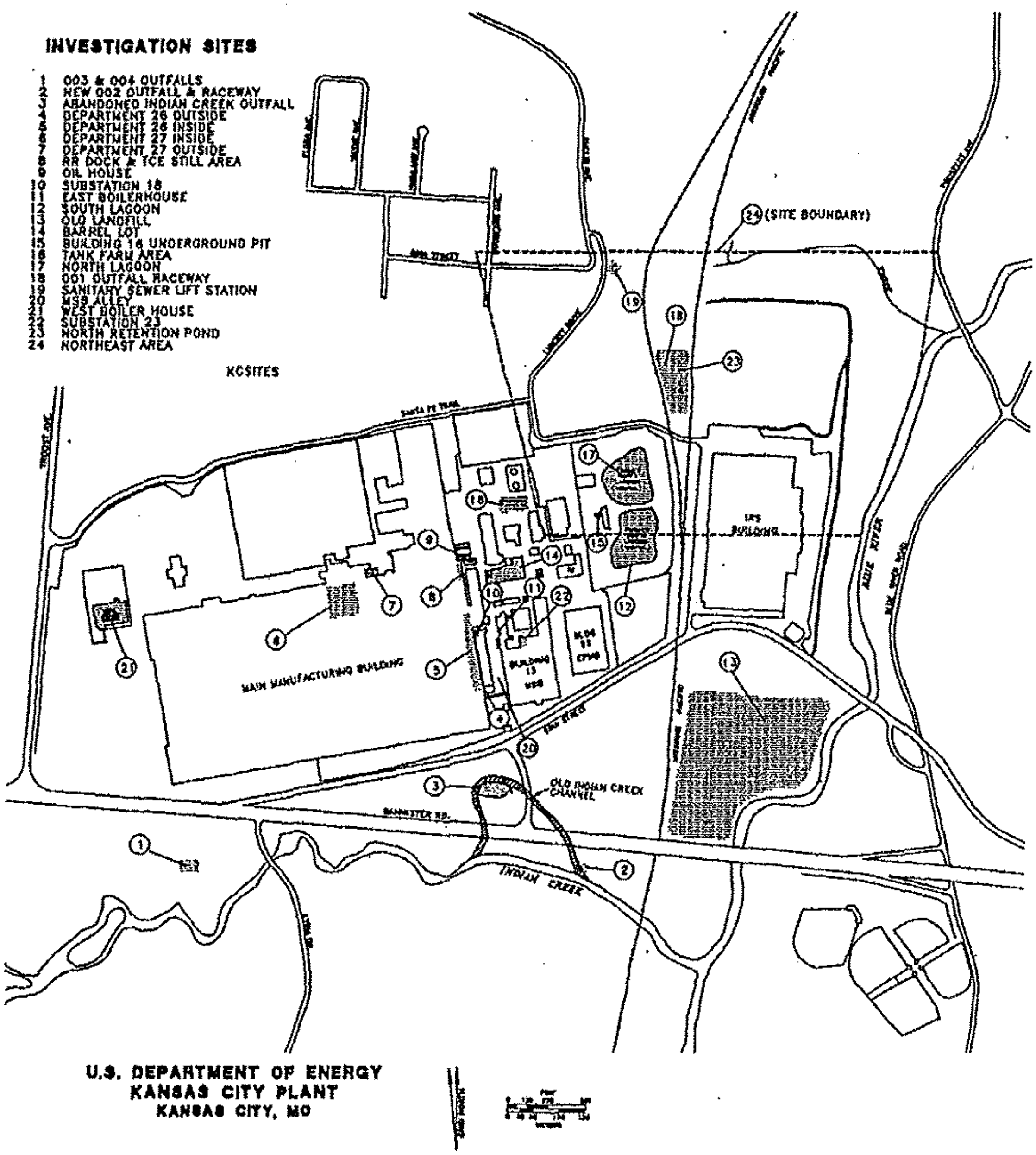


Fig. 2. PCB contaminated sites.

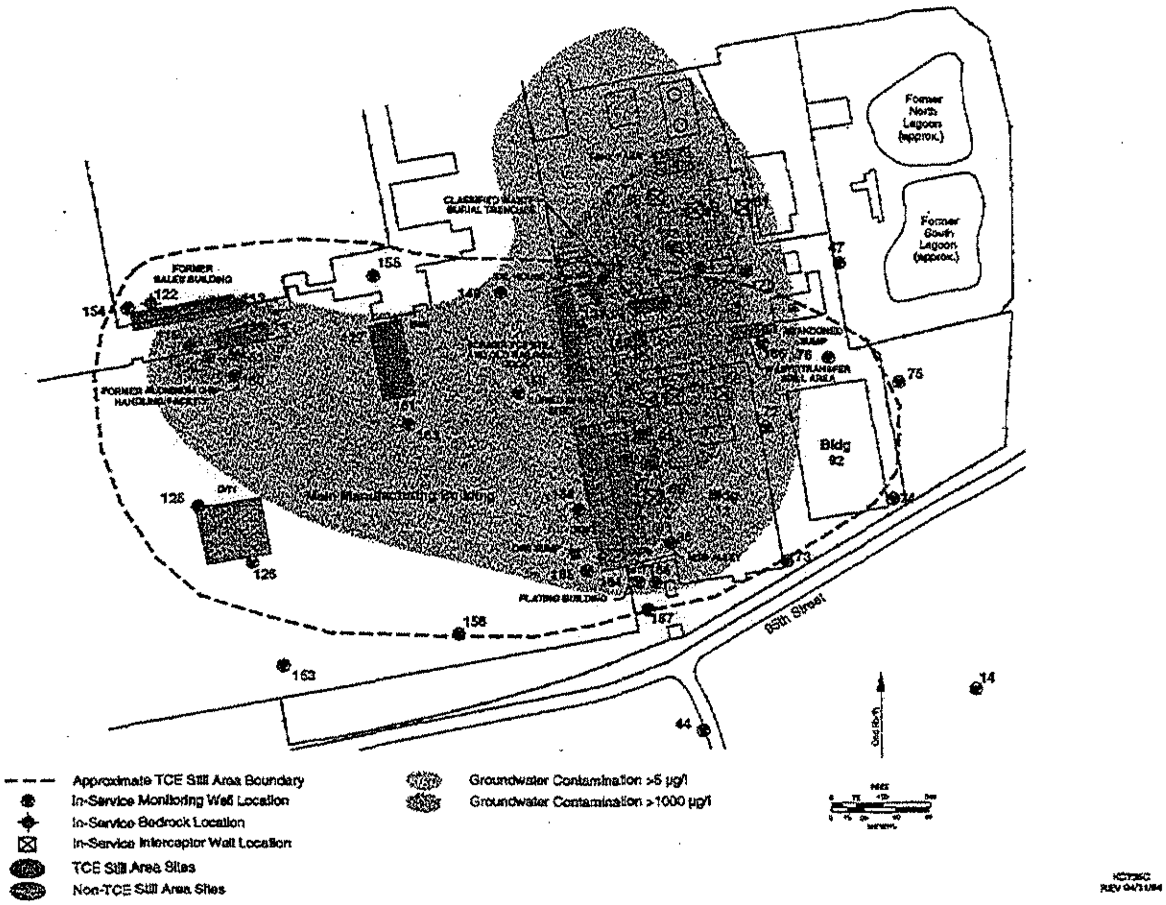
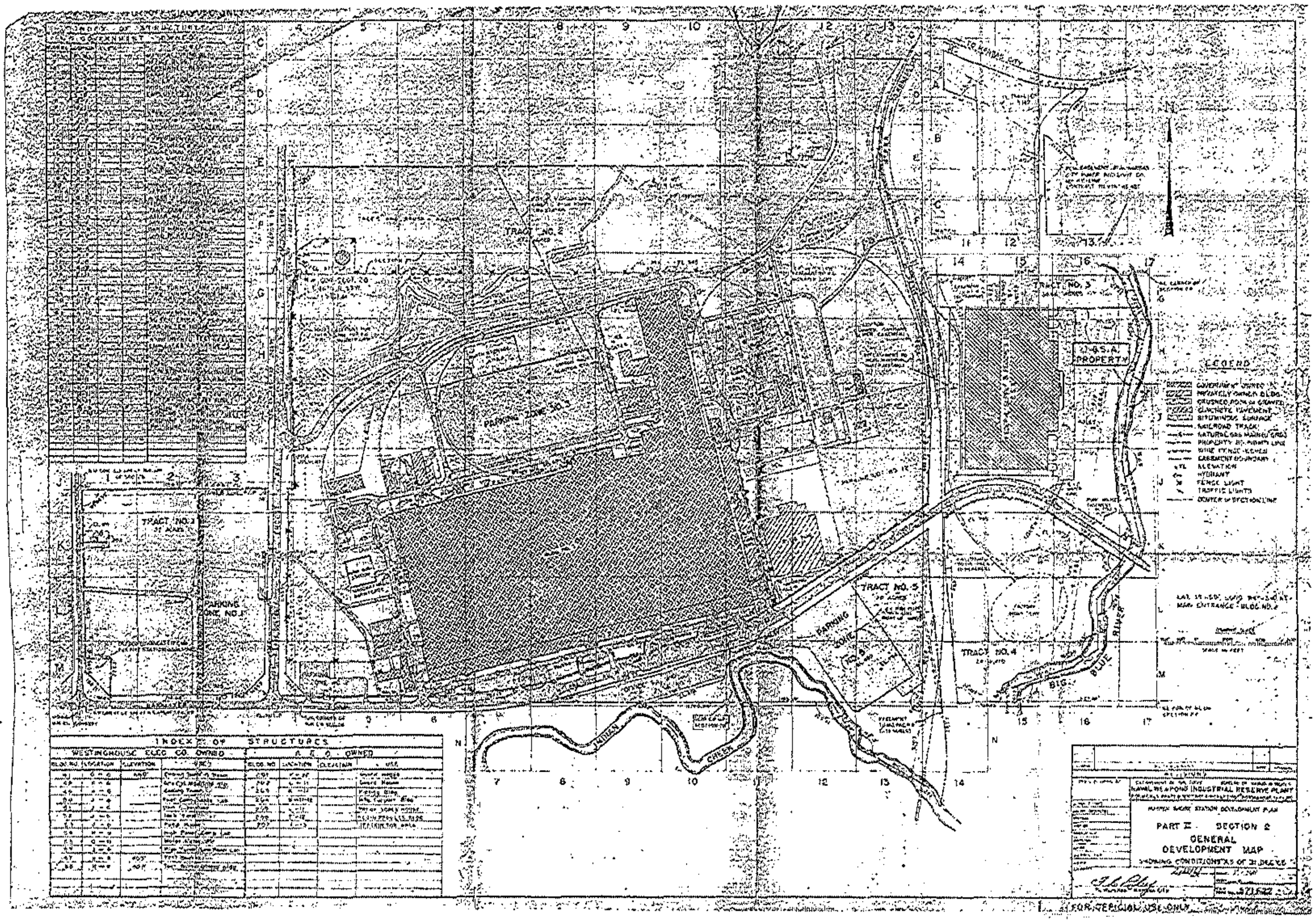
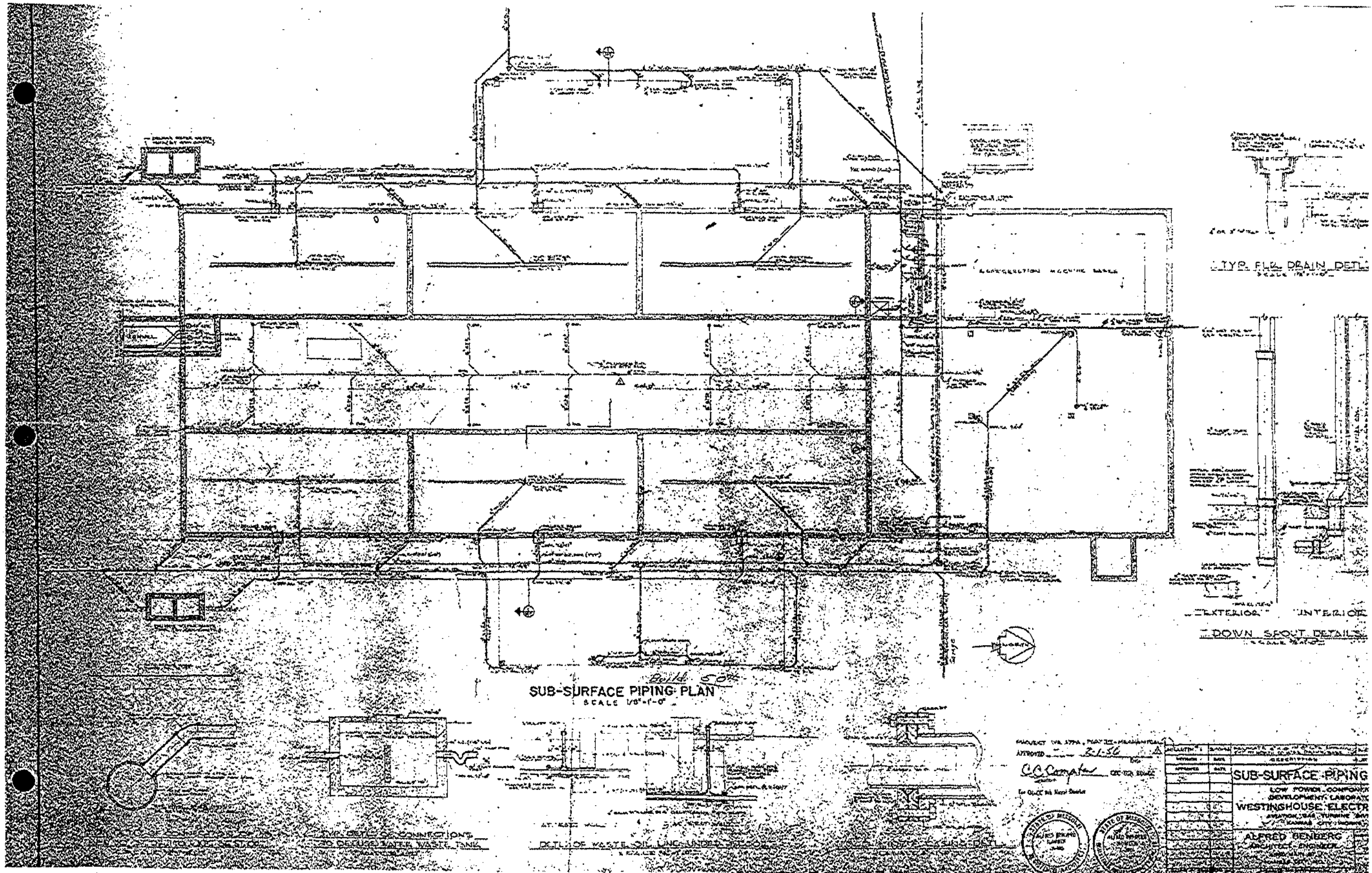


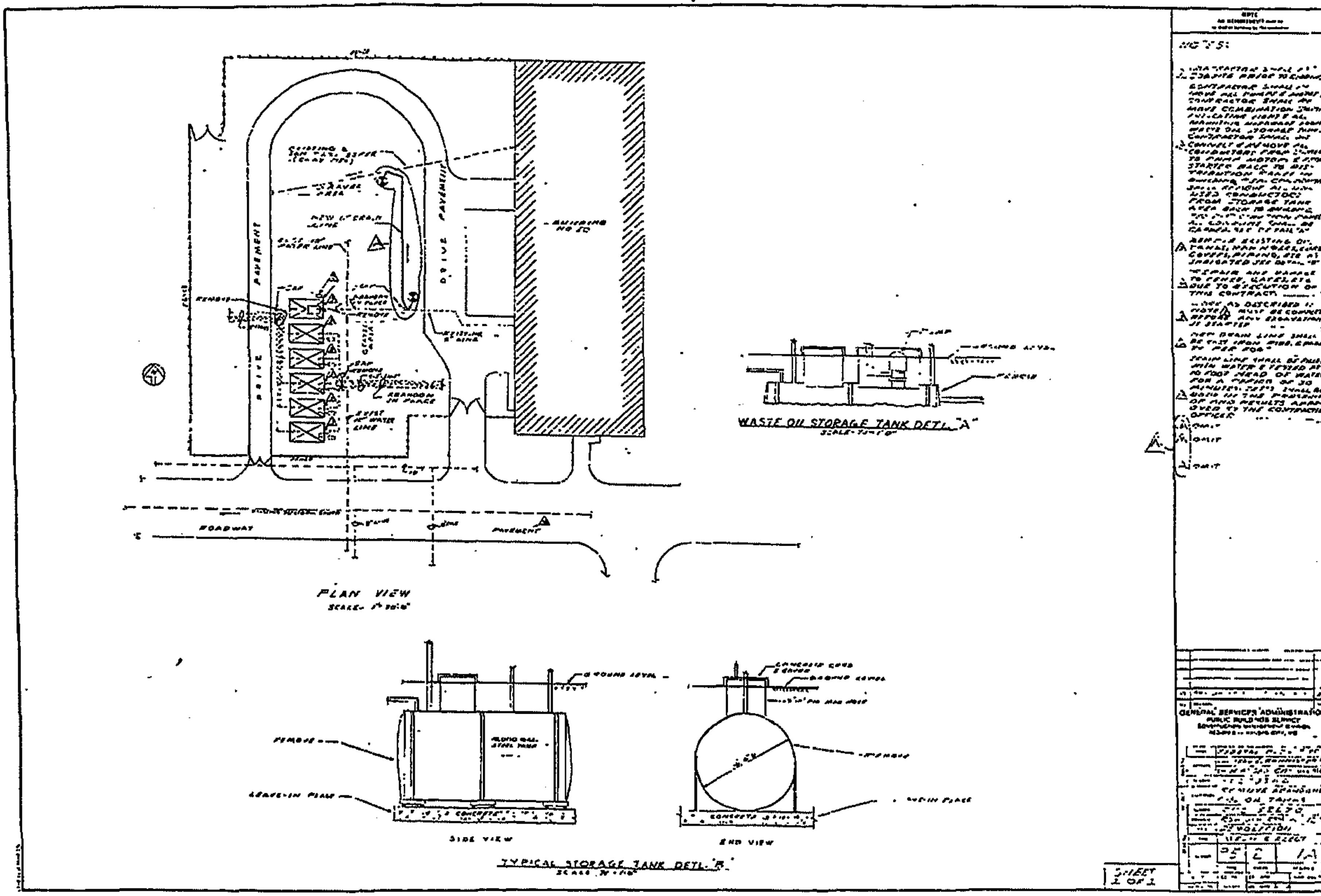
Fig. 2. TCE Still Area sites.

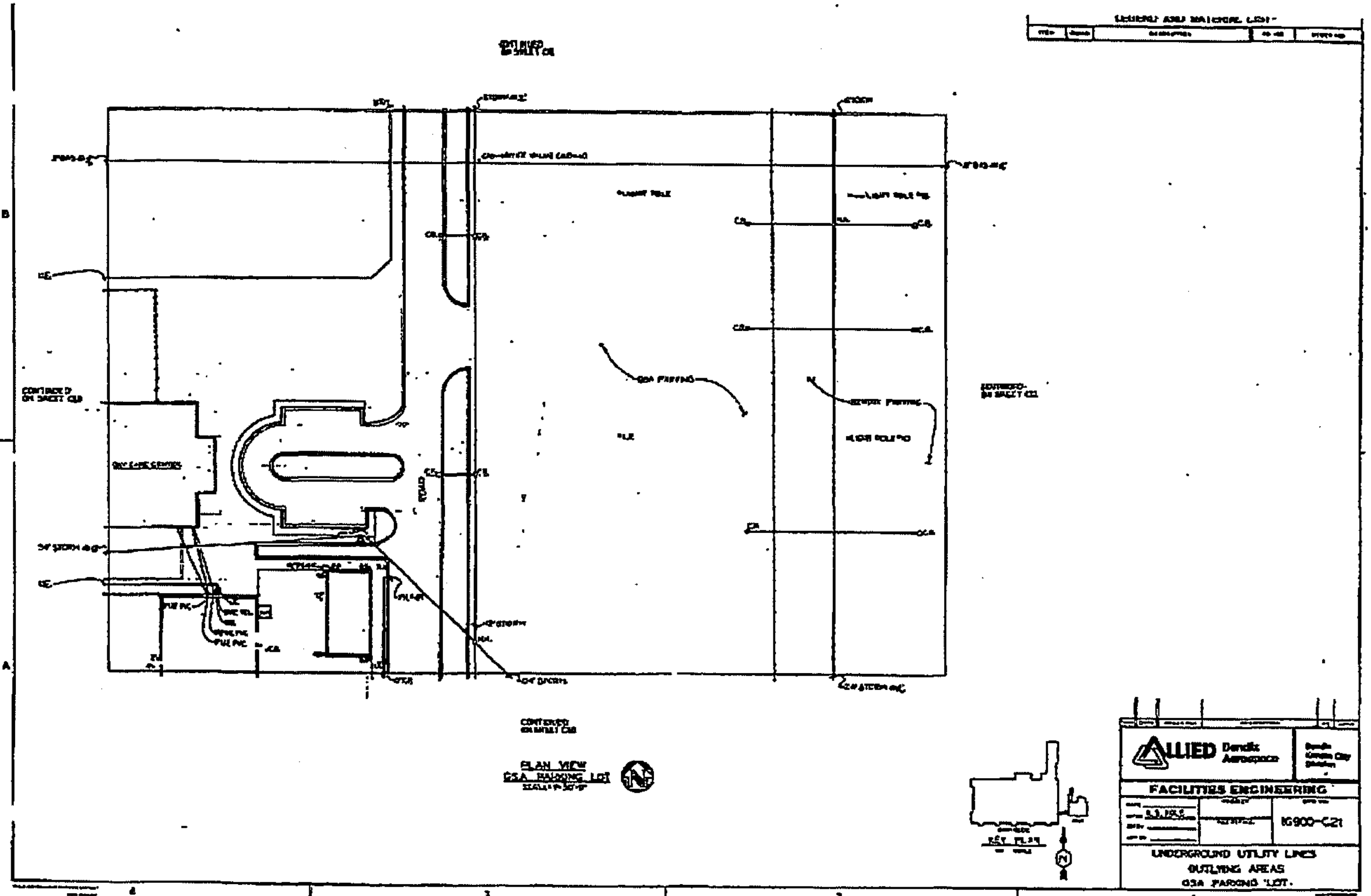


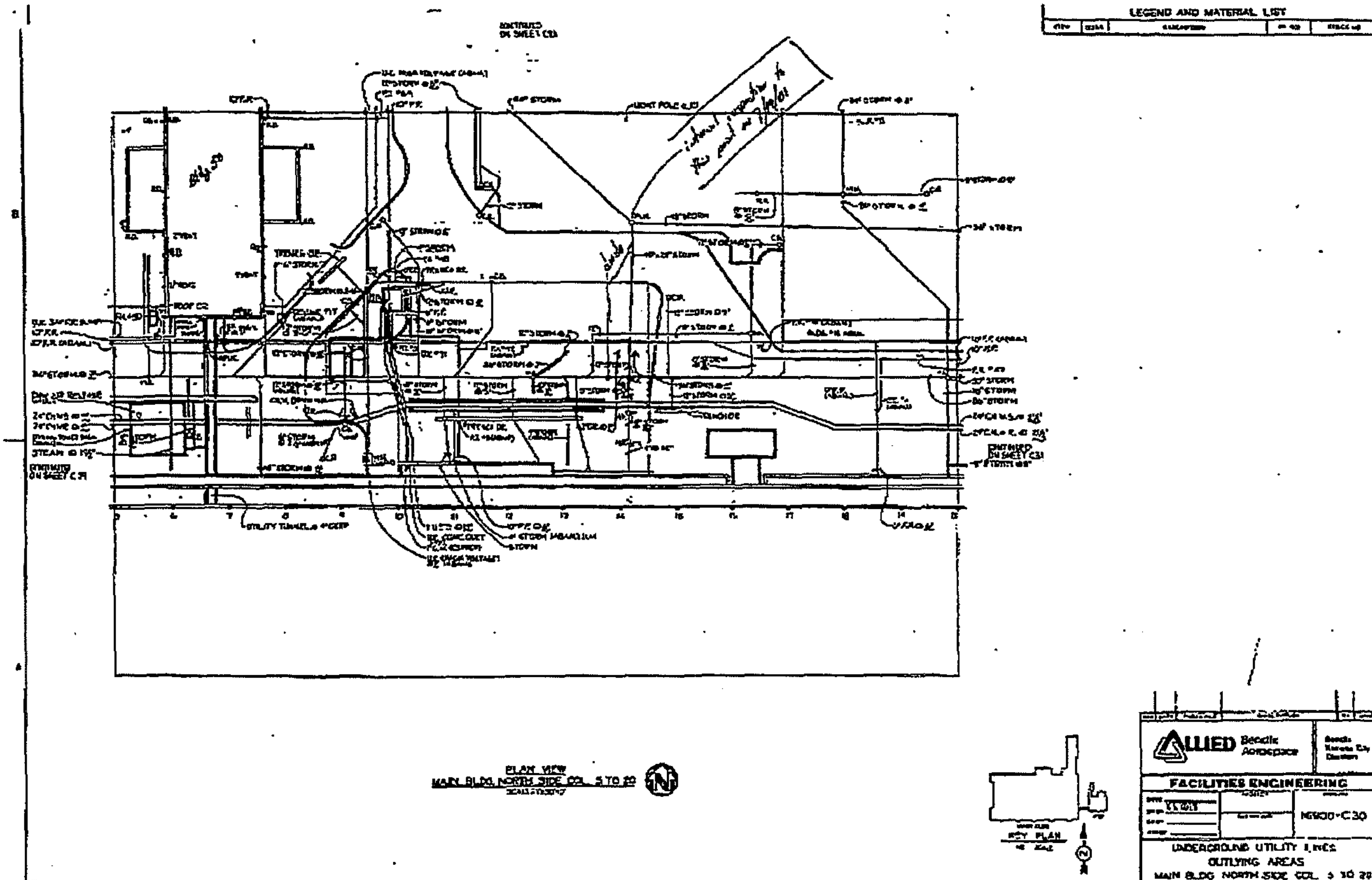
INDEX OF STRUCTURES
WESTINGHOUSE ELEC. CO. OWNED
A. E. C. OWNED
TRACT NO. 2
TRACT NO. 3
TRACT NO. 4
TRACT NO. 5
PARKING ZONE NO. 1
U.S.A. PROPERTY
LEGEND
RAILROAD TRACK
HYDRANT
FENCE LIGHT
TRAFFIC LIGHTS
ELEVATION
BIG BLUE RIVER
INDIAN CREEK
NAVAL WEAPONS INDUSTRIAL RESERVE PLANT
PART II SECTION 2
GENERAL DEVELOPMENT MAP
FOR OFFICIAL USE ONLY

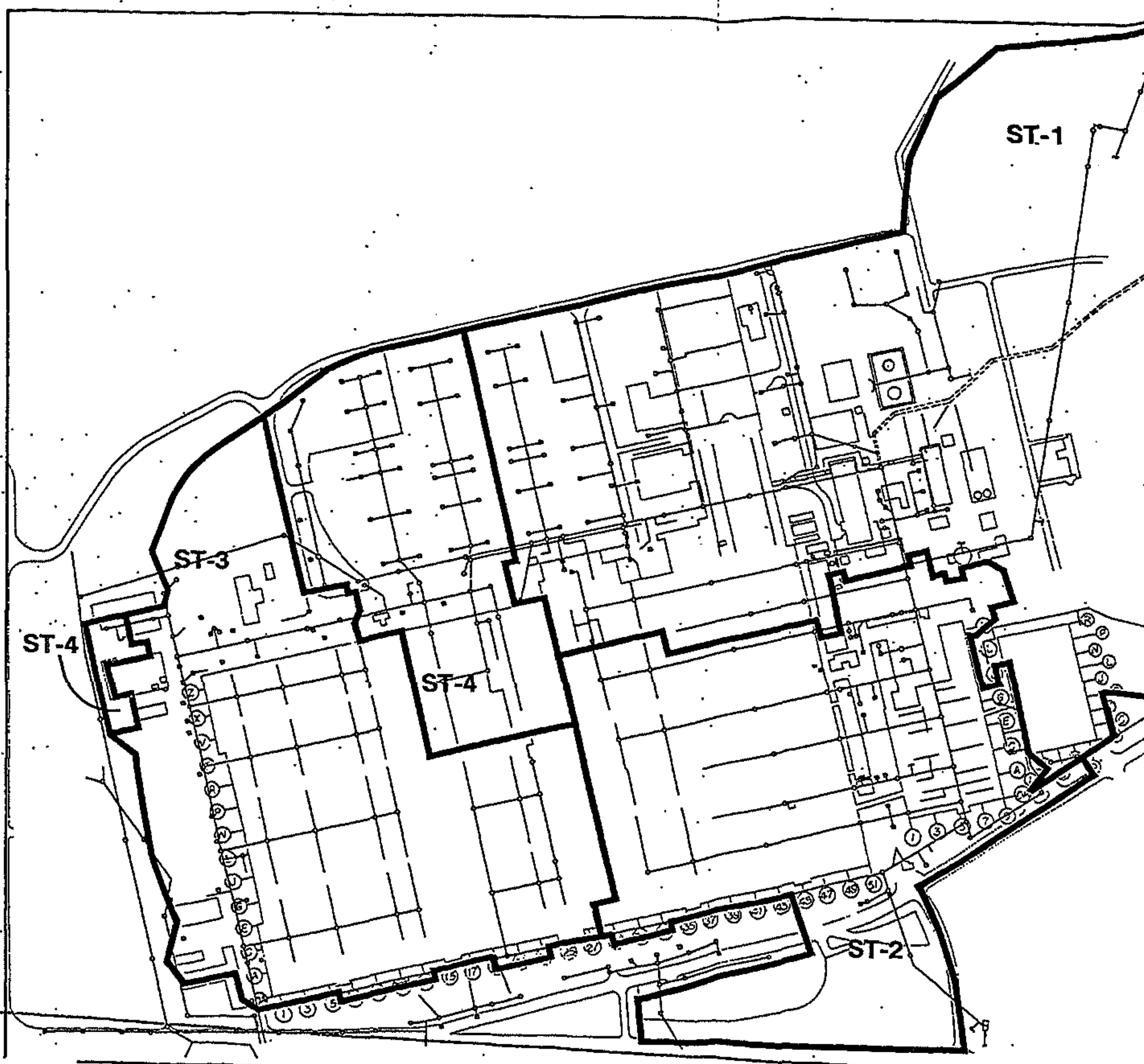


TYP. FLR. DRAIN DETL.
EXTERIOR
INTERIOR
DOWN SPOUT DETAILS
Build 50
SUB-SURFACE PIPING PLAN
SCALE 1/8"=1'-0"
DETL. OF CONNECTIONS
TO DECONTAMINATION WASTE TANK
DETL. OF WASTE OIL LINE UNDER
APPROVED 2-1-56
C.C. Compton
SUB-SURFACE PIPING
WESTINGHOUSE ELECTR
ALFRED BENBERG


NOTES:
REMOVE EXISTING OIL TANKS, MAN HOLES, COVERS, PIPING, ETC. AS INDICATED SEE DETAIL "B"
REPAIR ANY DAMAGE TO FENCE, CURBS, ETC. DUE TO EXECUTION OF THIS CONTRACT.
DRAIN LINE SHALL BE FILLED WITH WATER & TESTED AT 10 FOOT HEAD OF WATER FOR A PERIOD OF 30 MINUTES. TESTS SHALL BE MADE IN THE PRESENCE OF AND RESULTS APPROVED BY THE CONTRACTING OFFICER
OMIT
OMIT
OMIT
BUILDING NO 50
DRIVE PAVEMENT
ROADWAY
PAVEMENT
REMOVE
ABANDON IN PLACE
PLAN VIEW
WASTE OIL STORAGE TANK DETL. "A"
GROUND LEVEL
REMOVE
LEAVE-IN PLACE
CONCRETE
SIDE VIEW
END VIEW
TYPICAL STORAGE TANK DETL. "B"
GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDINGS SERVICE
SHEET 1 OF 1


LEGEND AND MATERIAL LIST
GSA PARKING
PLAN VIEW
GSA PARKING LOT
KEY PLAN
ALLIED Bendix Aerospace
FACILITIES ENGINEERING
16900-C21
UNDERGROUND UTILITY LINES
OUTLYING AREAS
GSA PARKING LOT.


LEGEND AND MATERIAL LIST
PLAN VIEW
MAIN BLDG NORTH SIDE COL. 5 TO 20
ALLIED Bendix Aerospace
FACILITIES ENGINEERING
KEY PLAN
UNDERGROUND UTILITY LINES
OUTLYING AREAS
MAIN BLDG NORTH SIDE COL. 5 TO 20
CONTINUED ON SHEET C31
UTILITY TUNNEL



ALLIED-SIGNAL INC.
KANSAS CITY DIVISION

LEGEND

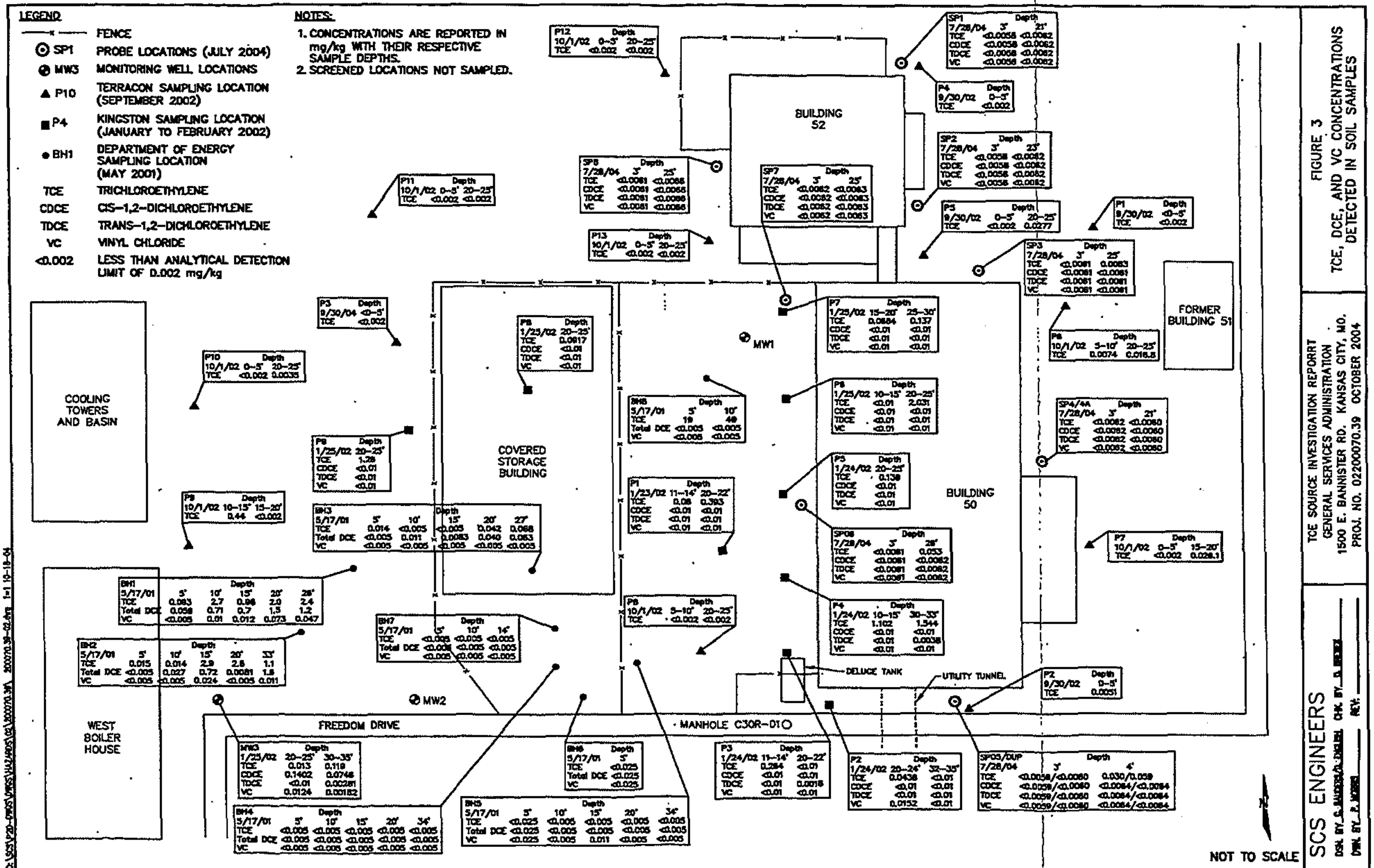
▬	Storm Sewer Basin Boundary
ST-1	Storm Sewer Basin Number

NORTH

STORM SEWER SYSTEM BASINS

FIGURE VI-1

GBA



LEGEND
FENCE
SP1 PROBE LOCATIONS (JULY 2004)
MW3 MONITORING WELL LOCATIONS
P10 TERRACON SAMPLING LOCATION (SEPTEMBER 2002)
P4 KINGSTON SAMPLING LOCATION (JANUARY TO FEBRUARY 2002)
BH1 DEPARTMENT OF ENERGY SAMPLING LOCATION (MAY 2001)
TCE TRICHLOROETHYLENE
CDCE CIS-1,2-DICHLOROETHYLENE
TDCE TRANS-1,2-DICHLOROETHYLENE
VC VINYL CHLORIDE
<0.002 LESS THAN ANALYTICAL DETECTION LIMIT OF 0.002 mg/kg
NOTES:
1. CONCENTRATIONS ARE REPORTED IN mg/kg WITH THEIR RESPECTIVE SAMPLE DEPTHS.
2. SCREENED LOCATIONS NOT SAMPLED.
BUILDING 52
FORMER BUILDING 51
BUILDING 50
COVERED STORAGE BUILDING
COOLING TOWERS AND BASIN
WEST BOILER HOUSE
FREEDOM DRIVE
MANHOLE C30R-D1
DELUGE TANK
UTILITY TUNNEL
MW1
MW2
NOT TO SCALE
SCS ENGINEERS
TCE SOURCE INVESTIGATION REPORRT
GENERAL SERVICES ADMINISTRATION
1500 E. BANNISTER RD. KANSAS CITY, MO.
PROJ. NO. 02200070.39 OCTOBER 2004
FIGURE 3
TCE, DCE, AND VC CONCENTRATIONS DETECTED IN SOIL SAMPLES

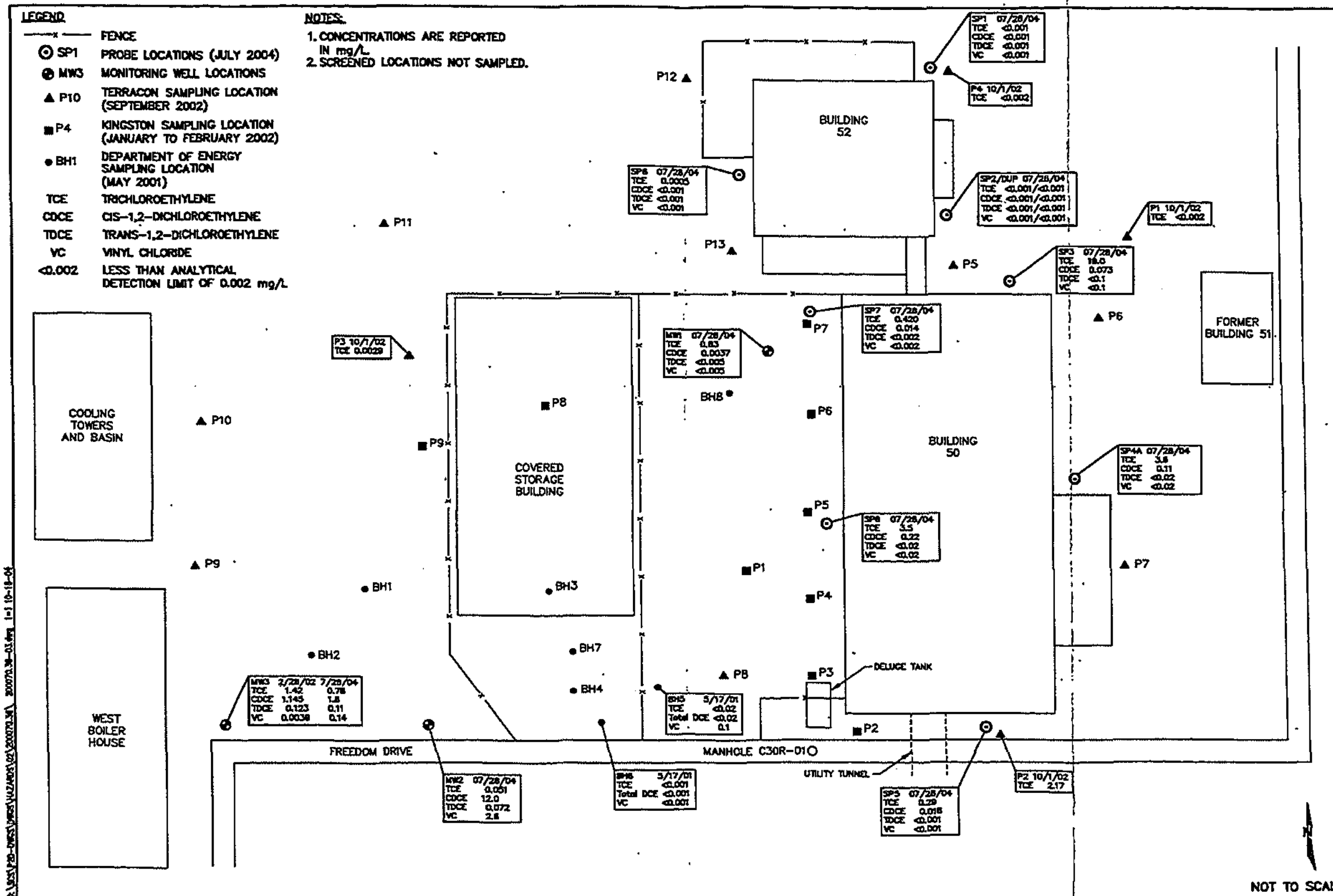
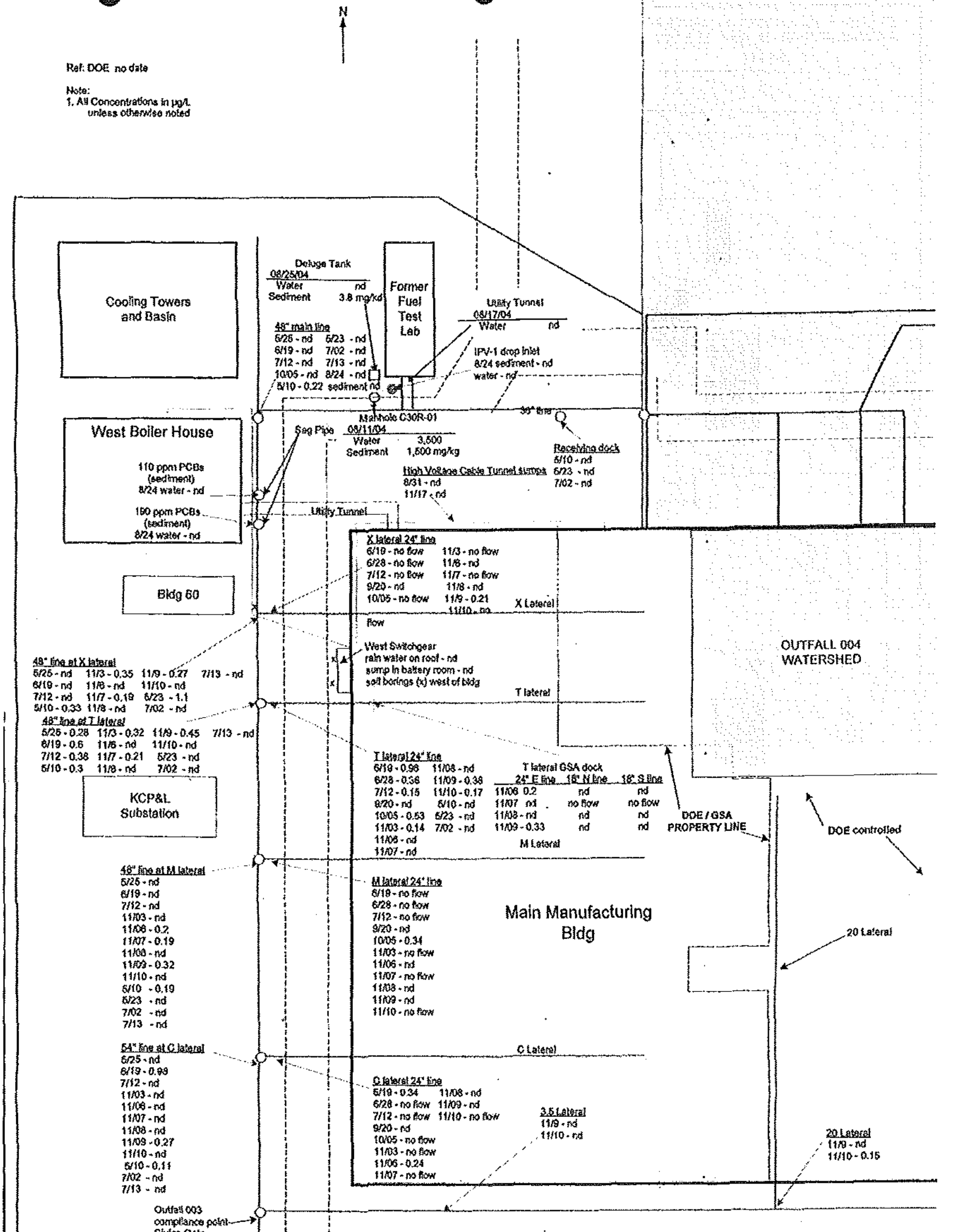


FIGURE 4
TCE, DCE AND VC CONCENTRATIONS DETECTED IN GROUNDWATER SAMPLES

TCS SOURCE INVESTIGATION REPORT
GENERAL SERVICES ADMINISTRATION
1500 E. BANNISTER RD. KANSAS CITY, MO.
PROJ. NO. 02200070.21 OCTOBER 2004

SCS ENGINEERS



key

(solid line)	Outfall 003 piping
(dashed arrow)	Outfall 003 sample location
(heavy line)	Outfall 004 piping
(line)	High voltage cable
(dashed line)	roadway

OUTFALL 003 COMPLIANCE POINT PCBs

date	PCBs	rain	date	PCBs	rain	date	PCBs	rain	date	PCBs	rain	date	PCBs	rain	date	PCBs	rain
5/10/00	1.1	0.65	8/16	nd	0	11/22	- 0.15	0	2/28	- 0.10	1.9	6/8	- nd	5.69	9/10	- nd	
5/17	1.8	0.02	8/23	0.21	0	11/29	- 0.49	0	3/09	- nd	0	6/13	- 0.31	0			
5/25	nd	0.10	8/30	nd	0	12/06	- 1.0	0	3/14	- 0.22	0.07	6/22	- 0.61	3.48			
6/1	0.47	0	9/6	nd	0	12/13	- 0.27	0	3/21	- nd	1.02	6/27	- 0.6	0.03			
6/8	nd	0	9/13	nd	0	12/20	- nd	0.1	3/28	- nd	0.68	7/2	- nd	0			
6/16	nd	0.08	9/20	nd	0.36	12/27	- nd	0.5	4/6	- nd	2.23	7/9	- nd	0			
6/22	nd	0	9/27	nd	0	01/03/01	- nd	0	4/13	- nd	0.07	7/16	- nd	2.2			
6/28	0.11	0	10/4	0.66	0	01/10	- nd	0	4/18	- nd	1.02	7/23	- 0.56	0			
7/5	nd	0.34	10/11	nd	0	01/17	- nd	0.43	4/25	- 0.23	0.23	7/30	- nd	1.26			
7/12	0.12	0.01	10/18	nd	0	01/24	- nd	0	5/03	- 5.2	0.49	8/7	- 0.937	0			
7/19	nd	0	10/25	2.5 (1.07 on 10/23)		01/31	- nd	0.29	5/10	- nd	1.4	8/13	- nd	0.27			
7/26	nd	0.43	11/01	0.23	0.37	02/07	- nd	0	5/16	- 0.43	0.07	8/20	- nd	0.24			
8/02	nd	0	11/08	- nd	0	02/14	- nd	1.2	5/23	- nd	0.82	8/27	- nd	3.4			
8/09	nd	0	11/15	- nd	0	02/21	- nd	0	5/30	- 0.14	1.09	9/4	- nd	0.4			

Storm Sewer Sample
PCB Analytical Results

APPENDIX C

WASTE DISPOSAL DOCUMENTATION

ALLIED WASTE INDUSTRIES, INC.

33676

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. NA

Manifest Document No. 850987

2. Page 1 of

3. Generator's Name and Mailing Address
GSA
1500 E Banister Rd Kc MO

Profile # Approval #
F48473312

4. Generator's Phone (913) 451-7510

5. Transporter 1 Company Name: Allied Waste

6. US EPA ID Number

A. Transporter's Phone: 816 257-2185

7. Transporter 2 Company Name

8. US EPA ID Number

B. Transporter's Phone

9. Designated Facility Name and Site Address
1701 N M-291 Hwy
Courtney Ridge LF / Allied Waste

10. US EPA ID Number

C. Facility's Phone: 816 257-2185

11. Waste Shipping Name and Description	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol
a. Special Waste/Debris		RO	10	Ton
b.				
c.				
d.				

D. Additional Descriptions for Materials Listed Above

E. Handling Codes for Waste Listed Above

15. Special Handling Instructions and Additional Information

16. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed / Typed Name: Jerrett Dooley SCS Engineers
Signature: [signature] agent for GSA
Month 05 Day 07 Year 07

17. Transporter 1 Acknowledgment of Receipt of Materials
Printed / Typed Name: Rex Dixon
Signature: Rex Dixon
Month 05 Day 15 Year 07

18. Transporter 2 Acknowledgment of Receipt of Materials
Printed / Typed Name
Signature
Month Day Year

19. Discrepancy Indication Space

JUN - 6 2007

20. Facility Owner or Operator: Certification of receipts of waste materials covered by this manifest except as noted in Item 19.

Printed / Typed Name: [illegible]
Signature: [signature]
Month 5 Day 15 Year 0

ORIGINAL - RETURN TO GENERATOR

AWI Form #12

GENERATOR WASTE PROFILE SHEET

ALLIED WASTE

Waste Profile #
AWI Sales Rep:
Date: February 28, 2007

Requested Disposal Facility:. Courtney Ridge

an Allied Waste Company

I. Generator Information

Generator Name: GSA			
Generator Site Address: 1500 East Bannister Road			
City: Kansas City	County: Jackson	State: MO	Zip: 64131
State ID/Reg No:	State Approval/Waste Code: (if applicable)		SIC Code:
Generator Mailing Address (if different):			
City:	County:	State:	Zip:
Generator Contact Name: Dave Hartshorn			
Phone Number: 816-823-2227		Fax Number: 816-926-1779	

IIa. Transporter Information

Transporter Name: Allied Waste		Contact Name: Nancy Hardin	
Transporter Address:			
City:	County:	State:	Zip:
Phone Number:	Fax Number:	State Transportation Number:	

IIb. Billing Information

Bill To: Hulcher Services		Contact Name: Ronnie Williams	
Billing Address: 3825 N Skiles Ave.			
City: Kansas City	State: MO	Zip: 64161	Phone Number: 816 454-0196

III. Waste Stream Information

Name of Waste: Siol/Debris

Process Generating Waste: Excavation Test Pits

Type of Waste: ☒ INDUSTRIAL PROCESS WASTE or ☐ POLLUTION CONTROL WASTE

Physical State: ☒ SOLID ☐ SEMI-SOLID ☐ POWDER ☐ LIQUID ☐ OTHER: _____:

Method of Shipment: ☒ BULK ☐ DRUM ☐ BAGGED ☐ OTHER: _____

Estimated Annual Volume: ☐ CUBIC YARDS: _____ ☒ TONS: 50 ☐ GALLONS _____ ☐ OTHER: _____

Frequency: ☒ ONE TIME ☐ DAILY ☐ WEEKLY ☐ MONTHLY ☐ OTHER:

Special Handling Instructions:

IV. Representative Sample Certification

☐ NO SAMPLE TAKEN

Is the representative sample collected to prepare this profile and laboratory analysis, collected in accordance with U.S. EPA 40 CFR 261.20(c) guidelines or equivalent rules? ☒ YES or ☐ NO

Sample Date: 2-14-07	Type of Sample: ☐ COMPOSITE SAMPLE ☒ GRAB SAMPLE
Laboratory: Pace Analytical	Sample ID Numbers: Soil Stockpile
Sampler's Employer: SCS Engineers	
Sampler's Name (printed): Jerrett Dowling	Signature: Jarrett Dowling

REV 1

© Allied Waste, February 2001

GENERATOR WASTE PROFILE SHEET (continued)

Waste Profile #

V. Physical Characteristics of Waste

Characteristic Components	% by Weight (range)
1. Soil	90
2. Sand	1-3
3. Rock	2-5
4.	
5.	

Color	Odor (describe)	Free Liquids ☐ YES or ☒ NO	% Solids	pH:	Flash Point	Phenol
Brown	NA	Content ____ %	100	7-10	NA OF	NAppm

Attach Laboratory Analytical Report (and/or Material Safety Data Sheet) Including Required Parameters Provided for this Profile

Does this waste or generating process contain regulated concentrations of the following Pesticides and/or Herbicides: Chlordane, Endrin, Heptachlor (and it epoxides), Lindane, Methoxychlor, Toxaphene, 2,4-D, or 2,4,5-TP Silvex as defined in 40 CFR 261.33?	☐ Yes or ☒ No
Does this waste or generating process cause it to exceed OSHA exposure limits from high levels of Hydrogen Sulfide or Hydrogen Cyanide as defined in 40 CFR 261.23?	☐ Yes or ☒ No
Does this waste contain regulated concentrations of Polychlorinated Biphenyls (PCBs) as defined in 40 CFR Part 761?	☐ Yes or ☒ No
Does this waste contain regulated concentrations of listed hazardous wastes defined in 40 CFR 261.31, 261.32, 261.33, including RCRA F-Listed Solvents?	☐ Yes or ☒ No
Does this waste contain regulated concentrations of 2,3,7,8-Tetrachlorodibenzodioxin (2,3,7,8-TCCD), or any other dioxin as defined in 40 CFR 261.31?	☐ Yes or ☒ No
Is this a regulated Toxic Material as defined by Federal and/or State regulations?	☐ Yes or ☒ No
Is this a regulated Radioactive Waste as defined by Federal and/or State regulations?	☐ Yes or ☒ No
Is this a regulated Medical or Infectious Waste as defined by Federal and/or State regulations?	☐ Yes or ☒ No
Is this waste generated at a Federal Superfund Clean Up Site?	☐ Yes or ☒ No

VI. Generator Certification

I hereby certify that to the best of my knowledge and belief, the information contained herein is a true, complete and accurate description of the waste material being offered for disposal and all known or suspected hazards have been disclosed. All Analytical Results/Material Safety Data Sheets submitted are truthful and complete and are representative of the waste. I further certify that by utilizing this profile, neither myself nor any other employee of the company will deliver for disposal or attempt to deliver for disposal any waste which is classified as toxic waste, hazardous waste or infectious waste, or any other waste material this facility is prohibited from accepting by law. I shall immediately give written notice of any change or condition pertaining to the waste not provided herein. Our company hereby agrees to fully indemnify this disposal facility against any damages resulting from this certification being inaccurate or untrue. I further certify that the company has not altered the form or content of this profile sheet as provided by Allied Waste.

Dave L. Hartshorn
Authorized Representative Name And Title (Printed)

General Services Admin.
Company Name

[signature]
Authorized Representative Signature

1 Mar 2007
Date

VII. Allied Waste Decision

Approved Rejected Expiration: ____________

Conditions:

______________________ ______________________ ______________________
Name, Title Signature Date

© Allied Waste, February 2001

Pace Analytical®
www.pacelabs.com

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
Phone: (913)599-
Fax: (913)599-

ANALYTICAL RESULTS

Project: GSA BANNISTER PA/SI
Pace Project No.: 6018954

Sample: SOIL STOCKPILE Lab ID: 6018954008 Collected: 02/16/07 16:00 Received: 02/17/07 12:11 Matrix: Solid

Solid results reported on dry weight basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB SW	Analytical Method: EPA 8082 Preparation Method: EPA 3546							
PCB-1016 (Aroclor 1016)	ND	ug/kg	43.3	1	02/20/07 00:00	02/21/07 00:36	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	43.3	1	02/20/07 00:00	02/21/07 00:36	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	43.3	1	02/20/07 00:00	02/21/07 00:36	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	43.3	1	02/20/07 00:00	02/21/07 00:36	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	43.3	1	02/20/07 00:00	02/21/07 00:36	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	43.3	1	02/20/07 00:00	02/21/07 00:36	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	43.3	1	02/20/07 00:00	02/21/07 00:36	11096-82-5	
Tetrachloro-m-xylene (S)	88	%	28-134	1	02/20/07 00:00	02/21/07 00:36	877-09-8	
Decachlorobiphenyl (S)	78	%	30-141	1	02/20/07 00:00	02/21/07 00:36	2051-24-3	
6010 MET ICP, TCLP	Analytical Method: EPA 6010 TCLP Preparation Method: EPA 3010							
Arsenic	ND	mg/L	0.50	1	02/21/07 00:00	02/21/07 16:01	7440-38-2	
Barium	1.2	mg/L	0.20	1	02/21/07 00:00	02/21/07 16:01	7440-39-3	
Cadmium	ND	mg/L	0.050	1	02/21/07 00:00	02/21/07 16:01	7440-43-9	
Chromium	ND	mg/L	0.10	1	02/21/07 00:00	02/21/07 16:01	7440-47-3	
Lead	ND	mg/L	0.50	1	02/21/07 00:00	02/21/07 16:01	7439-92-1	
Selenium	ND	mg/L	0.50	1	02/21/07 00:00	02/21/07 16:01	7782-49-2	
Silver	ND	mg/L	0.10	1	02/21/07 00:00	02/21/07 16:01	7440-22-4	
7470 Mercury, TCLP	Analytical Method: EPA 7470 TCLP Preparation Method: EPA 7470 TCLP							
Mercury	ND	ug/L	2.0	1	02/21/07 00:00	02/21/07 14:38	7439-97-6	
8270 MSSV TCLP Sep Funnel	Analytical Method: EPA 8270 TCLP Preparation Method: EPA 3510							
1,4-Dichlorobenzene	ND	ug/L	100	1	02/21/07 00:00	02/22/07 18:11	106-46-7	
2,4-Dinitrotoluene	ND	ug/L	100	1	02/21/07 00:00	02/22/07 18:11	121-14-2	
Hexachloro-1,3-butadiene	ND	ug/L	100	1	02/21/07 00:00	02/22/07 18:11	87-68-3	
Hexachlorobenzene	ND	ug/L	100	1	02/21/07 00:00	02/22/07 18:11	118-74-1	
Hexachloroethane	ND	ug/L	100	1	02/21/07 00:00	02/22/07 18:11	67-72-1	
2-Methylphenol(o-Cresol)	ND	ug/L	100	1	02/21/07 00:00	02/22/07 18:11	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/L	200	1	02/21/07 00:00	02/22/07 18:11		
Nitrobenzene	ND	ug/L	100	1	02/21/07 00:00	02/22/07 18:11	98-95-3	
Pentachlorophenol	ND	ug/L	500	1	02/21/07 00:00	02/22/07 18:11	87-86-5	
Pyridine	ND	ug/L	100	1	02/21/07 00:00	02/22/07 18:11	110-86-1	
2,4,5-Trichlorophenol	ND	ug/L	500	1	02/21/07 00:00	02/22/07 18:11	95-95-4	
2,4,6-Trichlorophenol	ND	ug/L	100	1	02/21/07 00:00	02/22/07 18:11	88-06-2	
Nitrobenzene-d5 (S)	78	%	35-105	1	02/21/07 00:00	02/22/07 18:11	4165-60-0	
2-Fluorobiphenyl (S)	88	%	35-107	1	02/21/07 00:00	02/22/07 18:11	321-60-8	
Terphenyl-d14 (S)	105	%	25-138	1	02/21/07 00:00	02/22/07 18:11	1718-51-0	
Phenol-d6 (S)	79	%	14-111	1	02/21/07 00:00	02/22/07 18:11	13127-88-3	
2-Fluorophenol (S)	75	%	17-105	1	02/21/07 00:00	02/22/07 18:11	367-12-4	
2,4,6-Tribromophenol (S)	89	%	39-111	1	02/21/07 00:00	02/22/07 18:11	118-79-6	
8260 MSV TCLP	Analytical Method: EPA 8260							
Benzene	ND	ug/L	50.0	1		02/22/07 15:53	71-43-2	
2-Butanone (MEK)	ND	ug/L	1000	1		02/22/07 15:53	78-93-3	

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nelac

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www.pacelabs.com

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Fax: (913)599-1759

ANALYTICAL RESULTS

Project: GSA BANNISTER PA/SI
Pace Project No.: 6018954

Sample: SOIL STOCKPILE Lab ID: 6018954008 Collected: 02/16/07 16:00 Received: 02/17/07 12:11 Matrix: Solid

Solid results reported on dry weight basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV TCLP	Analytical Method: EPA 8260							
Carbon tetrachloride	ND	ug/L	50.0	1		02/22/07 15:53	56-23-5	
Chlorobenzene	ND	ug/L	50.0	1		02/22/07 15:53	108-90-7	
Chloroform	ND	ug/L	200	1		02/22/07 15:53	67-66-3	
1,2-Dichloroethane	ND	ug/L	50.0	1		02/22/07 15:53	107-06-2	
1,1-Dichloroethene	ND	ug/L	50.0	1		02/22/07 15:53	75-35-4	
Tetrachloroethene	ND	ug/L	50.0	1		02/22/07 15:53	127-18-4	
Trichloroethene	ND	ug/L	50.0	1		02/22/07 15:53	79-01-6	
Vinyl chloride	ND	ug/L	100	1		02/22/07 15:53	75-01-4	
1,2-Dichloroethane-d4 (S)	105	%	80-126	1		02/22/07 15:53	17060-07-0	
Toluene-d8 (S)	105	%	83-113.	1		02/22/07 15:53	2037-26-5	
4-Bromofluorobenzene (S)	98	%	84-117	1		02/22/07 15:53	460-00-4	
Dibromofluoromethane (S)	102	%	87-116	1		02/22/07 15:53	1868-53-7	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**24.1**	%	0.10	1		02/20/07 00:00		

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 7

1039167

Section A Required Client Information:

- Company: SCS Engineers
- Address: 10975 El Monte, Ste 100, Overland Park, KS 66211
- Email To: denglish@scsengineers.com
- Phone: 913-451-7510
- Fax: 913-451-7513
- Requested Due Date/TAT: Standard unless noted otherwise

Section B Required Project Information:

- Report To: Deborah English
- Copy To: Jerrett Dowling
- Purchase Order No.:
- Project Name: GSA Bannister PA/SI
- Project Number: 02200070.57

Section C Invoice Information:

- Attention: Sandy Weeks
- Company Name: SCS Engineers
- Address: 10975 El Monte
- Pace Quote Reference:
- Pace Project Manager:
- Pace Profile #:

REGULATORY AGENCY: ☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER ☐ UST ☐ RCRA ☐ Other

SITE LOCATION: ☐ GA ☐ IL ☐ IN ☐ MI ☐ MN ☐ NC ☐ OH ☐ SC ☐ WI ☒ OTHER MO

Section D Required Client Information

SAMPLE ID — One Character per box. (A-Z, 0-9 / ,-) Samples IDs MUST BE UNIQUE

Valid Matrix Codes: MATRIX / CODE — DRINKING WATER DW, WATER WT, WASTE WATER WW, PRODUCT P, SOIL/SOLID SL, OIL OL, WIPE WP, AIR AR, OTHER OT, TISSUE TS

Requested Analysis: 8260B VOCs; 8082 PCBs; 8260 BTEX; TPH-GRO/DRO; 6010 Metals; 8260 Voc TCLP; 8270 SVOC TCLP; 6010 Metals TCLP; 8082 PCBs TCLP; Residual Chlorine (Y/N)

Pace Project Number: 6018754

ITEM #	SAMPLE ID	MATRIX CODE	SAMPLE TYPE (G=GRAB C=COMP)	COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other TSP	8260B VOCs	8082 PCBs	8260 BTEX	TPH-GRO/DRO	6010 Metals	8260 Voc TCLP	8270 SVOC TCLP	6010 Metals TCLP	8082 PCBs TCLP	Residual Chlorine (Y/N)	Lab I.D.
1	Exc. #1 2(4oz) 1(4oz) 1(VG?) 1(...)	S	G			2-14-07	4:15	X	7	4						1	2	X	X									001
2	Exc. #2					2-15-07	11:15		7	4						1	2	X	X									002
3	Exc. #3 2(4oz) 1(4oz) 2(VG?) 1(...)					2-15-07	2:45		7	4						1	2	X	X									003
4	Exc. #4					2-16-07	11:00		7	4						1	2	X	X									004
5	Exc. #5					2-16-07	12:30		7	4						1	2	X	X									005
6	Exc. #6					2-16-07	2:15		7	4						1	2	X	X									006
7	IRS TANK					2-16-07	4:00		7	4						1	2			X	X	X						007
8	Soil Stockpile 3(4oz)					2-14-07	5:00		3	3													X	X	X	X		008
9																												009
10																												
11																												
12																												

Additional Comments:

Run TCLP Samples for a 72 hour TAT.

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITION			
Jerrett Dowling	2-17-07	9:30	[signature]	2/17/07	10:40	3.7	Y/N	Y/N	Y/N
							Y/N	Y/N	Y/N
							Y/N	Y/N	Y/N
							Y/N	Y/N	Y/N

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: J. Dowling

MISSOURI DEPARTMENT OF NATURAL RESOURCES
SOLID WASTE MANAGEMENT PROGRAM
SPECIAL WASTE DISPOSAL REQUEST

SECTION I GENERAL INFORMATION (TO BE COMPLETED BY THE GENERATOR AND LANDFILL OPERATOR)

	DISPOSAL FACILITY	WASTE GENERATOR
NAME	Courtney Ridge RDF	GSA
ADDRESS	2001 N. M-291 Highway	1500 E Bannister Rd
CITY, STATE, ZIP CODE	Sugar Creek, Missouri 64058	KC MO 64131
TELEPHONE NUMBER	(816) 257-7999	816-823-2227
PERMIT NO.	MO - 109521	N/A
CONTACT PERSON	Nancy Hardin 816-257-2185	Dave Hartshorn

SECTION II WASTE CHARACTERIZATION (TO BE COMPLETED BY THE GENERATOR)

A. NAME OF WASTE Soil / Debris

B. DESCRIPTION OF GENERATION PROCESS Excavation test pits Former UST - Fuel oil

C. (CHECK ONE)

(1.) ☒ SOLID (2.) ☐ SLUDGE (20% OR GREATER SOLIDS) (3.) SLURRY (20% OR LESS SOLIDS)

(4.) ☐ LIQUID (5% OR LESS SOLIDS) (5.) ☐ OTHER - SPECIFY

(INDICATE) % SOLIDS BY WEIGHT ______;
SPECIFIC GRAVITY ______; PUMPABLE: ☐ YES ☒ NO; ODOR: ☐ YES ☒ NO; FREE FLUID: ☐ YES ☒ NO;
pH ______; FLASHPOINT ______

D. WAS THE WASTE EVER CLASSIFIED OR LISTED HAZARDOUS? ☐ YES ☒ NO IF YES, SPECIFY THE EPA WASTE NUMBER ______

E. LIST BELOW THE CHEMICAL COMPOSITION (ATTACH ANY ADDITIONAL ANALYSIS)

	MAJOR COMPONENTS	% BY WEIGHT
1.	Soil / ROCK	>99%
2.	Fuel oil	<1%
3.		
4.		

F. SOURCE OF CHEMICAL DATA

SECTION III GENERATION RATE/DISPOSAL FREQUENCY* (TO BE COMPLETED BY GENERATOR)

A. AVERAGE GENERATION RATE (CUBIC YARDS PER WEEK, POUNDS PER MONTH, ETC.) ______

B. DISPOSAL REQUEST [COMPLETE (1) OR (2)]:

(1) ☐ Continual (or intermittent)
If disposal is to be made on a continual or intermittent basis, indicate the quantity and frequency of disposal ______ (cubic yards per week, pounds per month, etc.)
Indicate the quantity available for immediate disposal, if applicable ______

(2) ☒ one-time only
If one-time only, indicate the total amount to be disposed of ______

*NOTE ▶ INDICATE APPROPRIATE UNITS (TONS, GALLONS, POUNDS, CUBIC YARDS, ETC.)

SECTION IV TRANSPORTATION (TO BE COMPLETED BY GENERATOR OR LANDFILL OPERATOR)

A. CONTAINERS USED FOR TRANSPORTATION (CHECK ONE)

(1) ☒ BULK (20 CU.YD.); (2) ☐ METAL DRUMS (______ GAL.); (3) ☐ CASES, CARTONS (SIZE ______);
(4) ☐ FIBER DRUMS (______ GALS.); (5) OTHER - SPECIFY ______

B. TYPE OF VEHICLE

(1) ☐ TRACTOR-TRAILER; (2) ☒ ROLL-OFF/LUGGER; (3) ☐ DUMP TRUCK; (4) ☐ (OTHER) ______

MO 780-1188 (4-00)

SECTION V DISPOSAL TECHNIQUES (TO BE COMPLETED BY THE LANDFILL OPERATOR)

A. ☐ SEPARATE TRENCH BURIAL

(1) LOCATION ON LANDFILL SITE ______

(2) TRENCH DESIGN PREVIOUSLY APPROVED BY DNR? ☐ YES ☐ NO IF NOT, ATTACH REQUEST FOR APPROVAL

B. ☒ CO-DISPOSAL WITH MUNICIPAL WASTE ON ACTIVE FILL FACE

1. AVERAGE DAILY QUANTITY OF MUNICIPAL SOLID WASTE ______ (SPECIFY TONS OR CUBIC YARDS)
2. SPECIAL WASTE TO BE UNLOADED AT: ____ TOE OF WORKING FACE
   ____ TOP OF WORKING FACE

C. ☐ OTHER DISPOSAL PROCEDURES - SPECIFY ______

SECTION VI HANDLING PROCEDURES (TO BE COMPLETED BY GENERATOR)

Safety precautions during handling: Provide handling information supplied by product manufacturer, waste generator, or from other sources, describing the necessary measures that should be taken to protect personal safety, to control dusting, or to ensure fixed placement of waste. This should include a description of materials not compatible with this waste.

SECTION VII CERTIFICATION (TO BE COMPLETED BY GENERATOR AND LANDFILL OPERATOR)

I, the undersigned, submit this request to dispose of the named waste and certify that the information supplied by me herein is correct. I understand approval to dispose of the waste may be suspended if false information has been submitted or if the disposal operation is not performed in a proper and legal manner.

SIGNATURE OF LANDFILL OPERATOR OR AUTHORIZED REPRESENTATIVE

Nancy Harden

PRINT NAME/TITLE	DATE
	3/9/07

I, the undersigned, submit this request to dispose of the named waste and certify that the waste named herein, to the best of my knowledge, is not a hazardous waste as defined by the Missouri Waste Management Law and rules, and that the information supplied by me is correct.

SIGNATURE OF WASTE GENERATOR OR AUTHORIZED REPRESENTATIVE

Deb A English

PRINT NAME/TITLE	DATE
Deborah English	3/9/07

ADDITIONAL COMMENTS

MAIL THE COMPLETED FORM TO: PLEASE SEND TO THE REGIONAL OFFICE IN YOUR AREA.

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-003

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number: MO0470000530
2. Page 1 of
3. Emergency Response Phone
4. Manifest Tracking Number: **001729117 JJK**

5. Generator's Name and Mailing Address

US GENERAL SERVICES ADMINISTRATION
1500 E. BANNISTER RD.
KANSAS CITY, MO 64131 USA

Generator's Phone: (816) 823-2227

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: AMEREX ENVIRONMENTAL SOLUTIONS — U.S. EPA ID Number: OKD007222128

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address — U.S. EPA ID Number: MOD981123391

WASTE EXPRESS INC
6300 STADIUM DRIVE
KANSAS CITY, MO 64129 01

Facility's Phone: (816) 924-5959

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes		
X	1. HAZARDOUS WASTE, LIQUID, N.O.S., 9, NA3082, III, (1,2-DICHLOROETHENE, TRICHLOROETHYLENE)	6	DM	2400	P	D027	D040	
	2. NON-REGULATED, (SOIL)	20	DM	14000	P			
	3.							
	4.							

14. Special Handling Instructions and Additional Information

15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: DAVE L. HARTSHORN — Signature: D. Hartsh — Month Day Year: 01 11 2107

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: BILL LURVEY — Signature: Bill Lurvey — Month Day Year: 1 15 07

Transporter 2 Printed/Typed Name — Signature — Month Day Year

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

18b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

18c. Signature of Alternate Facility (or Generator) — Month Day Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1. H141 2. 3. 4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name: Kelle Coslin — Signature — Month Day Year: 1 18 07

GENERATOR · INT'L · TRANSPORTER · DESIGNATED FACILITY

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

DESIGNATED FACILITY TO GENERATOR STATE (IF REQUIRED)

20699

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. N/A

Manifest Doc. No.

2. Page 1 of

3. Generator's Name and Mailing Address US General Services Administration 1500 E Bannister Rd KCMO

4. Generator's Phone (913) 451-7510

5. Transporter 1 Company Name Waste Express

6. US EPA ID Number MO.0981183391

A. Transporter's Phone 816 924 5884

7. Transporter 2 Company Name

8. US EPA ID Number

B. Transporter's Phone

9. Designated Facility Name and Site Address Waste Express 1050 Stadium Drive Kansas City, Mo 64129

10. US EPA ID Number MO0981183391

C. Facility's Phone 816-924 5884

11. Waste Shipping Name and Description	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol
a. Non RCRA Solid	1	DM	100	P
b.				
c.				
d.				

D. Additional Descriptions for Materials Listed Above

E. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

16. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name Jerrett Domking (SCS Engineers) Signature [signature] Month 05 Day 05 Year 06

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name Signature Month Day Year

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name Dave Brannon Signature Dave Brannon Month 05 Day 05 Year 06

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name Steven Brown Signature Steven Brown Month 05 Day 05 Year 06

GENERATOR / TRANSPORTER / FACILITY

ORIGINAL – RETURN TO GENERATOR

MATERIAL CHARACTERIZATION FORM

Profile #: AES-15811

SECTION A: GENERATOR INFORMATION

Name:	GSA-BANNISTER COMPLEX	EPA I.D. #:	MO0470000530
Mailing Address:	1500 E. BANNISTER RD.	Facility Address:	~~10976 EL MONTE~~ 1500 E. Bannister Rd, KCMO
City:	KANSAS CITY	Phone:	(816) 823-2227
State/Zip:	MO, 64131	FAX:	(816) 926-1779
Technical Contact:	DAVE HARTSHORN, CIH	Title:	

SECTION B: WASTE IDENTIFICATION

Profile Name: CHLORINATED H2O

Process Gen Waste: IDW SAMPLING

SECTION C: WASTE CHARACTERISTICS

Default Physical Form Type:	L	Viscosity Value:	L	WW or NWW:	NWW
Layers					
Multilayered/Bilayered/None:	C	Color:	VARIES		
% Total Solids Value:		BTU Value:			
pH:	9-12.5	Specific Gravity:	.8-1.0	Boiling Point:	
Flash Point:	141-200 F	Cyanides Value:		Total Organic Halogen Value:	

SECTION D: CHEMICAL CONSTITUENTS (must equal 100% and represent all constituents)

Constituent Name	Lower %	Upper %	Units
1,2-DICHLOROETHENE	0	1	%
TRICHLOROETHYLENE	0	1	%
VINYL CHLORIDE	0	1	%
WATER	95	99	%

SECTION E: SAFETY DATA

HAZARD ALERT SYMBOL	RATED TOXICITY
HEALTH	INGESTION
FLAMMABILITY	INHALATION
REACTIVITY	Skin Absorbtion

Safe Use Category:

SECTION F: RECERTIFICATION

I certify that this waste stream has not changed.

Name: X Dave L Hartshorn

Signature: X D Hartshorn

Date: X 11 Jan 07 Title: X Industrial Hygienist

SECTION G: SHIPPING INFORMATION

Proper Shipping Name/Shipping Description: HAZARDOUS WASTE, LIQUID, N.O.S., (1,2-DICHLOROETHENE, 1,2-DICHLOROETHENE TRICHLOROETHYLENE, TRICHLOROETHYLENE)

Hazard Class Code: 9

UN/NA Code: NA3082

Pack Group & UN Number: III

ERG Page:

$175 per 55g drum + trans.

SECTION H: APPROVAL INFORMATION

TSDF Name | Cost Code | Approval #

SECTION I: WASTE CODES

Waste Code D027, D040, D043 Subcode

MATERIAL CHARACTERIZATION FORM

Profile #: AES-15809

SECTION A: GENERATOR INFORMATION

Name:	GSA-BANNISTER COMPLEX	EPA I.D. #:	MO0470000510
Mailing Address:	1500 E. BANNISTER RD.	Facility Address:	~~10006 HI-MONTE~~ 1500 E. Bannister Rd, KC MO
City:	KANSAS CITY	Phone:	(816) 823-2227
State/Zip:	MO, 64131	FAX:	(816) 926-1779
Technical Contact:	DAVE HARTSHORN, CIH	Title:	

SECTION B: WASTE IDENTIFICATION

Profile Name: NON REGULATED SOIL-CUTTING

Process Gen Waste: DRILLING

SECTION C: WASTE CHARACTERISTICS

Default Physical Form Type:	S	Viscosity Value:	H	WW or NWW:	NWW
Layers Multilayered/Bilayered/None:	C	Color:	VARIES		
% Total Solids Value:		BTU Value:			
pH:	9-12.5	Specific Gravity:	1.0-1.2	Boiling Point:	
Flash Point:	141-200 F	Cyanides Value:		Total Organic Halogen Value:	

SECTION D: CHEMICAL CONSTITUENTS (must equal 100% and represent all constituents)

Constituent Name	Lower %	Upper %	Units
SOIL	95	99	%
WATER	0	1	%

SECTION E: SAFETY DATA

HAZARD ALERT SYMBOL	RATED TOXICITY
HEALTH	INGESTION
FLAMMABILITY	INHALATION
REACTIVITY	Skin Absorbtion

Safe Use Category:

SECTION F: RECERTIFICATION

I certify that this waste stream has not changed.

Name: X Dave E. Hartshorn

Signature: X [signature]

Date: X 11 Jan 07 Title: X Industrial Hygienist

SECTION G: SHIPPING INFORMATION

Proper Shipping Name/Shipping Description: NON-REGULATED, (SOIL, SOIL)

Hazard Class Code:

UN/NA Code:

Pack Group & UN Number:

ERG Page:

$65 per 55 g. drum + trans.

SECTION H: APPROVAL INFORMATION

TSDF Name	Cost Code	Approval #

SECTION I: WASTE CODES

Waste Code	Subcode

WASTE EXPRESS, INC.

CERTIFICATION OF NON-HAZARDOUS WASTE

GSA-BANNISTER COMPLEX

has contracted with Waste Express, Inc., to provide transportation, storage, and/or processing of the solid waste described below. Generator hereby certified and warrants to Waste Express, Inc., that the solid waste described is not "hazardous waste" as the term is defined in Title 42 United States Code, 6903a, because said waste meets the following conditions:

a. Said waste is exempt from regulation because it meets the provisions of Title 40 Code of Federal Regulations 261.4 and/or,

b. Said waste is not listed as a hazardous waste in Subpart D of Title 40 Code of Federal Regulations Part 261, and said waste is not classified as a hazardous waste in Subpart C, Title 40 Code of Federal Regulations, Parts 261 as a result of actual testing or knowledge of the hazard characteristics of the waste in light of the materials or processes used to generate the waste.

DESCRIPTION OF NON-HAZARDOUS WASTE: ________

NON REGULATED, SOIL CUTTING

ORIGIN OF WASTE: ________

x [signature] x 11 Jan 2007

SIGNATURE/TITLE DATE

INDUSTRIAL HYGIENIST

6300 Stadium Drive – Kansas City, MO 64129

APPENDIX D

BORING LOGS, WELL DEVELOPMENT, AND PHYSICAL SOIL TEST DATA

SCS ENGINEERS				DRILLING LOG
Boring/Monitoring Well Identification: SB-206				Facility: General Services Administration Bannister Complex
Date: 4/27/07 SD 10:30				Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler				Driller: Mike Costlow
Drilling Method: Geoprobe®				Logger: Jerrett Domling

Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
				~12" Asphalt and rock
		S-1 3-4'		1-4' Mottled brown/dk brown/blk, moist, firm, silty clay, traces of rock
5				4-8' Med brown, very moist, firm, silty clay, carbon and Fe staining
10				Target depth - 8'
15				
20				
25				
30				
35				
40				
45				

SCS ENGINEERS	DRILLING LOG
Boring/Monitoring Well Identification: SB-205	Facility: General Services Administration
	Bannister Complex
Date: 4/27/07 SD 10:00	Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler	Driller: Mike Costlow
Drilling Method: Geoprobe®	Logger: Jerrett Domling

Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
				~10" Asphalt and rock
				10"-3.5' Fill, moist, firm, silty clay, w/med rock
5		S-1 4-5'		3.5-8' Med brown, silty clay, carbon and Fe staining
				5' Increasing moisture content
10				Target depth - 8'
15				
20				
25				
30				
35				
40				
45				

SCS ENGINEERS	DRILLING LOG
Boring/Monitoring Well Identification: SB-301	Facility:General Services Administration
	Bannister Complex
Date: 4/26/07 SD 11:45	Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler	Driller: Mike Costlow
Drilling Method: Geoprobe®	Logger: Jerrett Domling

Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
				~8" of concrete and 6" of rock fill
				Lt brown, moist, firm, silty clay 2-2.2' sand fill layer
5		S-1 5'		
				5-5.5' Fill with slight discoloration and odor
10				
				Target depth - 12'
15				
20				
25				
30				
35				
40				
45				

SCS ENGINEERS	DRILLING LOG
Boring/Monitoring Well Identification: SB-302	Facility: General Services Administration
	Bannister Complex
Date: 4/26/07 SD 12:15	Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler	Driller: Mike Costlow
Drilling Method: Geoprobe®	Logger: Jerrett Domling

Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
				~8" of concrete and 4" of rock
				1-12' Brown, moist, firm, silty clay, traces of carbon and Fe staining
5		S-1 10-11'		
10				
				Target depth - 12'
15				
20				
25				
30				
35				
40				
45				

SCS ENGINEERS	DRILLING LOG
Boring/Monitoring Well Identification: SB-303	Facility:General Services Administration Bannister Complex
Date: 4/26/07 SD 12:40	Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler	Driller: Mike Costlow
Drilling Method: Geoprobe®	Logger: Jerrett Domling

Depth *in Feet*	Monitoring Well Construction *Detail*	*Sample*	Headspace Field Screening PID *(ppm)*	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
				~8" of concrete and 4" of rock
				1-12' Brown, moist, firm, silty clay, traces of carbon and Fe staining, small tree roots in top 4'
5		S-1 10-11'		
10				
				Target depth - 12'
15				
20				
25				
30				
35				
40				
45				

SCS ENGINEERS	DRILLING LOG
Boring/Monitoring Well Identification: SB-304	Facility:General Services Administration Bannister Complex
Date: 4/26/07 SD 1:00	Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler	Driller: Mike Costlow
Drilling Method: Geoprobe®	Logger: Jerrett Domling

Depth in Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
				~8" of concrete and 4" of rock
5		S-1 9-10'		1-12' Brown, moist, firm, silty clay, traces of carbon and Fe staining
10				
15				Target depth - 12'
20				
25				
30				
35				
40				
45				

SCS ENGINEERS	DRILLING LOG
Boring/Monitoring Well Identification: SB-305	Facility:General Services Administration Bannister Complex
Date: 4/26/07 SD 2:10	Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler	Driller: Mike Costlow
Drilling Method: Geoprobe®	Logger: Jerrett Domling

Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
				~8" of concrete and 4" of rock
5		S-1 8-10'		1-12' Med brown, moist, firm, silty clay, carbon and Fe staining
10				
15				Target depth - 12'
20				
25				
30				
35				
40				
45				

SCS ENGINEERS	DRILLING LOG
Boring/Monitoring Well Identification: SB-306	Facility: General Services Administration
	Bannister Complex
Date: 4/26/07 SD 2:40	Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler	Driller: Mike Costlow
Drilling Method: Geoprobe®	Logger: Jerrett Domling

Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
				~8" of concrete and 4" of rock
				1-12' Med brown, moist, firm, silty clay, carbon and Fe staining
5		S-1 8-10'		
10				
				Target depth - 12'
15				
20				
25				
30				
35				
40				
45				

SCS ENGINEERS				DRILLING LOG
Boring/Monitoring Well Identification: SB-307				Facility: General Services Administration Bannister Complex
Date: 4/26/07 SD 3:00				Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler				Driller: Mike Costlow
Drilling Method: Geoprobe®				Logger: Jerrett Domling
Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
				~8" of concrete and 4" of rock
5		S-1 8-10'		1-12' Med brown, moist, firm, silty clay, carbon and Fe staining
10				
15				Target depth - 12'
20				
25				
30				
35				
40				
45				

SCS ENGINEERS				DRILLING LOG
Boring/Monitoring Well Identification: SB-308				Facility: General Services Administration Bannister Complex
Date: 4/26/07 SD 3:25				Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler				Driller: Mike Costlow
Drilling Method: Geoprobe®				Logger: Jerrett Domling
Depth in Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
				~8" of concrete and 4" of rock
5		S-1 8-10'		1-12' Med brown, moist, firm, silty clay, carbon and Fe staining
10				
15				Target depth - 12'
20				
25				
30				
35				
40				
45				

SCS ENGINEERS				DRILLING LOG
Boring/Monitoring Well Identification: SB-309				Facility:General Services Administration Bannister Complex
Date: 4/27/07 SD 8:30				Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler				Driller: Mike Costlow
Drilling Method: Geoprobe®				Logger: Jerrett Domling

Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
				0-1' Dk brown, moist, firm, silty clay
5		S-1 8-10'		1-12' Fill, med brown, moist, firm, silty clay, with traces of rock/concrete
10				
15				Target depth - 12'
20				
25				
30				
35				
40				
45				

SCS ENGINEERS	DRILLING LOG
Boring/Monitoring Well Identification: SB-310	Facility:General Services Administration
	Bannister Complex
Date: 4/27/07 SD 9:00	Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler	Driller: Mike Costlow
Drilling Method: Geoprobe®	Logger: Jerrett Domling

Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
				0-1' Dk brown, moist, firm, silty clay
				1-12' Fill, med brown, moist, firm, silty clay
5		S-1 8-10'		
10				
				Target depth - 13'
15				
20				
25				
30				
35				
40				
45				

SCS ENGINEERS	DRILLING LOG
Boring/Monitoring Well Identification: SB-311	Facility:General Services Administration Bannister Complex
Date: 4/27/07 SD 9:15	Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler	Driller: Mike Costlow
Drilling Method: Geoprobe®	Logger: Jerrett Domling

Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
				0-1' Dk brown, moist, firm, silty clay
				1-12' Med brown, moist, firm, silty clay
5		S-1 8-10'		
10				
				Target depth - 13'
15				
20				
25				
30				
35				
40				
45				

SCS ENGINEERS	DRILLING LOG
Boring/Monitoring Well Identification: SB-312	Facility:General Services Administration
	Bannister Complex
Date: 4/27/07 SD 9:30	Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler	Driller: Mike Costlow
Drilling Method: Geoprobe®	Logger: Jerrett Domling

Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
				0-1' Dk brown, moist, firm, silty clay
				1-12' Fill, med brown, moist, firm, silty clay
5		S-1 8-10'		
10				
				Target depth - 13'
15				
20				
25				
30				
35				
40				
45				

SCS ENGINEERS			DRILLING LOG	
Boring/Monitoring Well Identification: SB-201				Facility: General Services Administration Bannister Complex
Date: 4/26/07 SD 10:20				Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler				Driller: Mike Costlow
Drilling Method: Geoprobe®				Logger: Jerrett Domling

Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
				0-2' Asphalt rock and fill
				Lt brown/med brown, very moist, soft, silty clay
5		S-1 6-7'		6-7' Traces of wood fragments and discoloration adjacent to wood fragments
10				Target depth - 8'
15				
20				
25				
30				
35				
40				
45				

SCS ENGINEERS		DRILLING LOG		
Boring/Monitoring Well Identification: SB-202			Facility: General Services Administration Bannister Complex	
Date: 4/26/07 SD 10:30			Project No: 02200070.57	
Sampling Method: Continuous-Barrel Sampler			Driller: Mike Costlow	
Drilling Method: Geoprobe®			Logger: Jerrett Domling	

Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
				~8" Fill w/ asphalt, rock
5		S-1 4-5'		Brown/lt brown, moist, firm, silty clay, carbon and Fe staining
10				Target depth - 8'
15				
20				
25				
30				
35				
40				
45				

SCS ENGINEERS	DRILLING LOG
Boring/Monitoring Well Identification: SB-203	Facility:General Services Administration
	Bannister Complex
Date: 4/26/07 SD 10:40	Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler	Driller: Mike-Costlow
Drilling Method: Geoprobe®	Logger: Jerrett Domling

Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
				~18" Asphalt and rock
				Brown/lt brown, moist, firm, silty clay
5		S-1 4-5'		Increasing moisture content @ 5'
				Target depth - 8'
10				
15				
20				
25				
30				
35				
40				
45				

SCS ENGINEERS		DRILLING LOG	
Boring/Monitoring Well Identification: SB-204		Facility: General Services Administration Bannister Complex	
Date: 4/26/07 SD 10:55		Project No: 02200070.57	
Sampling Method: Continuous-Barrel Sampler		Driller: Mike Costlow	
Drilling Method: Geoprobe®		Logger: Jerrett Domling	

Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
				~18" Asphalt and rock
				Brown/lt brown, moist, firm, silty clay
5		S-1 4-5'		Increasing moisture content @ 5'
10				Target depth - 8'
15				
20				
25				
30				
35				
40				
45				

SCS ENGINEERS	DRILLING LOG
Boring/Monitoring Well Identification: SB-101	Facility:General Services Administration
	Bannister Complex
Date: 4/26/07 SD 8:30	Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler	Driller: Mike Costlow
Drilling Method: Geoprobe®	Logger: Jerrett Domling

Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
		S-1 1-2'		~8" Asphalt
				Lt brown, moist, firm, silty clay, carbon and Fe staining
5				Target depth - 3'
10				
15				
20				
25				
30				
35				
40				
45				

SCS ENGINEERS **DRILLING LOG**

Boring/Monitoring Well Identification: SB-102	Facility: General Services Administration
	Bannister Complex
Date: 4/26/07 SD 8:45	Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler	Driller: Mike Costlow
Drilling Method: Geoprobe®	Logger: Jerrett Domling

Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
		S-1 1-2'		~8" Asphalt 1' Fine/med-grain sand - clean Brown, moist, firm, silty clay, poor recovery
5				Target depth - 3'
10				
15				
20				
25				
30				
35				
40				
45				

SCS ENGINEERS				DRILLING LOG
Boring/Monitoring Well Identification: SB-103				Facility:General Services Administration Bannister Complex
Date: 4/26/07 SD 9:00				Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler				Driller: Mike Costlow
Drilling Method: Geoprobe®				Logger: Jerrett Domling

Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
		S-1 1-2'		~8" Asphalt
				8"-2' Med brown/grey brown, silty clay, w/med gravel trace
				2-3' Lt brown, moist, firm, silty clay, carbon and Fe staining
5				Target depth - 3'
10				
15				
20				
25				
30				
35				
40				
45				

SCS ENGINEERS		DRILLING LOG		
Boring/Monitoring Well Identification: SB-104				Facility:General Services Administration Bannister Complex
Date: 4/26/07 SD 9:10				Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler				Driller: Mike Costlow
Drilling Method: Geoprobe®				Logger: Jerrett Domling

Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
		S-1 1.5-2'		0-1' Mottled dk brown/red brown, moist, firm, silty clay
				1-1.5' Fill, clay and rock; 1.5-2' Dk brown/blk, silty clay
				2-3' Brown, moist, firm, silty clay
				Target depth - 3'
5				
10				
15				
20				
25				
30				
35				
40				
45				

SCS ENGINEERS	DRILLING LOG
Boring/Monitoring Well Identification: SB-105	Facility:General Services Administration
	Bannister Complex
Date: 4/26/07 SD 9:20	Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler	Driller: Mike Costlow
Drilling Method: Geoprobe®	Logger: Jerrett Domling

Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
		S-1 1-2'		0-1' Mottled dk brown/red brown, moist, firm, silty clay
				1-1.5' Fill, clay and rock
				1.5-3' Lt brown, moist, firm, silty clay
5				Target depth - 3'
10				
15				
20				
25				
30				
35				
40				
45				

SCS ENGINEERS	DRILLING LOG
Boring/Monitoring Well Identification: SB-106	Facility: General Services Administration
	Bannister Complex
Date: 4/26/07 SD 9:30	Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler	Driller: Mike Costlow
Drilling Method: Geoprobe®	Logger: Jerrett Domling

Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
		S-1		0-1' Mottled dk brown/red brown, silty clay
		1-1.5'		1-1.5' Dk brown/blk, moist, firm, silty clay; 1.5-1.7' fill
				1.7-3' Lt brown/brown, moist, firm, silty clay
				Target depth - 3'
5				
10				
15				
20				
25				
30				
35				
40				
45				

SCS ENGINEERS	DRILLING LOG
Boring/Monitoring Well Identification: SB-107	Facility:General Services Administration Bannister Complex
Date: 4/26/07 SD 9:40	Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler	Driller: Mike Costlow
Drilling Method: Geoprobe®	Logger: Jerrett Domling

Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
		S-1 1-2'		0-1' Mottled dk brown/red brown, moist, firm, silty clay; 6-12"rock trace
				1-3' Brown, moist, firm, silty clay
5				Target depth - 3'
10				
15				
20				
25				
30				
35				
40				
45				

SCS ENGINEERS				DRILLING LOG
Boring/Monitoring Well Identification: SB-108				Facility: General Services Administration Bannister Complex
Date: 4/26/07 SD 9:50				Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler				Driller: Mike Costlow
Drilling Method: Geoprobe®				Logger: Jerrett Domling

Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
		S-1 1-2'		0-1' Mottled dk brown/red brown, moist, firm, silty clay
				8-12" rock trace; 12-18" mottled blk/grey brown, silty clay
				18"-3' Lt brown, moist, firm, silty clay
5				Target depth - 3'
10				
15				
20				
25				
30				
35				
40				
45				

SCS ENGINEERS			DRILLING LOG	
Boring/Monitoring Well Identification: SB-109				Facility:General Services Administration Bannister Complex
Date: 4/26/07 SD 10:00				Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler				Driller: Mike Costlow
Drilling Method: Geoprobe®				Logger: Jerrett Domling

Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
		S-1 1-2'		0-1' Asphalt and rock
				1-3' Brown/lt brown, moist, firm, silty clay, carbon and Fe staining
5				Target depth - 3'
10				
15				
20				
25				
30				
35				
40				
45				

SCS ENGINEERS	DRILLING LOG
Boring/Monitoring Well Identification: SB-110	Facility:General Services Administration
	Bannister Complex
Date: 4/26/07 SD 10:10	Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler	Driller: Mike Costlow
Drilling Method: Geoprobe®	Logger: Jerrett Domling

Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
		S-1		-14" Rock and asphalt
		1-2'		14-24" Silty clay w/rock
				2-3' Lt brown/brown, moist, firm, silty clay
5				Target depth - 3'
10				
15				
20				
25				
30				
35				
40				
45				

SCS ENGINEERS	DRILLING LOG
Boring/Monitoring Well Identification: SP-18	Facility:General Services Administration
.	Bannister Complex
Date: 10/31/06 SD 11:50 ED 12:25	Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler	Driller: Mike Costlow
Drilling Method: Geoprobe®	Logger: Jerrett Domling

Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
				~4" Asphalt
		S-1		Fill to 4' bgs, dk brown, moist, firm, silty clay
5				Lt brown, moist, firm, silty clay, carbon and Fe staining
		S-2 7-9'		
10		S-3		Increasing moisture content
15		S-4 20% Rec.		Grey brown, very moist, soft
				Saturated soils
20		S-5		Dk grey brown
25				Refusal at 25'
30				
35				
40				
45				

SCS ENGINEERS	DRILLING LOG
Boring/Monitoring Well Identification: SP-19	Facility: General Services Administration
	Bannister Complex
Date: 10/31/06 SD 10:30 ED 11:30	Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler	Driller: Mike Costlow
Drilling Method: Geoprobe®	Logger: Jerrett Domling

Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
				~4" Asphalt
0–5		S-1		Fill to 4' bgs, dk brown, moist, very firm, silty clay
5–10		S-2 8-10'		Lt brown, moist, firm, silty clay, carbon and Fe staining
10–15		S-3		Increasing moisture content
15–20		S-4		Grey brown, very moist, soft, silty clay
20–25		S-5		Saturated soils @ 19'. Greenish/Grey, soft, silty clay
25–45				Refusal at 25'

SCS ENGINEERS	DRILLING LOG
Boring/Monitoring Well Identification: SP-20	Facility: General Services Administration
	Bannister Complex
Date: 10/31/06 SD 9:30 ED 9:40	Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler	Driller: Mike Costlow
Drilling Method: Geoprobe®	Logger: Jerrett Domling

Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
		S-1		~8" Asphalt over concrete
				Dk brown/blk, moist, firm, silty clay
5				Fill, mottled dk brown/blk, moist, firm, silty clay
		S-2		
10				Refusal at 7.5', Concrete at 7.5' Off set ~7' W (SP20A)
15				
20				
25				
30				
35				
40				
45				

SCS ENGINEERS	DRILLING LOG
Boring/Monitoring Well Identification: SP-20A	Facility:General Services Administration
	Bannister Complex
Date: 10/31/06 SD 9:45 ED 10:15	Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler	Driller: Mike Costlow
Drilling Method: Geoprobe®	Logger: Jerrett Domling

Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
				~8" Asphalt over concrete
		S-1 50% Rec.		Fill, dk brown, very moist, slightly firm, silty clay
5		S-2 10% Rec.		
10		S-3 10-12'		Med brown, very moist, slightly firm, silty clay, carbon and Fe staining
15		S-4		More grey, very moist, soft, silty clay
20		S-5		Dk grey, silty clay
25		S-6		
30				
35				
40				
45				

SCS ENGINEERS	DRILLING LOG
Boring/Monitoring Well Identification: SP-21	Facility:General Services Administration
	Bannister Complex
Date: 10/31/06 SD 7:30 ED 8:00	Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler	Driller: Mike Costlow
Drilling Method: Geoprobe®	Logger: Jerrett Domling

Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
				8" Concrete and asphalt
		S-1		Med brown, moist, firm, silty clay
5				
				Increasing moisture content
		S-2 7'		7-9' Traces of med gravel
10				
15				
20				
25				
30				
35				
40				
45				

SCS ENGINEERS	DRILLING LOG
Boring/Monitoring Well Identification: SP-22	Facility:General Services Administration
	Bannister Complex
Date: 10/31/06 SD 8:10 ED 8:25	Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler	Driller: Mike Costlow
Drilling Method: Geoprobe®	Logger: Jerrett Domling

Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
				~12" to soil
5		S-1		Med brown, moist, firm, silty clay
10		S-2 8'		7-9' Layers of 2-3" thick gravel Increasing moisture content
15				
20				
25				
30				
35				
40				
45				

SCS ENGINEERS	DRILLING LOG
Boring/Monitoring Well Identification: SPMH-04A	Facility:General Services Administration
	Bannister Complex
Date: 10/31/06 SD 3:25 ED 3:35	Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler	Driller: Mike Costlow
Drilling Method: Geoprobe®	Logger: Jerrett Domling

Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
		S-1		~6" Pavement
				Fill, med brown, moist, firm, silty clay
				Increasing moisture content
5		S-2 8.5'		5-8' Mottled grey, silty clay
10				
15				
20				
25				
30				
35				
40				
45				

SCS ENGINEERS		DRILLING LOG	
Boring/Monitoring Well Identification: SPMH-04		Facility:General Services Administration Bannister Complex	
Date: 10/31/06 SD 2:20 ED 2:35		Project No: 02200070.57	
Sampling Method: Continuous-Barrel Sampler		Driller: Mike Costlow	
Drilling Method: Geoprobe®		Logger: Jerrett Domling	

Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
				~6" Pavement
5		S-1		Med brown, moist, firm, silty clay
10		S-2 8.5'		Increasing moisture content Traces of med gravel Soft
15				
20				
25				
30				
35				
40				
45				

SCS ENGINEERS	DRILLING LOG
Boring/Monitoring Well Identification: SPMH-03A	Facility:General Services Administration
	Bannister Complex
Date: 10/31/06 SD 3:40 ED 3:50	Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler	Driller: Mike Costlow
Drilling Method: Geoprobe®	Logger: Jerrett Domling

Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
		S-1		6" Pavement Fill, med brown, moist, firm, silty clay
5		S-2 8.5'		5-7' Traces of med gravel Increasing moisture content
10				
15				
20				
25				
30				
35				
40				
45				

SCS ENGINEERS	DRILLING LOG
Boring/Monitoring Well Identification: SPMH-03	Facility:General Services Administration Bannister Complex
Date: 10/31/06	Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler	Driller: Mike Costlow
Drilling Method: Geoprobe®	Logger: Jerrett Domling

Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
				6" Pavement
		S-1		Med brown, silt
5				
		S-2 9'		7' Traces of fill/gravel Increasing moisture content
10				
15				
20				
25				
30				
35				
40				
45				

SCS ENGINEERS	DRILLING LOG
Boring/Monitoring Well Identification: SPMH-02A	Facility:General Services Administration
	Bannister Complex
Date: 10/31/06 SD 3:10 ED 3:20	Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler	Driller: Mike Costlow
Drilling Method: Geoprobe®	Logger: Jerrett Domling

Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm).	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
		S-1		~6" Pavement
				Fill, med brown, moist, firm, silty clay
5				Lt brown, moist, slightly firm, silty clay, carbon and Fe staining
10		S-2 9'		Increasing moisture content and traces of med gravel
15				
20				
25				
30				
35				
40				
45				

SCS ENGINEERS	DRILLING LOG
Boring/Monitoring Well Identification: SPMH-02	Facility:General Services Administration Bannister Complex
Date: 10/31/06 SD 2:45 ED 3:00	Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler	Driller: Mike Costlow
Drilling Method: Geoprobe®	Logger: Jerrett Domling

Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
				~6" Pavement
		S-1		Fill, med brown, moist, firm, silty clay
5				Lt brown, moist, slightly firm, silty clay, carbon and Fe staining
		S-2 8'		*Increasing moisture content*
10				
15				
20				
25				
30				
35				
40				
45				

SCS ENGINEERS	DRILLING LOG
Boring/Monitoring Well Identification: SPMH-O1A	Facility:General Services Administration
	Bannister Complex
Date: 10/31/06 SD 1:45 ED 2:05	Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler	Driller: Mike Costlow
Drilling Method: Geoprobe®	Logger: Jerrett Domling

Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
		S-1		~6" Pavement Med brown, silty clay, w/traces of med gravel fill
5		S-2 9'		Increasing moisture content
10		S-3		Grey, very moist, soft, silty clay
15				
20				
25				
30				
35				
40				
45				

SCS ENGINEERS				DRILLING LOG
Boring/Monitoring Well Identification: SPMH-01				Facility:General Services Administration Bannister Complex
Date: 10/31/06 SD 1:15 ED 1:25				Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler				Driller: Mike Costlow
Drilling Method: Geoprobe®				Logger: Jerrett Domling
Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
				~6" Pavement
		S-1		Fill, med brown, silty clay Increasing moisture content
5		S-2 5'		Soft
10				Refusal - Concrete encountered at 9' bgs
15				
20				
25				
30				
35				
40				
45				

SCS ENGINEERS	DRILLING LOG
Boring/Monitoring Well Identification: SP-9	Facility:General Services Administration
	Bannister Complex
Date: 10/30/06 SD 11:00 / ED 11:30	Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler	Driller: Mike Costlow
Drilling Method: Geoprobe®	Logger: Jerrett Domling

Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
		S-1	4 PPM field screening	~4" Asphalt
				24" bgs.Dk brown, silty clay, w/gravel fill
5				Med brown, moist, very firm, silty clay, carbon and Fe staining
		S-2		Increasing moisture content, very moist, soft
10		S-3		Gravel larger (~2" thick), returns to med. brown, moist, firm, silty clay, carbon and Fe staining
15		S-4		18.5' Increasing moisture content and med gravel
20		S-5		22' Saturated
				23' Basal gravel, aggregate to 3/4" diameter
25		S-6		Aggregate to 1" diameter
30				28.5' Shale
35				
40				
45				

SCS ENGINEERS	DRILLING LOG
Boring/Monitoring Well Identification: SP-10	Facility:General Services Administration Bannister Complex
Date: 10/30/06 SD 9:20 / ED 10:00	Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler	Driller: Mike Costlow
Drilling Method: Geoprobe®	Logger: Jerrett Domling

Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
		S-1		~4" Asphalt
				24" bgs sand bedding
5				Brown, clayey silt, stiff, moist, w/traces of gravel (to 3/8"), carbon and Fe staining
		S-2		
10			100 PPM field	
		S-3		11' bgs 3' thick groundwater layer
15				Return to brown clayey silt, increasing moisture content at ~14' bgs
		S-4		18' bgs granular layer 2-3" thick
20				Return to brown, silty clay
		S-5		22.5 bgs granular layer; 22.5-23.5 moist, soft, silty clay
25				Basal gravel at 23.5 bgs; saturated at 23' Gravel to 3/4" diameter
		S-6		
30				28.0' Shale
35				
40				
45				

SCS ENGINEERS **DRILLING LOG**

Boring/Monitoring Well Identification: SP-11	Facility:General Services Administration
	Bannister Complex
Date: 10/30/06 SD 12:20	Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler	Driller: Mike Costlow
Drilling Method: Geoprobe®	Logger: Jerrett Domling

Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
		S-1	22 PPM field screening	~4" Asphalt
				~3" Sand
5				Brown, moist, very firm, silty clay, carbon and Fe staining
		S-2		
10		S-3		
15				14' Increasing moisture content
		S-4		Increasing clay Poor recovery, silty clay
				18-18.3' Gravel
20		S-5		Silty clay, moist
25				Gravel @ 24', dry; Moist at 24.5'.
		S-6		Gravel and clay, wet @ 25'.
				Silty clay
				Saturated basal gravel/silty clay @ 28-30'.
30				
35				
40				
45				

SCS ENGINEERS	DRILLING LOG
Boring/Monitoring Well Identification: SP-12	Facility:General Services Administration
	Bannister Complex
Date: 10/30/06	Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler	Driller: Mike Costlow
Drilling Method: Geoprobe®	Logger: Jerrett Domling

Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
		S-1		~4" Asphalt
				~3" Aggregate and fill
5				Med brown, moist, very firm, silty clay, carbon and Fe staining.
		S-2 8'		Lt brown, moist, very firm, silty clay, carbon and Fe staining.
10				
		S-3		
15				
20				
25				
30				
35				
40				
45				

SCS ENGINEERS	DRILLING LOG
Boring/Monitoring Well Identification: SP-13	Facility: General Services Administration Bannister Complex
Date: 10/30/06 ED 3:00	Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler	Driller: Mike Costlow
Drilling Method: Geoprobe®	Logger: Jerrett Domling

Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
		S-1		~4" Asphalt
				~3" Sand bedding
5				Med brown, moist, very firm, silty clay, carbon and Fe staining
		S-2 9-10'		Lt brown, moist, firm, silty clay, carbon and Fe staining
10			6 PPM field screening	
		S-3		
15		S-4		Increasing moisture content Returning to silty clay
				Gravel layer ~3" thick @ 17.5
20		S-5		
				Saturated @ 23' Basal gravel @ 24', max diameter of 3/4"
25		S-6		
				Refusal at 28'
30				
35				
40				
45				

SCS ENGINEERS			DRILLING LOG	
Boring/Monitoring Well Identification: SP-14				Facility: General Services Administration Bannister Complex
Date: 10/30/06 SD 3:20				Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler				Driller: Mike Costlow
Drilling Method: Geoprobe®				Logger: Jerrett Domling

Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
		S-1		~4" Asphalt
				~3" Aggregate and fill
5				Med brown, moist, very firm, silty clay, carbon and Fe staining.
10		S-2 8'		Lt brown, moist, very firm, silty clay, carbon and Fe staining.
15		S-3		Increasing moisture content
20				
25				
30				
35				
40				
45				

SCS ENGINEERS	DRILLING LOG
Boring/Monitoring Well Identification: SP-15	Facility:General Services Administration Bannister Complex
Date: 10/31/06 SD 3:05 ED 3:15	Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler	Driller: Mike Costlow
Drilling Method: Geoprobe®	Logger: Jerrett Domling

Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
		S-1		~4" Asphalt
				~3" Sand backfill
5				Dk brown/brown, moist, very firm, silty clay, carbon and Fe staining.
10		S-2 6-7'		Lt brown, moist, very firm, silty clay, carbon and Fe staining.
15		S-3		Increasing moisture content
20				
25				
30				
35				
40				
45				

SCS ENGINEERS		DRILLING LOG		
Boring/Monitoring Well Identification: SP-16			Facility:General Services Administration Bannister Complex	
Date: 10/30/06 SD 1:15			Project No: 02200070.57	
Sampling Method: Continuous-Barrel Sampler			Driller: Mike Costlow	
Drilling Method: Geoprobe®			Logger: Jerrett Domling	

Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
		S-1	5 PPM field screening	~4" Asphalt
				~3" Sand backfill
5				Med brown, moist, very firm, silty clay
10		S-2 6-7'		Lt brown, moist, very firm, silty clay, traces of fine gravel
		S-3		Mottled lt. brown/grey, silty clay
15				~3" thick layer of med gravel & soil mix @ 13.5'
20		S-4		Increasing moisture content
25		S-5		Saturated @ 22' Basal gravel @ 23.5', max diameter of 1"
		S-6		
30				Refusal at 28'
35				
40				
45				

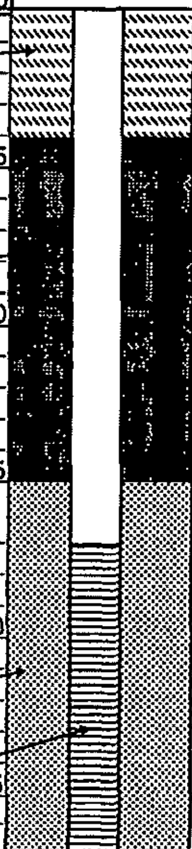
SCS ENGINEERS	DRILLING LOG
Boring/Monitoring Well Identification: SP-17	Facility:General Services Administration Bannister Complex
Date: 10/30/06	Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler	Driller: Mike Costlow
Drilling Method: Geoprobe®	Logger: Jerrett Domling

Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
		S-1		~4" Asphalt
				~3" Aggregate fill
5				Med brown, silty clay, carbon and Fe staining
10		S-2		Lt brown, moist, very firm, silty clay, carbon and Fe staining
15		S-3		Increasing moisture content Traces of fine/med gravel
20		S-4		Increasing moisture content
25		S-5		Saturated @ 21.5' Basal gravel @ 23', max diameter of 3/4"
		S-6		
30				Refusal at 28'
35				
40				
45				

SCS ENGINEERS	DRILLING LOG
Boring/Monitoring Well Identification: MW-4	Facility:General Services Administration Bannister Complex
Date: 11/2/06 SD 10:30 / ED 12:30	Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler	Driller: Mike Costlow
Drilling Method: Geoprobe®	Logger: Jerrett Domling

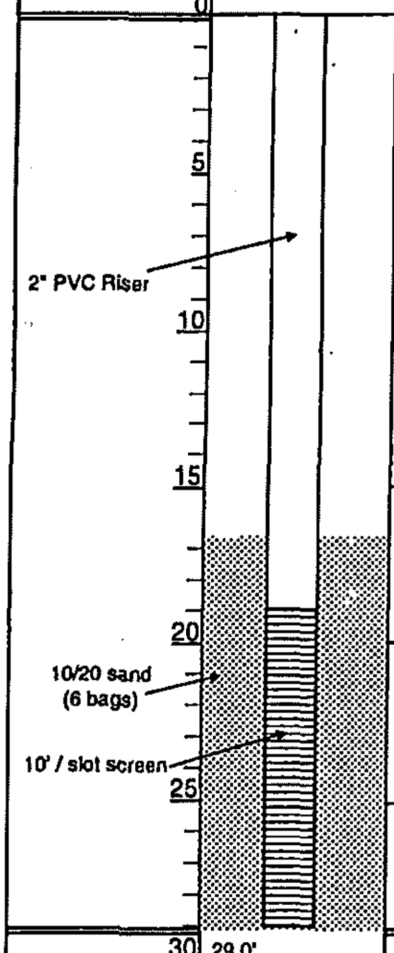
Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
	Cement / bentonite mix	S-1 3-5' bgs		~8" Grass and developed zone 8-30" Fill, dk brown, moist, firm, silty clay
5–10	1/4" hole plug (5 bags)	S-2 8-10' bgs		Brown, silty clay, carbon and Fe staining
10–15		S-3		Increasing moisture content
15–20		S-4		Saturated soils
20–25	10/20 sand (6 bags) 10' / slot screen	S-5		
25–28		S-6		Basal gravel at 25', gravel max diameter of 1"
28.0'				28.0' Refusal
30				
35				
40				
45				

SCS ENGINEERS	DRILLING LOG
Boring/Monitoring Well Identification: MW-5	Facility: General Services Administration Bannister Complex
Date: 11/2/06 SD 8:00 / ED 9:15	Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler	Driller: Mike Costlow
Drilling Method: Geoprobe®	Logger: Jerrett Domling



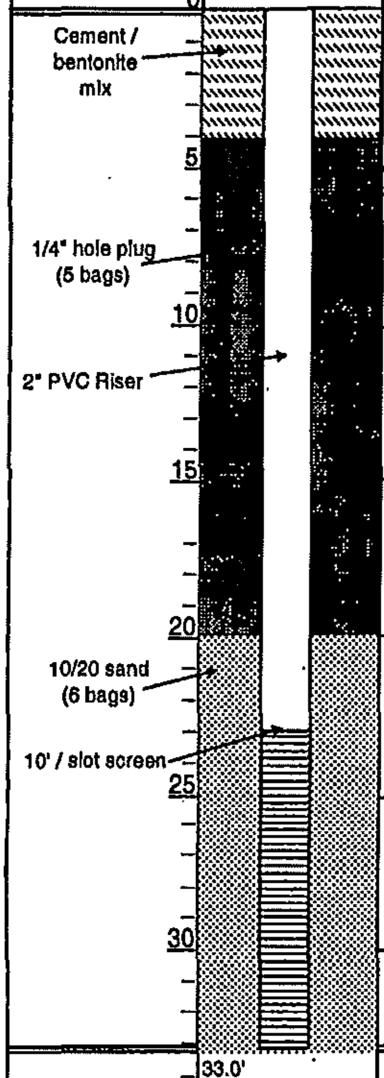
Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
	Cement / bentonite mix	S-1 3-5' bgs		~6" Grass and developed zone
				6-24" Fill sand
				Med brown, moist, firm, silty clay
5	1/4" hole plug (4 bags)	S-2 8-10' bgs		Increasing moisture content
10		S-3		Saturated soils
15		S-4		Mottled grey/lt. brown, very moist, soft, carbon and Fe staining
20	10/20 sand (7 bags); 10' / slot screen	S-5		Traces of med gravel
25		S-6		Basal gravel at 25.5'; gravel max diameter of 1"
	27.0'			27.0' Refusal
30				
35				
40				
45				

SCS ENGINEERS	DRILLING LOG
Boring/Monitoring Well Identification: MW-6	Facility:General Services Administration Bannister Complex
Date: 11/1/06 SD 2:10 / ED 3:50	Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler	Driller: Mike Costlow
Drilling Method: Geoprobe®	Logger: Jerrett Domling



Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
0-3		S-1 3-5' bgs		0-3' Grass, fill, med brown, moist, firm, silty clay
3-10		S-2 8-10' bgs		Lt brown, slightly moist, very firm, silty clay, carbon and Fe staining
10-15		S-3		Slight brown/grey brown mottling Increasing moisture content Traces of fine/med gravel
15-20		S-4		Becoming more grey
20-25		S-5		Saturated soil
25-30		S-6		Basal gravel at 23.5', gravel max diameter of 3/4"
30	29.0'			29.0' Refusal 29.0' Shale
35				
40				
45				

SCS ENGINEERS	DRILLING LOG
Boring/Monitoring Well Identification: MW-7	Facility: General Services Administration Bannister Complex
Date: 11/1/06 SD 10:50 / ED 12:40	Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler	Driller: Mike Costlow
Drilling Method: Geoprobe®	Logger: Jerrett Domling



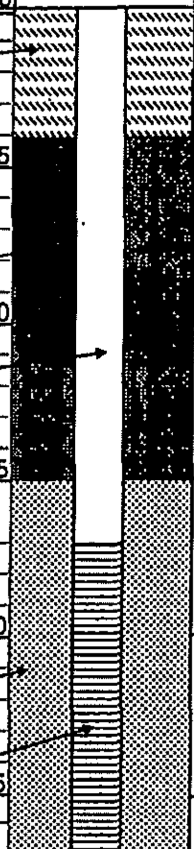
Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
0–5	Cement / bentonite mix	S-1 3-5' bgs		~6" Grass and topsoil 2' Dk brown, moist, firm, silty clay, w/ fine/med aggregate Lt. brown, moist, firm, silty clay, carbon and Fe staining
5–10	1/4" hole plug (5 bags)	S-2 8-10' bgs		Increasing moisture content Very moist, soft
10–15	2" PVC Riser	S-3		Saturated soils Med brown
15–20		S-4		
20–25	10/20 sand (6 bags) 10' / slot screen	S-5		Mottled grey/brown, slightly moist, very firm, silty clay, carbon and Fe staining Changing to more grey, increasing moisture content
25–30		S-6		Grey, very moist, slightly firm, silty clay
30–33		S-7		Soft ~6" thick basal gravel - minimal quantities
33.0'				33.0' Refusal 33.0' Shale
35				
40				
45				

SCS ENGINEERS	DRILLING LOG
Boring/Monitoring Well Identification: MW-8	Facility:General Services Administration
	Bannister Complex
Date: 11/1/06 SD 3:00 / ED 5:30	Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler	Driller: Mike Costlow
Drilling Method: Geoprobe®	Logger: Jerrett Domling

Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
		S-1		~6" Pavement 18" Fill, dk brown/blk, moist, firm, silty clay, traces of crushed limestone (1" diameter) Lt brown, moist, firm, silty clay, carbon and Fe staining
5		S-2		Increasing moisture content, very moist, soft
10		S-3		Saturated soil, med brown transitioning to grey
15		S-4		Grey, very soft, silty clay, saturated, slight Fe staining
20		S-5		Becoming more firm, increasing Fe staining
25		S-6		Grey, moist, very firm, silty clay, Fe staining to 31'
30		S-7		31-32' Grey, very moist, soft, silty clay 32-33' Basal gravel
35				33.0' Refusal
40				
45				

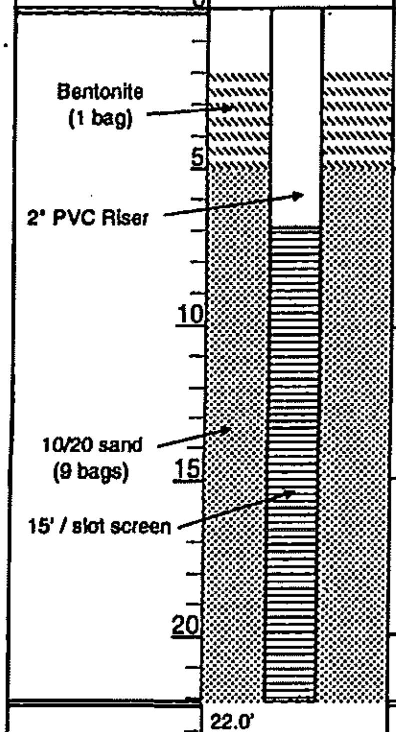
SCS ENGINEERS — DRILLING LOG

Boring/Monitoring Well Identification: MW-9	Facility: General Services Administration
	Bannister Complex
Date: 11/1/06 SD 7:15 / ED 9:30	Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler	Driller: Mike Costlow
Drilling Method: Geoprobe®	Logger: Jerrett Domling



Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
0–5	Cement / bentonite mix	S-1		~6" Asphalt 2.5' Fill, med brown, moist, very firm, silty clay Mottled brown/grey, moist, firm, silty clay, carbon and Fe staining
5–10	1/4" hole plug (4 bags)	S-2		Brown, moist, firm, silty clay 9' Increasing moisture content
10–15	2" PVC Riser	S-3		Traces of fine/med gravel
15–20	10/20 sand (5 bags)	S-4		~3' thick fine.med gravel at 18' bgs
20–25	10' / slot screen	S-5		Return to brown, very moist, slightly firm, silty clay Saturated soils at ~22'
25–27		S-6		Basal gravel at 24.5', gravel max diameter of 1"
27.0	27.0'			27.0' Refusal 27.0' Shale
30				
35				
40				
45				

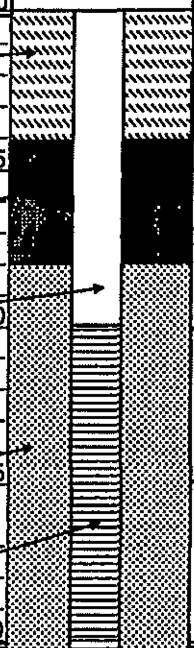
SCS ENGINEERS	DRILLING LOG
Boring/Monitoring Well Identification: MW-10	Facility: General Services Administration
:	Bannister Complex
Date: 11/2/06 SD 3:00 / ED 4:00	Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler	Driller: Mike Costlow
Drilling Method: Geoprobe®	Logger: Jerrett Domling



Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
				~6" Asphalt
		S-1		DK brown, moist, firm, silty clay, traces of gravel fill to 4'
5				Brown, moist, firm, silty clay
		S-2 7-8'		Increasing moisture content Soft
10				
		S-3		
15				
		S-4		Lt brown, slight carbon and Fe staining Water at 19'
20		S-5		
	22.0'			22.0' Refusal
25				
30				
35				
40				
45				

SCS ENGINEERS	DRILLING LOG
Boring/Monitoring Well Identification: MW-11	Facility:General Services Administration
	Bannister Complex
Date: 11/3/06 SD 8:15 / ED 9:10	Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler	Driller: Mike Costlow
Drilling Method: Geoprobe®	Logger: Jerrett Domling

Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
				~6" Asphalt
		S-1		4' bgs 1"-crushed limestone
5				Dk brown, moist, firm, silty clay, carbon and Fe staining
		S-2 7-9'		Med brown, moist, firm, silty clay, carbon and Fe staining
10		S-3		Increasing moisture content
15		S-4		
20	20.0'			20.0' Refusal
25				
30				
35				
40				
45				



Cement / bentonite grout

Bentonite plug (2.5 bags)

2" PVC Riser

10/20 sand (6 bags)

10' / slot screen

SCS ENGINEERS	DRILLING LOG
Boring/Monitoring Well Identification: MW-12	Facility:General Services Administration Bannister Complex
Date: 11/3/06 SD 10:15 / ED 11:15	Project No: 02200070.57
Sampling Method: Continuous-Barrel Sampler	Driller: Mike Costlow
Drilling Method: Geoprobe®	Logger: Jerrett Domling

Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
				~6" Asphalt and Pavement
		S-1		Med brown, moist, firm, silty clay, carbon and Fe staining
5		S-2 6-9'		Increasing moisture content
10		S-3		Moist, soft
15	10' / slot screen	S-4		
20	20.0'			20.0' Refusal
25				
30				
35				
40				
45				

SCS ENGINEERS	DRILLING LOG
Test Pit 1 (3'X6')	Facility:General Services Administration
	Bannister Complex
Date: 2/14/07 Time: 1:30	Project No: 02200070.57
Method: Backhoe	Driller: Hulcher
	Logger: Jerrett Domling

Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
				~4" Asphalt; ~8" of concrete below the asphalt
				Lt brown, moist, firm, silty clay
	NA			Increasing moisture content @ 3'
5				Several bricks noted
				Wet @ 6'
		S-1 base		Pipe bedding @ 8'; Saturated soils
10				Target depth (pipe) - 8.5'
15				
20				
25				
30				
35				
40				
45				

SCS ENGINEERS	DRILLING LOG
Test Pit 2 (5' square)	Facility:General Services Administration
	Bannister Complex
Date: 2/15/07 Time: 10:30	Project No: 02200070.57
Method: Backhoe	Driller: Hulcher
	Logger: Jerrett Domling

Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
				~4" Asphalt; ~8" of concrete below the asphalt
5	NA	S-1 collected directly below pipe		Lt brown, moist, firm, silty clay Increasing moisture content @ 3'
				Clay tile pipe @ 5.5'
10				Target depth (pipe) - 6.5'
15				
20				
25				
30				
35				
40				
45				

SCS ENGINEERS			DRILLING LOG	
Test Pit 3 (3X9')				Facility:General Services Administration
				Bannister Complex
Date: 2/15/07 Time: 1:20				Project No: 02200070.57
Method: Backhoe				Driller: Hulcher
				Logger: Jerrett Domling

Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
				16" Asphalt
	NA			8" Gravel
				24" Fill and grey clay
5				Stiff brown clay
		S-1 base		Bedding - top 8'
10				Target depth (water infiltration) - 8.5'
15				
20				
25				
30				
35				
40				
45				

SCS ENGINEERS				DRILLING LOG
Test Pit 4 (3X8')				Facility:General Services Administration Bannister Complex
Date: 2/16/07 Time: 10:00				Project No: 02200070.57
Method: Backhoe				Driller: Hulcher
				Logger: Jerrett Domling
Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
				4" Asphalt; 8" concrete below the asphalt
	NA			Fill, med brown, moist, firm, silty clay
				Several pieces of wood/lumber @ 3-4'
5				
				Increasing moisture content @ 6'
		S-1 8.5'		Water @ 8.5'
10				
				Target depth (water infiltration) - 9.5'
15				
20				
25				
30				
35				
40				
45				

SCS ENGINEERS				DRILLING LOG
Test Pit 5 (3X8')				Facility:General Services Administration Bannister Complex
Date: 2/16/07 Time: 11:50				Project No: 02200070.57
Method: Backhoe				Driller: Hulcher
				Logger: Jerrett Domling

Depth In Feet	Monitoring Well Construction Detail	Sample	Headspace Field Screening PID (ppm)	Rock Formations, Soil, Color and Classifications Observations
0		0.0	0.0	0.0 Top of Ground Surface
				~4" Asphalt; ~6-8" of concrete below the asphalt
	NA			Mottled brown/yellowish brown, moist, very firm, silty clay to 2.5-3'
5				Med brown, moist, firm, silty clay @ 3'
		S-1 base		
10				Target depth - 8'
15				
20				
25				
30				
35				
40				
45				

Table C-1

Well Development Data					
	Time	pH	Conductivity	Temperature(° C)	Purge Volume (gallons)
MW1	3:27	7.09	0.62	18.6	1.5
	3:37	7.16	0.83	16.6	5.0
	4:11	7.06	1.83	16.9	10.0
MW2	2:35	7.01	0.92	17.4	-
	2:50	6.99	1.04	17.9	5.0
	3:03	7.03	0.81	16.8	10.0
	3:13	7.02	0.90	16.7	11.5
MW3	3:18	7.39	0.65	17.9	2.5
	3:26	7.25	0.63	17.6	5.0
	3:38	7.26	0.67	17.3	9.0
	3:	7.28	0.70	16.8	14.0
MW4	5:15	7.08	0.83	15.9	3.0
	5:27	7.16	0.73	15.8	7.0
	5:44	7.25	0.71	15.7	11.0
	5:56	7.10	0.81	15.7	14.0
	6:02	7.22	0.69	15.4	16.0
	6:12	7.07	0.85	15.3	18.0
MW5	5:19	7.22	0.51	16.8	1.5
	5:29	7.27	0.51	17.4	6
	5:46	7.35	0.56	16.6	9
	6:00	7.38	0.59	16.4	14
MW6	1:29	7.80	0.58	19.2	1.5
	1:35	7.45	0.59	18.3	4.5
	1:44	7.44	0.54	17.6	9.5
	1:50	7.40	0.54	18.2	10.5
MW7	12:54	7.31	2.13	21.3	0
	12:59	7.18	1.85	18.8	4.0
	1:08	7.01	1.72	19.6	8.5
	1:17	6.85	1.63	18.3	12.6
MW8	4:30	6.96	1.50	16.1	2.5
	4:36	6.93	1.29	15.8	7.5
	4:46	6.97	1.35	15.4	12.5
MW9	2:18	7.41	0.67	19.7	2.0
	2:28	7.42	0.69	17.7	4.5
	2:40	7.41	0.71	16.7	10.0
	2:49	7.31	0.68	16.8	13.0

GEOTECH

December 5, 2006

RECEIVED
DEC 8 2006

Ms. Deborah English
SCS Engineers
10975 El Monte, Suite 100
Overland Park, Kansas 66211

Fax # (913) 451-7513 **(3 Pages)**

SCS Engineers; (A-OG Project #6-783T)

Dear Ms. English:

We have completed our laboratory testing services for your above-referenced project.

The detailed results of these tests are enclosed. As you directed, these testing services were provided in accordance with test methods that you specified.

If you have any questions regarding this information or require any further testing, please contact me at your convenience. We enjoy doing business with you.

Sincerely,
ALPHA-OMEGA GEOTECH, INC.

Thomas J Burdick

Thomas J. Burdick
Laboratory Manager

Enclosures

Alpha-Omega Geotech, Inc.
1701 State Avenue
Kansas City, Kansas 66102
Phone (913) 371-0000
Fax (913) 371-6710
www.aogeotech.com

AASHTO R18

Summary of Laboratory Testing

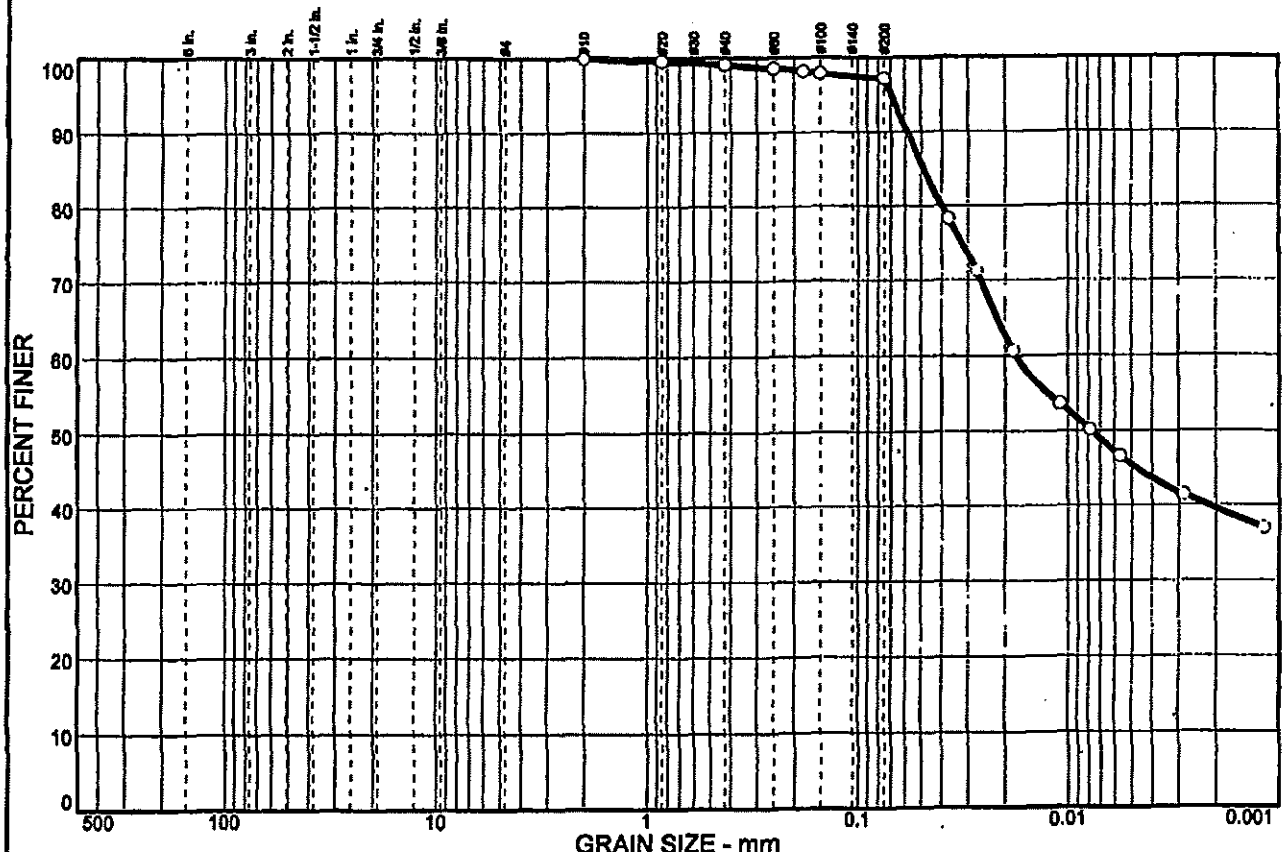
SLT 22205

Alpha-Omega Geotech, Inc.
1701 State Avenue
Kansas City, KS 66102
Office: (913) 371-0000 Fax: (913) 371-6710
Website: www.aogeotech.com

PROJECT NAME: SCS Engineers
PROJECT LOCATION:
PROJECT NUMBER: 6-783T
DATE: 12/5/2006

Boring Number	Sample Number	Depth or Elevation	Description	Natural Moisture (%)	Dry Unit Weight (pcf)	Atterberg Limits LL	Atterberg Limits PL	Atterberg Limits PI	USCS Class.	% Passing No. 200	Unconfined Compression PSF	%ε	% Swell	Remarks
	11-20-06, Bag		Brown FAT CLAY						CH	97.2				Please see the attached Hydrometer Analysis Test Report.

Particle Size Distribution Report



% + 3"	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.0	0.0	0.9	1.9	51.7	45.5

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#10	100.0		
#20	99.6		
#40	99.1		
#60	98.6		
#80	98.2		
#100	97.9		
#200	97.2		

* (no specification provided)

Material Description

Brown FAT CLAY

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.0487 D_{60}= 0.0177 D_{50}= 0.0077
D_{30}= D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= CH AASHTO=

Remarks

F.M.=0.02

Sample No.: 11-20-06, Bag **Source of Sample:** **Date:** 12/5/06
Location: **Elev./Depth:**

Alpha-Omega Geotech, Inc.

Client: SCS Engineers
Project: SCS Engineers
Project No: 6-783T **Figure** 1 of 1

APPENDIX E

LABORATORY ANALYTICAL REPORTS

Additional Pipeline Soil Probe Data 6021940
Miscellaneous Data RR, Tunnel, Drains 615760
Monitoring Well Soil Data 6015223
Monitoring Well Water Data 6015531
Pipeline and High Voltage Soil Probe Data 6021883
Soil Probe Data 6015055
Test Pit Soil Data 6018954
Water and Sediment Data from Bannister manhole C20R-01

Additional Pipeline Soil Probe Data
6021940

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Phone: (913)599-5665
Fax: (913)599-1759

May 11, 2007

Deborah English
SCS Engineers
10975 El Monte, Suite 100
Leawood, KS 66211

RE: Project: GSA BANNISTER PA/SI
Pace Project No.: 6021940

Dear Deborah English:
Enclosed are the analytical results for sample(s) received by the laboratory on April 27, 2007. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Derek Varney

derek.varney@pacelabs.com
Project Manager

A2LA Certification Number: 2456.01
Arkansas Certification Number: 05-008-0
California Certification Number: 02109CA
Illinois Certification Number: 001191
Iowa Certification Number: 118
Kansas/NELAP Certification Number: E-10116
Louisiana Certification Number: 03055
Oklahoma Certification Number: 9205/9935
Utah Certification Number: 9135995665

Enclosures

cc: Jarrett Domling, SCS Engineers

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SAMPLE SUMMARY

Project: GSA BANNISTER PA/SI
Pace Project No.: 6021940

Lab ID	Sample ID	Matrix	Date Collected	Date Received
6021940001	SB205	Solid	04/27/07 10:00	04/27/07 16:15
6021940002	SB206	Solid	04/27/07 10:30	04/27/07 16:15

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nelac

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SAMPLE ANALYTE COUNT

Project: GSA BANNISTER PA/SI
Pace Project No.: 6021940

Lab ID	Sample ID	Method	Analytes Reported
6021940001	SB205	ASTM D2974-87	1
		EPA 8082	9
		EPA 8260	69
6021940002	SB206	ASTM D2974-87	1
		EPA 8082	9
		EPA 8260	69

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ANALYTICAL RESULTS

Project: GSA BANNISTER PA/SI
Pace Project No.: 6021940

Sample: SB205 *Lab ID: 6021840001* *Collected: 04/27/07 10:00* *Received: 04/27/07 16:15* *Matrix: Solid*

Solid results reported on dry weight basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB SW	Analytical Method: EPA 8082 Preparation Method: EPA 3546							
PCB-1016 (Aroclor 1016)	ND	ug/kg	40.2	1	05/07/07 00:00	05/08/07 19:48	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	40.2	1	05/07/07 00:00	05/08/07 19:48	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	40.2	1	05/07/07 00:00	05/08/07 19:48	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	40.2	1	05/07/07 00:00	05/08/07 19:48	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	40.2	1	05/07/07 00:00	05/08/07 19:48	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	40.2	1	05/07/07 00:00	05/08/07 19:48	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/kg	40.2	1	05/07/07 00:00	05/08/07 19:48	11096-82-5	
Tetrachloro-m-xylene (S)	71	%	49-109	1	05/07/07 00:00	05/08/07 19:48	877-09-8	
Decachlorobiphenyl (S)	69	%	28-134	1	05/07/07 00:00	05/08/07 19:48	2051-24-3	
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Acetone	**18.8**	ug/kg	18.2	1		05/09/07 17:57	67-64-1	
Benzene	ND	ug/kg	4.6	1		05/09/07 17:57	71-43-2	
Bromobenzene	ND	ug/kg	4.6	1		05/09/07 17:57	108-86-1	
Bromochloromethane	ND	ug/kg	4.6	1		05/09/07 17:57	74-97-5	
Bromodichloromethane	ND	ug/kg	4.6	1		05/09/07 17:57	75-27-4	
Bromoform	ND	ug/kg	4.6	1		05/09/07 17:57	75-25-2	
Bromomethane	ND	ug/kg	4.6	1		05/09/07 17:57	74-83-9	
2-Butanone (MEK)	ND	ug/kg	9.1	1		05/09/07 17:57	78-93-3	
n-Butylbenzene	ND	ug/kg	4.6	1		05/09/07 17:57	104-51-8	
sec-Butylbenzene	ND	ug/kg	4.6	1		05/09/07 17:57	135-98-8	
tert-Butylbenzene	ND	ug/kg	4.6	1		05/09/07 17:57	98-06-6	
Carbon disulfide	ND	ug/kg	4.6	1		05/09/07 17:57	75-15-0	
Carbon tetrachloride	ND	ug/kg	4.6	1		05/09/07 17:57	56-23-5	
Chlorobenzene	ND	ug/kg	4.6	1		05/09/07 17:57	108-90-7	
Chloroethane	ND	ug/kg	4.6	1		05/09/07 17:57	75-00-3	
Chloroform	ND	ug/kg	4.6	1		05/09/07 17:57	67-66-3	
Chloromethane	ND	ug/kg	4.6	1		05/09/07 17:57	74-87-3	
2-Chlorotoluene	ND	ug/kg	4.6	1		05/09/07 17:57	95-49-8	
4-Chlorotoluene	ND	ug/kg	4.6	1		05/09/07 17:57	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	4.6	1		05/09/07 17:57	96-12-8	
Dibromochloromethane	ND	ug/kg	4.6	1		05/09/07 17:57	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	4.6	1		05/09/07 17:57	106-93-4	
Dibromomethane	ND	ug/kg	4.6	1		05/09/07 17:57	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	4.6	1		05/09/07 17:57	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	4.6	1		05/09/07 17:57	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	4.6	1		05/09/07 17:57	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	4.6	1		05/09/07 17:57	75-71-8	
1,1-Dichloroethane	ND	ug/kg	4.6	1		05/09/07 17:57	75-34-3	
1,2-Dichloroethane	ND	ug/kg	4.6	1		05/09/07 17:57	107-06-2	
1,2-Dichloroethene (Total)	ND	ug/kg	4.6	1		05/09/07 17:57	540-59-0	
1,1-Dichloroethene	ND	ug/kg	4.6	1		05/09/07 17:57	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	4.6	1		05/09/07 17:57	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	4.6	1		05/09/07 17:57	156-60-5	
1,2-Dichloropropane	ND	ug/kg	4.6	1		05/09/07 17:57	78-87-5	
1,3-Dichloropropane	ND	ug/kg	4.6	1		05/09/07 17:57	142-28-9	

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ANALYTICAL RESULTS

Project: GSA BANNISTER PA/SI
Pace Project No.: 6021940

Sample: SB205 Lab ID: 6021940001 Collected: 04/27/07 10:00 Received: 04/27/07 16:15 Matrix: Solid

Solid results reported on dry weight basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
2,2-Dichloropropane	ND	ug/kg	4.6	1		05/09/07 17:57	594-20-7	
1,1-Dichloropropene	ND	ug/kg	4.6	1		05/09/07 17:57	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	4.6	1		05/09/07 17:57	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	4.6	1		05/09/07 17:57	10061-02-6	
Ethylbenzene	ND	ug/kg	4.6	1		05/09/07 17:57	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	4.6	1		05/09/07 17:57	87-68-3	
2-Hexanone	ND	ug/kg	18.2	1		05/09/07 17:57	591-78-6	
Isopropylbenzene (Cumene)	ND	ug/kg	4.6	1		05/09/07 17:57	98-82-8	
p-Isopropyltoluene	ND	ug/kg	4.6	1		05/09/07 17:57	99-87-6	
Methylene chloride	ND	ug/kg	4.6	1		05/09/07 17:57	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	9.1	1		05/09/07 17:57	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	4.6	1		05/09/07 17:57	1634-04-4	
Naphthalene	ND	ug/kg	9.1	1		05/09/07 17:57	91-20-3	
n-Propylbenzene	ND	ug/kg	4.6	1		05/09/07 17:57	103-65-1	
Styrene	ND	ug/kg	4.6	1		05/09/07 17:57	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	4.6	1		05/09/07 17:57	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	4.6	1		05/09/07 17:57	79-34-5	
Tetrachloroethene	ND	ug/kg	4.6	1		05/09/07 17:57	127-18-4	
Toluene	ND	ug/kg	4.6	1		05/09/07 17:57	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	4.6	1		05/09/07 17:57	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	4.6	1		05/09/07 17:57	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	4.6	1		05/09/07 17:57	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	4.6	1		05/09/07 17:57	79-00-5	
Trichloroethene	**5.8**	ug/kg	4.6	1		05/09/07 17:57	79-01-6	
Trichlorofluoromethane	ND	ug/kg	4.6	1		05/09/07 17:57	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	4.6	1		05/09/07 17:57	96-18-4	
1,2,4-Trimethylbenzene	ND	ug/kg	4.6	1		05/09/07 17:57	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	4.6	1		05/09/07 17:57	108-67-8	
Vinyl chloride	ND	ug/kg	4.6	1		05/09/07 17:57	75-01-4	
Xylene (Total)	ND	ug/kg	4.6	1		05/09/07 17:57	1330-20-7	
Dibromofluoromethane (S)	69	%	74-119	1		05/09/07 17:57	1868-53-7	
Toluene-d8 (S)	97	%	82-119	1		05/09/07 17:57	2037-26-5	
4-Bromofluorobenzene (S)	100	%	83-124	1		05/09/07 17:57	460-00-4	
1,2-Dichloroethane-d4 (S)	103	%	72-124	1		05/09/07 17:57	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**18.6**	%	0.10	1		05/09/07 00:00		

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ANALYTICAL RESULTS

Project: GSA BANNISTER PA/SI
Pace Project No.: 6021940

Sample: SB208 | Lab ID: 6021940002 | Collected: 04/27/07 10:30 | Received: 04/27/07 16:15 | Matrix: Solid

Solid results reported on dry weight basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB SW	Analytical Method: EPA 8082 Preparation Method: EPA 3546							
PCB-1016 (Aroclor 1016)	ND	ug/kg	38.8	1	05/07/07 00:00	05/08/07 20:07	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	38.8	1	05/07/07 00:00	05/08/07 20:07	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	38.8	1	05/07/07 00:00	05/08/07 20:07	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	38.8	1	05/07/07 00:00	05/08/07 20:07	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	38.8	1	05/07/07 00:00	05/08/07 20:07	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	38.8	1	05/07/07 00:00	05/08/07 20:07	11097-69-1	
PCB-1260 (Aroclor 1260)	550	ug/kg	38.8	1	05/07/07 00:00	05/08/07 20:07	11096-82-5	
Tetrachloro-m-xylene (S)	70	%	49-109	1	05/07/07 00:00	05/08/07 20:07	877-09-8	
Decachlorobiphenyl (S)	67	%	28-134	1	05/07/07 00:00	05/08/07 20:07	2051-24-3	
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Acetone	42.3	ug/kg	18.1	1		05/09/07 18:14	67-64-1	
Benzene	ND	ug/kg	4.5	1		05/09/07 18:14	71-43-2	
Bromobenzene	ND	ug/kg	4.5	1		05/09/07 18:14	108-86-1	
Bromochloromethane	ND	ug/kg	4.5	1		05/09/07 18:14	74-97-5	
Bromodichloromethane	ND	ug/kg	4.5	1		05/09/07 18:14	75-27-4	
Bromoform	ND	ug/kg	4.5	1		05/09/07 18:14	75-25-2	
Bromomethane	ND	ug/kg	4.5	1		05/09/07 18:14	74-83-9	
2-Butanone (MEK)	ND	ug/kg	9.0	1		05/09/07 18:14	78-93-3	
n-Butylbenzene	ND	ug/kg	4.5	1		05/09/07 18:14	104-51-8	
sec-Butylbenzene	ND	ug/kg	4.5	1		05/09/07 18:14	135-98-8	
tert-Butylbenzene	ND	ug/kg	4.5	1		05/09/07 18:14	98-06-6	
Carbon disulfide	ND	ug/kg	4.5	1		05/09/07 18:14	75-15-0	
Carbon tetrachloride	ND	ug/kg	4.5	1		05/09/07 18:14	56-23-5	
Chlorobenzene	ND	ug/kg	4.5	1		05/09/07 18:14	108-90-7	
Chloroethane	ND	ug/kg	4.5	1		05/09/07 18:14	75-00-3	
Chloroform	ND	ug/kg	4.5	1		05/09/07 18:14	67-66-3	
Chloromethane	ND	ug/kg	4.5	1		05/09/07 18:14	74-87-3	
2-Chlorotoluene	ND	ug/kg	4.5	1		05/09/07 18:14	95-49-8	
4-Chlorotoluene	ND	ug/kg	4.5	1		05/09/07 18:14	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	4.5	1		05/09/07 18:14	96-12-8	
Dibromochloromethane	ND	ug/kg	4.5	1		05/09/07 18:14	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	4.5	1		05/09/07 18:14	106-93-4	
Dibromomethane	ND	ug/kg	4.5	1		05/09/07 18:14	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	4.5	1		05/09/07 18:14	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	4.5	1		05/09/07 18:14	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	4.5	1		05/09/07 18:14	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	4.5	1		05/09/07 18:14	75-71-8	
1,1-Dichloroethane	ND	ug/kg	4.5	1		05/09/07 18:14	75-34-3	
1,2-Dichloroethane	ND	ug/kg	4.5	1		05/09/07 18:14	107-06-2	
1,2-Dichloroethene (Total)	ND	ug/kg	4.5	1		05/09/07 18:14	540-59-0	
1,1-Dichloroethene	ND	ug/kg	4.5	1		05/09/07 18:14	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	4.5	1		05/09/07 18:14	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	4.5	1		05/09/07 18:14	156-60-5	
1,2-Dichloropropane	ND	ug/kg	4.5	1		05/09/07 18:14	78-87-5	
1,3-Dichloropropane	ND	ug/kg	4.5	1		05/09/07 18:14	142-28-9	

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ANALYTICAL RESULTS

Project: GSA BANNISTER PA/SI
Pace Project No.: 6021940

Sample: SB206 | Lab ID: 6021940002 | Collected: 04/27/07 10:30 | Received: 04/27/07 16:15 | Matrix: Solid

Solid results reported on dry weight basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
2,2-Dichloropropane	ND	ug/kg	4.5	1		05/09/07 18:14	594-20-7	
1,1-Dichloropropene	ND	ug/kg	4.5	1		05/09/07 18:14	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	4.5	1		05/09/07 18:14	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	4.5	1		05/09/07 18:14	10061-02-6	
Ethylbenzene	ND	ug/kg	4.5	1		05/09/07 18:14	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	4.5	1		05/09/07 18:14	87-68-3	
2-Hexanone	ND	ug/kg	18.1	1		05/09/07 18:14	591-78-6	
Isopropylbenzene (Cumene)	ND	ug/kg	4.5	1		05/09/07 18:14	98-82-8	
p-Isopropyltoluene	ND	ug/kg	4.5	1		05/09/07 18:14	99-87-6	
Methylene chloride	ND	ug/kg	4.5	1		05/09/07 18:14	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	9.0	1		05/09/07 18:14	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	4.5	1		05/09/07 18:14	1634-04-4	
Naphthalene	ND	ug/kg	9.0	1		05/09/07 18:14	91-20-3	
n-Propylbenzene	ND	ug/kg	4.5	1		05/09/07 18:14	103-65-1	
Styrene	ND	ug/kg	4.5	1		05/09/07 18:14	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	4.5	1		05/09/07 18:14	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	4.5	1		05/09/07 18:14	79-34-5	
Tetrachloroethene	ND	ug/kg	4.5	1		05/09/07 18:14	127-18-4	
Toluene	ND	ug/kg	4.5	1		05/09/07 18:14	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	4.5	1		05/09/07 18:14	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	4.5	1		05/09/07 18:14	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	4.5	1		05/09/07 18:14	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	4.5	1		05/09/07 18:14	79-00-5	
Trichloroethene	ND	ug/kg	4.5	1		05/09/07 18:14	79-01-6	
Trichlorofluoromethane	ND	ug/kg	4.5	1		05/09/07 18:14	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	4.5	1		05/09/07 18:14	96-18-4	
1,2,4-Trimethylbenzene	ND	ug/kg	4.5	1		05/09/07 18:14	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	4.5	1		05/09/07 18:14	108-67-8	
Vinyl chloride	ND	ug/kg	4.5	1		05/09/07 18:14	75-01-4	
Xylene (Total)	ND	ug/kg	4.5	1		05/09/07 18:14	1330-20-7	
Dibromofluoromethane (S)	68	%	74-119	1		05/09/07 18:14	1868-53-7	
Toluene-d8 (S)	102	%	82-119	1		05/09/07 18:14	2037-26-5	
4-Bromofluorobenzene (S)	97	%	83-124	1		05/09/07 18:14	460-00-4	
1,2-Dichloroethane-d4 (S)	104	%	72-124	1		05/09/07 18:14	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**16.7**	%	0.10	1		05/09/07 00:00		

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QUALITY CONTROL DATA

Project: GSA BANNISTER PA/SI
Pace Project No.: 6021940

QC Batch: OEXT/6352 | Analysis Method: EPA 8082
QC Batch Method: EPA 3546 | Analysis Description: 8082 GCS PCB
Associated Lab Samples: 6021940001, 6021940002

METHOD BLANK: 178344
Associated Lab Samples: 6021940001, 6021940002

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg	ND	33.0	
PCB-1221 (Aroclor 1221)	ug/kg	ND	33.0	
PCB-1232 (Aroclor 1232)	ug/kg	ND	33.0	
PCB-1242 (Aroclor 1242)	ug/kg	ND	33.0	
PCB-1248 (Aroclor 1248)	ug/kg	ND	33.0	
PCB-1254 (Aroclor 1254)	ug/kg	ND	33.0	
PCB-1260 (Aroclor 1260)	ug/kg	ND	33.0	
Decachlorobiphenyl (S)	%	122	28-134	
Tetrachloro-m-xylene (S)	%	91	49-109	

LABORATORY CONTROL SAMPLE: 178345

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg	167	128	77	65-108	
PCB-1260 (Aroclor 1260)	ug/kg	167	132	79	73-107	
Decachlorobiphenyl (S)	%			76	28-134	
Tetrachloro-m-xylene (S)	%			79	49-109	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 178346 178347

Parameter	Units	6021896001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
PCB-1016 (Aroclor 1016)	ug/kg	ND	213	213	154	152	72	71	42-122	1	34	
PCB-1260 (Aroclor 1260)	ug/kg	ND	213	213	153	166	72	78	35-116	8	36	
Decachlorobiphenyl (S)	%						68	68	28-134			
Tetrachloro-m-xylene (S)	%						74	72	49-109			

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QUALITY CONTROL DATA

Project: GSA BANNISTER PA/SI
Pace Project No.: 6021940

QC Batch: PMST/2135 | Analysis Method: ASTM D2974-87
QC Batch Method: ASTM D2974-87 | Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 6021940001, 6021940002

SAMPLE DUPLICATE: 179105

Parameter	Units	6021883001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	16.7	17.1	3	20	

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QUALITY CONTROL DATA

Project: GSA BANNISTER PA/SI
Pace Project No.: 6021940

QC Batch: MSV/8037 | Analysis Method: EPA 8260
QC Batch Method: EPA 8260 | Analysis Description: 8260 MSV 5035A Volatile Organics
Associated Lab Samples: 6021940001, 6021940002

METHOD BLANK: 179370
Associated Lab Samples: 6021940001, 6021940002

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	5.0	
1,1,1-Trichloroethane	ug/kg	ND	5.0	
1,1,2,2-Tetrachloroethane	ug/kg	ND	5.0	
1,1,2-Trichloroethane	ug/kg	ND	5.0	
1,1-Dichloroethane	ug/kg	ND	5.0	
1,1-Dichloroethene	ug/kg	ND	5.0	
1,1-Dichloropropene	ug/kg	ND	5.0	
1,2,3-Trichlorobenzene	ug/kg	ND	5.0	
1,2,3-Trichloropropane	ug/kg	ND	5.0	
1,2,4-Trichlorobenzene	ug/kg	ND	5.0	
1,2,4-Trimethylbenzene	ug/kg	ND	5.0	
1,2-Dibromo-3-chloropropane	ug/kg	ND	5.0	
1,2-Dibromoethane (EDB)	ug/kg	ND	5.0	
1,2-Dichlorobenzene	ug/kg	ND	5.0	
1,2-Dichloroethane	ug/kg	ND	5.0	
1,2-Dichloroethene (Total)	ug/kg	ND	5.0	
1,2-Dichloropropane	ug/kg	ND	5.0	
1,3,5-Trimethylbenzene	ug/kg	ND	5.0	
1,3-Dichlorobenzene	ug/kg	ND	5.0	
1,3-Dichloropropane	ug/kg	ND	5.0	
1,4-Dichlorobenzene	ug/kg	ND	5.0	
2,2-Dichloropropane	ug/kg	ND	5.0	
2-Butanone (MEK)	ug/kg	ND	10.0	
2-Chlorotoluene	ug/kg	ND	5.0	
2-Hexanone	ug/kg	ND	20.0	
4-Chlorotoluene	ug/kg	ND	5.0	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	10.0	
Acetone	ug/kg	ND	20.0	
Benzene	ug/kg	ND	5.0	
Bromobenzene	ug/kg	ND	5.0	
Bromochloromethane	ug/kg	ND	5.0	
Bromodichloromethane	ug/kg	ND	5.0	
Bromoform	ug/kg	ND	5.0	
Bromomethane	ug/kg	ND	5.0	
Carbon disulfide	ug/kg	ND	5.0	
Carbon tetrachloride	ug/kg	ND	5.0	
Chlorobenzene	ug/kg	ND	5.0	
Chloroethane	ug/kg	ND	5.0	
Chloroform	ug/kg	ND	5.0	
Chloromethane	ug/kg	ND	5.0	
cis-1,2-Dichloroethene	ug/kg	ND	5.0	
cis-1,3-Dichloropropene	ug/kg	ND	5.0	
Dibromochloromethane	ug/kg	ND	5.0	

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QUALITY CONTROL DATA

Project: GSA BANNISTER PA/SI
Pace Project No.: 6021940

METHOD BLANK: 179370

Associated Lab Samples: 6021940001, 6021940002

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Dibromomethane	ug/kg	ND	5.0	
Dichlorodifluoromethane	ug/kg	ND	5.0	
Ethylbenzene	ug/kg	ND	5.0	
Hexachloro-1,3-butadiene	ug/kg	ND	5.0	
Isopropylbenzene (Cumene)	ug/kg	ND	5.0	
Methyl-tert-butyl ether	ug/kg	ND	5.0	
Methylene chloride	ug/kg	ND	5.0	
n-Butylbenzene	ug/kg	ND	5.0	
n-Propylbenzene	ug/kg	ND	5.0	
Naphthalene	ug/kg	ND	10.0	
p-Isopropyltoluene	ug/kg	ND	5.0	
sec-Butylbenzene	ug/kg	ND	5.0	
Styrene	ug/kg	ND	5.0	
tert-Butylbenzene	ug/kg	ND	5.0	
Tetrachloroethene	ug/kg	ND	5.0	
Toluene	ug/kg	ND	5.0	
trans-1,2-Dichloroethene	ug/kg	ND	5.0	
trans-1,3-Dichloropropene	ug/kg	ND	5.0	
Trichloroethene	ug/kg	ND	5.0	
Trichlorofluoromethane	ug/kg	ND	5.0	
Vinyl chloride	ug/kg	ND	5.0	
Xylene (Total)	ug/kg	ND	5.0	
1,2-Dichloroethane-d4 (S)	%	104	72-124	
4-Bromofluorobenzene (S)	%	97	83-124	
Dibromofluoromethane (S)	%	105	74-119	
Toluene-d8 (S)	%	101	82-119	

LABORATORY CONTROL SAMPLE: 179371

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	50	51.3	103	84-120	
1,1,1-Trichloroethane	ug/kg	50	53.5	107	85-123	
1,1,2,2-Tetrachloroethane	ug/kg	50	56.5	113	76-130	
1,1,2-Trichloroethane	ug/kg	50	55.3	111	77-128	
1,1-Dichloroethane	ug/kg	50	49.4	99	83-125	
1,1-Dichloroethene	ug/kg	50	53.9	108	75-148	
1,1-Dichloropropene	ug/kg	50	52.5	105	86-128	
1,2,3-Trichlorobenzene	ug/kg	50	57.1	114	80-123	
1,2,3-Trichloropropane	ug/kg	50	51.6	103	72-117	
1,2,4-Trichlorobenzene	ug/kg	50	55.5	111	77-127	
1,2,4-Trimethylbenzene	ug/kg	50	53.4	107	83-123	
1,2-Dibromo-3-chloropropane	ug/kg	50	49.1	98	80-122	
1,2-Dibromoethane (EDB)	ug/kg	50	56.3	113	82-122	
1,2-Dichlorobenzene	ug/kg	50	54.6	109	86-118	
1,2-Dichloroethane	ug/kg	50	53.3	107	82-125	

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QUALITY CONTROL DATA

Project: GSA BANNISTER PA/SI
Pace Project No.: 6021940

LABORATORY CONTROL SAMPLE: 179371

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethene (Total)	ug/kg	100	107	107	81-133	
1,2-Dichloropropane	ug/kg	50	53.3	107	82-125	
1,3,5-Trimethylbenzene	ug/kg	50	53.0	106	81-125	
1,3-Dichlorobenzene	ug/kg	50	52.0	104	85-117	
1,3-Dichloropropane	ug/kg	50	53.8	108	80-125	
1,4-Dichlorobenzene	ug/kg	50	52.7	105	85-117	
2,2-Dichloropropane	ug/kg	50	51.5	103	84-127	
2-Butanone (MEK)	ug/kg	100	79.0	79	68-128	
2-Chlorotoluene	ug/kg	50	52.2	104	85-126	
2-Hexanone	ug/kg	100	113	113	60-139	
4-Chlorotoluene	ug/kg	50	53.6	107	80-123	
4-Methyl-2-pentanone (MIBK)	ug/kg	100	107	107	76-120	
Acetone	ug/kg	100	107	107	54-132	
Benzene	ug/kg	50	52.1	104	81-125	
Bromobenzene	ug/kg	50	53.4	107	78-124	
Bromochloromethane	ug/kg	50	54.1	108	82-130	
Bromodichloromethane	ug/kg	50	54.4	109	86-127	
Bromoform	ug/kg	50	47.0	94	71-117	
Bromomethane	ug/kg	50	48.3	97	60-134	
Carbon disulfide	ug/kg	100	69.6	70	45-135	
Carbon tetrachloride	ug/kg	50	52.4	105	84-129	
Chlorobenzene	ug/kg	50	51.6	103	87-118	
Chloroethane	ug/kg	50	46.9	94	59-133	
Chloroform	ug/kg	50	53.5	107	80-120	
Chloromethane	ug/kg	50	38.3	77	45-130	
cis-1,2-Dichloroethene	ug/kg	50	55.2	110	79-130	
cis-1,3-Dichloropropene	ug/kg	50	53.1	106	87-120	
Dibromochloromethane	ug/kg	50	52.0	104	80-126	
Dibromomethane	ug/kg	50	55.8	112	88-123	
Dichlorodifluoromethane	ug/kg	50	25.7	51	10-139	
Ethylbenzene	ug/kg	50	51.7	103	85-119	
Hexachloro-1,3-butadiene	ug/kg	50	57.4	115	79-138	
Isopropylbenzene (Cumene)	ug/kg	50	48.6	97	79-111	
Methyl-tert-butyl ether	ug/kg	50	52.0	104	78-119	
Methylene chloride	ug/kg	50	49.8	100	72-122	
n-Butylbenzene	ug/kg	50	54.7	109	82-129	
n-Propylbenzene	ug/kg	50	53.9	108	82-127	
Naphthalene	ug/kg	50	55.3	111	70-129	
p-Isopropyltoluene	ug/kg	50	53.2	106	82-121	
sec-Butylbenzene	ug/kg	50	53.0	106	83-126	
Styrene	ug/kg	50	53.0	106	84-121	
tert-Butylbenzene	ug/kg	50	53.4	107	84-122	
Tetrachloroethene	ug/kg	50	52.1	104	83-126	
Toluene	ug/kg	50	49.2	98	83-122	
trans-1,2-Dichloroethene	ug/kg	50	52.3	105	80-139	
trans-1,3-Dichloropropene	ug/kg	50	52.2	104	78-128	
Trichloroethene	ug/kg	50	53.1	106	86-123	
Trichlorofluoromethane	ug/kg	50	50.6	101	69-130	

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QUALITY CONTROL DATA

Project: GSA BANNISTER PA/SI
Pace Project No.: 6021940

LABORATORY CONTROL SAMPLE: 179371

Parameter	Units	Spike Conc.	LCS Result.	LCS % Rec	% Rec Limits	Qualifiers
Vinyl chloride	ug/kg	50	45.3	91	53-135	
Xylene (Total)	ug/kg	150	154	103	84-118	
1,2-Dichloroethane-d4 (S)	%			97	72-124	
4-Bromofluorobenzene (S)	%			97	83-124	
Dibromofluoromethane (S)	%			101	74-119	
Toluene-d8 (S)	%			98	82-119	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 179372 179373

Parameter	Units	6022031050 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Benzene	ug/kg	ND	52.9	53.3	43.7	55.7	82	104	46-138	24	25	
Chlorobenzene	ug/kg	ND	52.9	53.3	42.5	49.8	80	93	24-137	16	27	
Toluene	ug/kg	ND	52.9	53.3	41.3	53.9	78	101	34-142	26	26	
Trichloroethene	ug/kg	ND	52.9	53.3	49.4	74.4	89	135	33-141	40	25	R1
1,2-Dichloroethane-d4 (S)	%						96	104	72-124			
4-Bromofluorobenzene (S)	%						97	98	83-124			
Dibromofluoromethane (S)	%						102	100	74-119			
Toluene-d8 (S)	%						101	102	82-119			

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QUALIFIERS

Project: GSA BANNISTER PA/SI
Pace Project No.: 6021940

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

ANALYTE QUALIFIERS

R1 RPD value was outside control limits.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: GSA BANNISTER PA/SI
Pace Project No.: 6021940

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
6021940001	SB205	EPA 3546	OEXT/6352	EPA 8082	GCSV/3191
6021940002	SB206	EPA 3546	OEXT/6352	EPA 8082	GCSV/3191
6021940001	SB205	ASTM D2974-87	PMST/2135		
6021940002	SB206	ASTM D2974-87	PMST/2135		
6021940001	SB205	EPA 8260	MSV/8037		
6021940002	SB206	EPA 8260	MSV/8037		

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 1

1052894

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: SLS Engineers	Report To: Deborah English	Attention: Sandy Weeks
Address: 10975 El Monte, Suite 100	Copy To:	Company Name: SLS
Overland Park, KS 66211		Address:
Email To: jdarling@slsengineers.com	Purchase Order No.:	Pace Quote Reference:
Phone: 913-451-7510 Fax: 913-451-7515	Project Name: GSA Bannister AVSL	Pace Project Manager:
Requested Due Date/TAT: Standard	Project Number:	Pace Profile #:

REGULATORY AGENCY		
☐ NPDES	☐ GROUND WATER	☐ DRINKING WATER
☐ UST	☐ RCRA	☐ Other

SITE LOCATION: ☐ GA ☐ IL ☐ IN ☐ MI ☐ MN ☐ NC ☐ OH ☐ SC ☐ WI ☒ OTHER MO

Filtered (Y/N)

Requested Analysis: PCBs 8082, VOCs 8260B

Residual Chlorine (Y/N)

Pace Project Number: 6021940

Section D Required Client Information

Valid Matrix Codes: MATRIX / CODE — DRINKING WATER DW; WATER WT; WASTE WATER WW; PRODUCT P; SOIL/SOLID SL; OIL OL; WIPE WP; AIR AR; OTHER OT; TISSUE TS

SAMPLE ID — One Character per box. (A-Z, 0-9 / ,-) Samples IDs MUST BE UNIQUE

ITEM #	SAMPLE ID	MATRIX CODE	SAMPLE TYPE G=GRAB C=COMP	Composite Start Date	Composite Start Time	Composite End/Grab Date	Composite End/Grab Time	Sample Temp at Collection	# of Containers	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other TSP	PCBs 8082	VOCs 8260B		Residual Chlorine (Y/N)	Lab I.D.
1	SB205 1WGAn 1WGRn	4	G	2VGAn		4-27-07	10:00		7	X	2 DGAQ					X	X	X	X	1 DGAm		001
2	SB206	↓	↓			↓	10:30		↓	↓	↓					↓	↓	↓	↓	↓		002
3	Trip Blank										1 DGAQ											003
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						

Additional Comments:

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITION			
[signature] SLS	4-27-07	4:05	[signature]	4/27/07	16:15	5.1	Y/N	Y/N	Y/N
							Y/N	Y/N	Y/N
							Y/N	Y/N	Y/N
							Y/N	Y/N	Y/N
						Temp in °C	Received on Ice	Custody Sealed Cooler	Samples Intact

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Jerrett Darling

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 4-27-07

SEE REVERSE FOR INSTRUCTIONS

ORIGINAL

F-ALL-Q-020rev.3,31Mar05

Miscellaneous Data RR, Tunnel, Drains
615760

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Jarrett Domling
SCS Engineers
10975 El Monte, Suite 100
Overland Park, KS 66211

Pace Project Number: 6015760

RECEIVED
DEC - 6 2006

REPORT OF LABORATORY ANALYSIS

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November 29, 2006

Deborah English
SCS Engineers
10975 El Monte
Kansas City, MO 64131

RE: Project: PASI Bannister Complex
Pace Project No.: 6015760

Dear Deborah English:

Enclosed are the analytical results for sample(s) received by the laboratory on November 15, 2006. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Derek Varney

derek.varney@pacelabs.com
Project Manager

A2LA Certification Number: 2456.01
Arkansas Certification Number: 05-008-0
California Certification Number: 02109CA
Illinois Certification Number: 001191
Iowa Certification Number: 118
Kansas/NELAP Certification Number: E-10116
Louisiana Certification Number: 03055
Oklahoma Certification Number: 9205/9935
Utah Certification Number: 9135995665

Enclosures

cc: Jarrett Domling, SCS Engineers

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SAMPLE SUMMARY

Project: PASI Bannister Complex
Pace Project No.: 6015760

Lab ID	Sample ID	Matrix	Date Collected	Date Received
6015760001	BLDG57/50TUNNEL	Solid	11/14/06 13:00	11/15/06 15:30
6015760002	BLDG1BATTERYRM	Solid	11/14/06 13:20	11/15/06 15:30
6015760003	BLDG1BATTERMDRAIN	Solid	11/14/06 13:30	11/15/06 15:30
6015760004	BLDG28SUMP	Solid	11/14/06 14:15	11/15/06 15:30
6015760005	TRANSUNIT4FLOOR	Wipe	11/14/06 14:45	11/15/06 15:30
6015760006	BLDG1RRTRACKS	Solid	11/14/06 13:10	11/15/06 15:30
6015760007	BLDG1RRTRACKSDUP	Solid	11/14/06 13:10	11/15/06 15:30
6015760008	BLDG4WBSED	Solid	11/15/06 13:20	11/15/06 15:30
6015760009	BLDG1PHOTOLAB	Water	11/15/06 14:00	11/15/06 15:30

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SAMPLE ANALYTE COUNT

Project: PASI Bannister Complex
Pace Project No.: 6015760

Lab ID	Sample ID	Method	Analytes Reported
6015760001	BLDG57/50TUNNEL	ASTM D2974-87	1
		EPA 8082	9
		EPA 8270	5
6015760002	BLDG1BATTERYRM	ASTM D2974-87	1
		EPA 6010	1
6015760003	BLDG1BATTERMDRAIN	ASTM D2974-87	1
		EPA 6010	1
6015760004	BLDG28SUMP	ASTM D2974-87	1
		EPA 6010	1
6015760005	TRANSUNIT4FLOOR	EPA 8082	9
6015760006	BLDG1RRTRACKS	ASTM D2974-87	1
		EPA 6010	6
		EPA 8082	9
		EPA 8270	5
6015760007	BLDG1RRTRACKSDUP	ASTM D2974-87	1
		EPA 6010	6
		EPA 8082	9
		EPA 8270	5
6015760008	BLDG4WBSED	ASTM D2974-87	1
		EPA 6010	6
		EPA 8270	5
6015760009	BLDG1PHOTOLAB	EPA 6010	1

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ANALYTICAL RESULTS

Project: PASI Bannister Complex
Pace Project No.: 6015760

Sample: BLDG57/50TUNNEL Lab ID: 6015760001 Collected: 11/14/06 13:00 Received: 11/15/06 15:30 Matrix: Solid

Solid results reported on dry weight basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	341	1	11/22/06 00:00	11/27/06 14:39	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	341	1	11/22/06 00:00	11/27/06 14:39	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	341	1	11/22/06 00:00	11/27/06 14:39	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	341	1	11/22/06 00:00	11/27/06 14:39	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	341	1	11/22/06 00:00	11/27/06 14:39	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	341	1	11/22/06 00:00	11/27/06 14:39	11097-69-1	
PCB-1260 (Aroclor 1260)	**1890**	ug/kg	341	1	11/22/06 00:00	11/27/06 14:39	11096-82-5	
Tetrachloro-m-xylene (S)	79	%	28-134	1	11/22/06 00:00	11/27/06 14:39	877-09-8	
Decachlorobiphenyl (S)	1006	%	30-141	1	11/22/06 00:00	11/27/06 14:39	2051-24-3	1e
8270 MSSV DRO/ORO	Analytical Method: EPA 8270 Preparation Method: EPA 3546							
TPH-ORO	**1190**	mg/kg	155	10	11/21/06 00:00	11/29/06 03:05		
TPH-DRO	**211**	mg/kg	155	10	11/21/06 00:00	11/29/06 03:05		
Nitrobenzene-d5 (S)	71	%	22-185	10	11/21/06 00:00	11/29/06 03:05	4165-60-0	
2-Fluorobiphenyl (S)	67	%	36-167	10	11/21/06 00:00	11/29/06 03:05	321-60-8	
Terphenyl-d14 (S)	148	%	14-172	10	11/21/06 00:00	11/29/06 03:05	1718-51-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**3.3**	%	0.10	1		11/27/06 00:00		

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ANALYTICAL RESULTS

Project: PASI Bannister Complex
Pace Project No.: 6015760

Sample: BLDG1BATTERYRM Lab ID: 6015760002 Collected: 11/14/06 13:20 Received: 11/15/06 15:30 Matrix: Solid
Solid results reported on dry weight basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Lead	49.8	mg/kg	5.0	10	11/22/06 00:00	11/27/06 11:49	7439-92-1	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	3.6	%	0.10	1		11/27/06 00:00		

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ANALYTICAL RESULTS

Project: PASI Bannister Complex
Pace Project No.: 6015760

Sample: BLDG1BATTERMDRAIN Lab ID: 6015760003 Collected: 11/14/06 13:30 Received: 11/15/06 15:30 Matrix: Solid
Solid results reported on dry weight basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Lead	784	mg/kg	7.9	10	11/22/06 00:00	11/27/06 11:54	7439-92-1	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	37.9	%	0.10	1		11/27/06 00:00		

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ANALYTICAL RESULTS

Project: PASI Bannister Complex
Pace Project No.: 6015760

Sample: BLDG28SUMP Lab ID: 6015760004 Collected: 11/14/06 14:15 Received: 11/15/06 15:30 Matrix: Solid
Solid results reported on dry weight basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Lead	595	mg/kg	6.5	10	11/22/06 00:00	11/27/06 11:58	7439-92-1	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	29.9	%	0.10	1		11/27/06 00:00		

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ANALYTICAL RESULTS

Project: PASI Bannister Complex
Pace Project No.: 6015760

Sample: TRANSUNIT4FLOOR   Lab ID: 6015760005   Collected: 11/14/06 14:45   Received: 11/15/06 15:30   Matrix: Wipe

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3580 (Wipe)							
PCB-1016 (Aroclor 1016)	ND	Total ug-	1.0	1	11/27/06 00:00	11/27/06 20:25	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	Total ug-	1.0	1	11/27/06 00:00	11/27/06 20:25	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	Total ug-	1.0	1	11/27/06 00:00	11/27/06 20:25	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	Total ug-	1.0	1	11/27/06 00:00	11/27/06 20:25	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	Total ug-	1.0	1	11/27/06 00:00	11/27/06 20:25	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	Total ug-	1.0	1	11/27/06 00:00	11/27/06 20:25	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	Total ug-	1.0	1	11/27/06 00:00	11/27/06 20:25	11096-82-5	
Tetrachloro-m-xylene (S)	82	%	50-125	1	11/27/06 00:00	11/27/06 20:25	877-09-8	
Decachlorobiphenyl (S)	83	%	51-126	1	11/27/06 00:00	11/27/06 20:25	2051-24-3	

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ANALYTICAL RESULTS

Project: PASI Bannister Complex
Pace Project No.: 6015760

Sample: BLDG1RRTRACKS Lab ID: 6015760006 Collected: 11/14/06 13:10 Received: 11/15/06 15:30 Matrix: Solid

Solid results reported on dry weight basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	334	1	11/22/06 00:00	11/27/06 13:59	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	334	1	11/22/06 00:00	11/27/06 13:59	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	334	1	11/22/06 00:00	11/27/06 13:59	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	334	1	11/22/06 00:00	11/27/06 13:59	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	334	1	11/22/06 00:00	11/27/06 13:59	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	334	1	11/22/06 00:00	11/27/06 13:59	11097-69-1	
PCB-1260 (Aroclor 1260)	1070	ug/kg	334	1	11/22/06 00:00	11/27/06 13:59	11096-82-5	
Tetrachloro-m-xylene (S)	101	%	28-134	1	11/22/06 00:00	11/27/06 13:59	877-09-8	
Decachlorobiphenyl (S)	91	%	30-141	1	11/22/06 00:00	11/27/06 13:59	2051-24-3	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	4.8	mg/kg	2.0	2	11/22/06 00:00	11/27/06 12:02	7440-38-2	
Barium	414	mg/kg	2.0	2	11/22/06 00:00	11/27/06 12:02	7440-39-3	
Cadmium	5.8	mg/kg	1.0	2	11/22/06 00:00	11/27/06 12:02	7440-43-9	
Chromium	83.4	mg/kg	1.0	2	11/22/06 00:00	11/27/06 12:02	7440-47-3	
Lead	123	mg/kg	1.0	2	11/22/06 00:00	11/27/06 12:02	7439-92-1	
Selenium	ND	mg/kg	7.5	5	11/22/06 00:00	11/28/06 10:34	7782-49-2	2e
8270 MSSV DRO/ORO	Analytical Method: EPA 8270 Preparation Method: EPA 3546							
TPH-ORO	7140	mg/kg	758	10	11/21/06 00:00	11/29/06 03:21		
TPH-DRO	1010	mg/kg	758	10	11/21/06 00:00	11/29/06 03:21		
Nitrobenzene-d5 (S)	49	%	22-185	10	11/21/06 00:00	11/29/06 03:21	4165-60-0	
2-Fluorobiphenyl (S)	7	%	38-167	10	11/21/06 00:00	11/29/06 03:21	321-60-8	S4
Terphenyl-d14 (S)	603	%	14-172	10	11/21/06 00:00	11/29/06 03:21	1718-51-0	S4
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	1.4	%	0.10	1		11/27/06 00:00		

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ANALYTICAL RESULTS

Project: PASI Bannister Complex
Pace Project No.: 6015760

Sample: BLDG1RRTRACKSDUP Lab ID: 6015760007 Collected: 11/14/06 13:10 Received: 11/15/06 15:30 Matrix: Solid
Solid results reported on dry weight basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3550							
PCB-1016 (Aroclor 1016)	ND	ug/kg	333	1	11/22/06 00:00	11/27/06 14:19	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/kg	333	1	11/22/06 00:00	11/27/06 14:19	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/kg	333	1	11/22/06 00:00	11/27/06 14:19	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/kg	333	1	11/22/06 00:00	11/27/06 14:19	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/kg	333	1	11/22/06 00:00	11/27/06 14:19	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/kg	333	1	11/22/06 00:00	11/27/06 14:19	11097-69-1	
PCB-1260 (Aroclor 1260)	597	ug/kg	333	1	11/22/06 00:00	11/27/06 14:19	11096-82-5	
Tetrachloro-m-xylene (S)	63	%	28-134	1	11/22/06 00:00	11/27/06 14:19	877-09-8	
Decachlorobiphenyl (S)	58	%	30-141	1	11/22/06 00:00	11/27/06 14:19	2051-24-3	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	5.4	mg/kg	1.9	2	11/22/06 00:00	11/27/06 12:05	7440-38-2	
Barium	134	mg/kg	1.9	2	11/22/06 00:00	11/27/06 12:05	7440-39-3	
Cadmium	2.1	mg/kg	0.97	2	11/22/06 00:00	11/27/06 12:05	7440-43-9	
Chromium	98.9	mg/kg	0.97	2	11/22/06 00:00	11/27/06 12:05	7440-47-3	
Lead	120	mg/kg	0.97	2	11/22/06 00:00	11/27/06 12:05	7439-92-1	
Selenium	ND	mg/kg	7.3	5	11/22/06 00:00	11/28/06 10:37	7782-49-2	2e
8270 MSSV DRO/ORO	Analytical Method: EPA 8270 Preparation Method: EPA 3546							
TPH-ORO	11400	mg/kg	759	10	11/21/06 00:00	11/29/06 03:36		
TPH-DRO	1490	mg/kg	759	10	11/21/06 00:00	11/29/06 03:36		
Nitrobenzene-d5 (S)	83	%	22-185	10	11/21/06 00:00	11/29/06 03:36	4165-60-0	
2-Fluorobiphenyl (S)	69	%	38-167	10	11/21/06 00:00	11/29/06 03:36	321-60-8	
Terphenyl-d14 (S)	906	%	14-172	10	11/21/06 00:00	11/29/06 03:36	1718-51-0	S4
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	1.2	%	0.10	1		11/27/06 00:00		

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nelac

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ANALYTICAL RESULTS

Project: PASI Bannister Complex
Pace Project No.: 6015760

Sample: BLDG4WBSED Lab ID: 6015760008 Collected: 11/15/06 13:20 Received: 11/15/06 15:30 Matrix: Solid

Solid results reported on dry weight basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	13.1	mg/kg	2.0	2	11/22/06 00:00	11/27/06 12:09	7440-38-2	
Barium	288	mg/kg	2.0	2	11/22/06 00:00	11/27/06 12:09	7440-39-3	
Cadmium	34.1	mg/kg	1.0	2	11/22/06 00:00	11/27/06 12:09	7440-43-9	
Chromium	119	mg/kg	1.0	2	11/22/06 00:00	11/27/06 12:09	7440-47-3	
Lead	7190	mg/kg	10.2	20	11/22/06 00:00	11/27/06 14:39	7439-92-1	
Selenium	ND	mg/kg	3.1	2	11/22/06 00:00	11/27/06 12:09	7782-49-2	2e
8270 MSSV DRO/ORO	Analytical Method: EPA 8270 Preparation Method: EPA 3546							
TPH-ORO	8750	mg/kg	765	10	11/21/06 00:00	11/29/06 03:52		
TPH-DRO	ND	mg/kg	765	10	11/21/06 00:00	11/29/06 03:52		
Nitrobenzene-d5 (S)	59	%	22-185	10	11/21/06 00:00	11/29/06 03:52	4165-60-0	
2-Fluorobiphenyl (S)	54	%	38-167	10	11/21/06 00:00	11/29/06 03:52	321-60-8	
Terphenyl-d14 (S)	280	%	14-172	10	11/21/06 00:00	11/29/06 03:52	1718-51-0	S4
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	1.9	%	0.10	1		11/27/06 00:00		

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ANALYTICAL RESULTS

Project: PASI Bannister Complex
Pace Project No.: 6015760

Sample: BLDG1PHOTOLAB Lab ID: 6015760009 Collected: 11/15/06 14:00 Received: 11/15/06 15:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Silver	108	ug/L	7.0	1	11/18/06 00:00	11/21/06 18:03	7440-22-4	

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QUALITY CONTROL DATA

Project: PASI Bannister Complex
Pace Project No.: 6015760

QC Batch: MPRP/3042 | Analysis Method: EPA 6010
QC Batch Method: EPA 3010 | Analysis Description: 6010 MET
Associated Lab Samples: 6015760009

METHOD BLANK: 127448
Associated Lab Samples: 6015760009

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Silver	ug/L	ND	7.0	

LABORATORY CONTROL SAMPLE: 127449

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Silver	ug/L	500	476	95	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 127450 127451

Parameter	Units	6015820004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Silver	ug/L	ND	500	500	477	471	95	94	75-125	1	20	

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QUALITY CONTROL DATA

Project: PASI Bannister Complex
Pace Project No.: 6015760

QC Batch: OEXT/4649 Analysis Method: EPA 8270
QC Batch Method: EPA 3546 Analysis Description: 8270 MSSV TPH ORO
Associated Lab Samples: 6015760001, 6015760006, 6015760007, 6015760008

METHOD BLANK: 128150
Associated Lab Samples: 6015760001, 6015760006, 6015760007, 6015760008

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
TPH-DRO	mg/kg	ND	15.0	
TPH-ORO	mg/kg	ND	15.0	
2-Fluorobiphenyl (S)	%	56	38-167	
Nitrobenzene-d5 (S)	%	60	22-185	
Terphenyl-d14 (S)	%	51	14-172	

LABORATORY CONTROL SAMPLE: 128151

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
TPH-DRO	mg/kg	667	382	57	49-135	
2-Fluorobiphenyl (S)	%			66	38-167	
Nitrobenzene-d5 (S)	%			163	22-185	
Terphenyl-d14 (S)	%			61	14-172	

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QUALITY CONTROL DATA

Project: PASI Bannister Complex
Pace Project No.: 6015760

QC Batch: OEXT/4654 Analysis Method: EPA 8082
QC Batch Method: EPA 3550 Analysis Description: 8082 GCS PCB
Associated Lab Samples: 6015760001, 6015760006, 6015760007

METHOD BLANK: 128662
Associated Lab Samples: 6015760001, 6015760006, 6015760007

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg	ND	33.0	
PCB-1221 (Aroclor 1221)	ug/kg	ND	33.0	
PCB-1232 (Aroclor 1232)	ug/kg	ND	33.0	
PCB-1242 (Aroclor 1242)	ug/kg	ND	33.0	
PCB-1248 (Aroclor 1248)	ug/kg	ND	33.0	
PCB-1254 (Aroclor 1254)	ug/kg	ND	33.0	
PCB-1260 (Aroclor 1260)	ug/kg	ND	33.0	
Decachlorobiphenyl (S)	%	79	30-141	
Tetrachloro-m-xylene (S)	%	73	28-134	

LABORATORY CONTROL SAMPLE: 128663

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg	167	117	70	68-115	
PCB-1260 (Aroclor 1260)	ug/kg	167	132	79	73-119	
Decachlorobiphenyl (S)	%			80	30-141	
Tetrachloro-m-xylene (S)	%			73	28-134	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 128664 128665

Parameter	Units	6015862002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
PCB-1016 (Aroclor 1016)	ug/kg	ND	166	166	138	147	83	88	38-177	6	37	
PCB-1260 (Aroclor 1260)	ug/kg	ND	166	166	189	120	114	72	54-155	45	28	R2
Decachlorobiphenyl (S)	%						78	79	30-141			
Tetrachloro-m-xylene (S)	%						80	78	28-134			

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QUALITY CONTROL DATA

Project: PASI Bannister Complex
Pace Project No.: 6015760

QC Batch:	MPRP/3051	Analysis Method:	EPA 6010
QC Batch Method:	EPA 3050	Analysis Description:	6010 MET

Associated Lab Samples: 6015760002, 6015760003, 6015760004, 6015760006, 6015760007, 6015760008

METHOD BLANK: 128774

Associated Lab Samples: 6015760002, 6015760003, 6015760004, 6015760006, 6015760007, 6015760008

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Arsenic	mg/kg	ND	1.0	
Barium	mg/kg	ND	1.0	
Cadmium	mg/kg	ND	0.50	
Chromium	mg/kg	ND	0.50	
Lead	mg/kg	ND	0.50	
Selenium	mg/kg	ND	1.5	

LABORATORY CONTROL SAMPLE: 128775

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/kg	50	43.9	88	80-120	
Barium	mg/kg	50	46.2	92	80-120	
Cadmium	mg/kg	50	47.1	94	80-120	
Chromium	mg/kg	50	47.1	94	80-120	
Lead	mg/kg	50	46.4	93	80-120	
Selenium	mg/kg	50	42.2	84	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 128776 128777

Parameter	Units	6015638001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	mg/kg	8.1	46.7	46.7	34.8	40.1	57	68	75-125	14	20	M0
Barium	mg/kg	85.4	46.7	46.7	133	119	101	72	75-125	11	20	
Cadmium	mg/kg	3.5	46.7	46.7	41.0	41.8	80	82	75-125	2	20	
Chromium	mg/kg	262	46.7	46.7	255	345	-16	179	75-125	30	20	M0,R1
Lead	mg/kg	14.1	46.7	46.7	50.0	49.5	77	76	75-125	1	20	
Selenium	mg/kg	ND	46.7	46.7	31.6	30.5	76	74	75-125	4	20	

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QUALITY CONTROL DATA

Project: PASI Bannister Complex
Pace Project No.: 6015760

QC Batch: OEXT/4881 Analysis Method: EPA 8082
QC Batch Method: EPA 3580 (Wipe) Analysis Description: 8082 GCS PCB Wipe
Associated Lab Samples: 6015760005

METHOD BLANK: 129294
Associated Lab Samples: 6015760005

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
PCB-1016 (Aroclor 1016)	Total ug-	ND	1.0	
PCB-1221 (Aroclor 1221)	Total ug-	ND	1.0	
PCB-1232 (Aroclor 1232)	Total ug-	ND	1.0	
PCB-1242 (Aroclor 1242)	Total ug-	ND	1.0	
PCB-1248 (Aroclor 1248)	Total ug-	ND	1.0	
PCB-1254 (Aroclor 1254)	Total ug-	ND	1.0	
PCB-1260 (Aroclor 1260)	Total ug-	ND	1.0	
Decachlorobiphenyl (S)	%	85	51-126	
Tetrachloro-m-xylene (S)	%	88	50-125	

LABORATORY CONTROL SAMPLE: 129295

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
PCB-1016 (Aroclor 1016)	Total ug-	5	4.4	89	68-119	
PCB-1260 (Aroclor 1260)	Total ug-	5	4.3	86	68-121	
Decachlorobiphenyl (S)	%			83	51-126	
Tetrachloro-m-xylene (S)	%			87	50-125	

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QUALITY CONTROL DATA

Project: PASI Bannister Complex
Pace Project No.: 6015760

QC Batch: PMST/1833 — Analysis Method: ASTM D2974-87
QC Batch Method: ASTM D2974-87 — Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 6015760001, 6015760002, 6015760003, 6015760004, 6015760006, 6015760007, 6015760008

METHOD BLANK: 129492

Associated Lab Samples: 6015760001, 6015760002, 6015760003, 6015760004, 6015760006, 6015760007, 6015760008

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Percent Moisture	%	ND	0.10	

SAMPLE DUPLICATE: 129539

Parameter	Units	6015760002 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	3.6	6.4	55	20	R2

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QUALIFIERS

Project: PASI Bannister Complex
Pace Project No.: 6015760

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

ANALYTE QUALIFIERS

M0	Matrix spike recovery was outside laboratory control limits.
R1	RPD value was outside control limits.
R2	RPD value was outside control limits due to matrix interference
S4	Surrogate recovery not evaluated against control limits due to sample dilution.
1e	Surrogate recovery outside laboratory control limits due to sample dilution. The alternate surrogate is within QC limits.
2e	Dilution performed due to matrix.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PASI Bannister Complex
Pace Project No.: 6015760

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
6015760009	BLDG1PHOTOLAB	EPA 3010	MPRP/3042	EPA 6010	ICP/2747
6015760001	BLDG57/50TUNNEL	EPA 3546	OEXT/4649	EPA 8270	MSSV/2337
6015760006	BLDG1RRTRACKS	EPA 3546	OEXT/4649	EPA 8270	MSSV/2337
6015760007	BLDG1RRTRACKSDUP	EPA 3546	OEXT/4649	EPA 8270	MSSV/2337
6015760008	BLDG4WBSED	EPA 3546	OEXT/4649	EPA 8270	MSSV/2337
6015760001	BLDG57/50TUNNEL	EPA 3550	OEXT/4654	EPA 8082	GCSV/2594
6015760006	BLDG1RRTRACKS	EPA 3550	OEXT/4654	EPA 8082	GCSV/2594
6015760007	BLDG1RRTRACKSDUP	EPA 3550	OEXT/4654	EPA 8082	GCSV/2594
6015760002	BLDG1BATTERYRM	EPA 3050	MPRP/3051	EPA 6010	ICP/2756
6015760003	BLDG1BATTERMDRAIN	EPA 3050	MPRP/3051	EPA 6010	ICP/2756
6015760004	BLDG28SUMP	EPA 3050	MPRP/3051	EPA 6010	ICP/2756
6015760006	BLDG1RRTRACKS	EPA 3050	MPRP/3051	EPA 6010	ICP/2756
6015760007	BLDG1RRTRACKSDUP	EPA 3050	MPRP/3051	EPA 6010	ICP/2756
6015760008	BLDG4WBSED	EPA 3050	MPRP/3051	EPA 6010	ICP/2756
6015760005	TRANSUNIT4FLOOR	EPA 3580 (Wipe)	OEXT/4661	EPA 8082	GCSV/2597
6015760001	BLDG57/50TUNNEL	ASTM D2974-87	PMST/1833		
6015760002	BLDG1BATTERYRM	ASTM D2974-87	PMST/1833		
6015760003	BLDG1BATTERMDRAIN	ASTM D2974-87	PMST/1833		
6015760004	BLDG28SUMP	ASTM D2974-87	PMST/1833		
6015760006	BLDG1RRTRACKS	ASTM D2974-87	PMST/1833		
6015760007	BLDG1RRTRACKSDUP	ASTM D2974-87	PMST/1833		
6015760008	BLDG4WBSED	ASTM D2974-87	PMST/1833		

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 1

1008546

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: SCS Engineers	Report To: Deborah English	Attention: Sandy Weeks
Address: 12975 El Monte St 102 Overland Park, KS	Copy To: Jerrett Dowling	Company Name: (Same)
Email To: denglish@scsengineers.com	Purchase Order No.:	Address: (Same)
Phone: 913-451-7510 Fax: 913-451-7513	Project Name: AAST Bannister Complex	Pace Quote Reference: 60505.01
Requested Due Date/TAT:	Project Number: 02200070.57	Pace Project Manager: Derek Vining
		Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ Other

SITE LOCATION

☐ GA ☐ IL ☐ IN ☐ MI ☐ MN ☐ NC
☐ OH ☐ SC ☐ WI ☒ OTHER MO

Filtered (Y/N)

Requested Analysis: 8270; TPH DRO/ORO; PCB 8082; Lead 6010; RCRA Metals 6010; Silver 6010

Residual Chlorine (Y/N)

Pace Project Number: 6015760

Section D Required Client Information

SAMPLE ID

One Character per box. (A-Z, 0-9 / ,-)
Samples IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID	MATRIX CODE	SAMPLE TYPE G=GRAB C=COMP	COLLECTED DATE	COLLECTED TIME	~~COMPOSITE END/GRAB~~	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other Hexane	8270	TPH DRO/ORO	PCB 8082	Lead 6010	RCRA Metals 6010	Silver 6010	Residual Chlorine (Y/N)	Lab I.D.
1	BLD657/50TUNNEL	SL	G	11-14-?	1:00	2 WGFU		2	X								X	X						001
2	BLD61BATTERYRM	SL	G	↓	1:20	WGFU		1	X										X					002
3	BLD61BATTRMDRAIN	SL	G	↓	1:30	↓		1	X										X					003
4	BLD628SUMP	SL	G	↓	2:15	↓		1	X										X					004
5	TRANSUNIT4FLOOR	WP	G	↓	2:45	OTHR		1								X		X						005
6	BLD61RRTRACKS	SL	G	↓	3:10	3 WGFU		3	X								X	X		X				006
7	BLD61RRTRACKSDUP	SL	G	↓	3:10	↓		3	X								X	X		X				007
8	BLD64WBSED	SL	G	11-15-?	1:20	2 WGFU		2	X								X			X				008
9	BLD61PHOTOLAB	WT	G	↓	2:00	WGFN		1	X												X			009
10																								
11																								
12																								

Additional Comments:

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITION			
[signature] SCS Engineers	11-15-?	3:30	L Clifton	11/15/0?	1530	5.1	Y/N	Y/N	Y/N
							Y/N	Y/N	Y/N
							Y/N	Y/N	Y/N
							Y/N	Y/N	Y/N
						Temp in °C	Received on Ice	Custody Sealed Cooler	Samples Intact

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Jerrett Dowling

SIGNATURE of SAMPLER: [signature]

DATE Signed (MM / DD / YY):

SEE REVERSE SIDE FOR INSTRUCTIONS

Monitoring Well Soil Data
6015223

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Jarrett Domling
SCS Engineers
10975 El Monte, Suite 100
Overland Park, KS 66211

Pace Project Number: 6015223

RECEIVED
NOV 27 2006

REPORT OF LABORATORY ANALYSIS

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November 17, 2006

Deborah English
SCS Engineers
10975 El Monte
Kansas City, MO 64131

RE: Project: GSA Bannister SI
Pace Project No.: 6015223

Dear Deborah English:
Enclosed are the analytical results for sample(s) received by the laboratory on November 03, 2006. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Derek Varney

derek.varney@pacelabs.com
Project Manager

A2LA Certification Number: 2456.01
Arkansas Certification Number: 05-008-0
California Certification Number: 02109CA
Illinois Certification Number: 001191
Iowa Certification Number: 118
Kansas/NELAP Certification Number: E-10116
Louisiana Certification Number: 03055
Oklahoma Certification Number: 9205/9935
Utah Certification Number: 9135995665

Enclosures

cc: Jarrett Domling, SCS Engineers

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SAMPLE SUMMARY

Project: GSA Bannister SI
Pace Project No.: 6015223

Lab ID	Sample ID	Matrix	Date Collected	Date Received
6015223001	MW5-1	Solid	11/02/06 08:15	11/03/06 17:05
6015223002	MW5-2	Solid	11/02/06 08:45	11/03/06 17:05
6015223003	MW4-1	Solid	11/02/06 10:45	11/03/06 17:05
6015223004	MW4-2	Solid	11/02/06 11:00	11/03/06 17:05
6015223005	MW10	Solid	11/02/06 15:20	11/03/06 17:05
6015223006	MW11	Solid	11/03/06 08:45	11/03/06 17:05
6015223007	MW12	Solid	11/03/06 10:40	11/03/06 17:05

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SAMPLE ANALYTE COUNT

Project: GSA Bannister SI
Pace Project No.: 6015223

Lab ID	Sample ID	Method	Analytes Reported
6015223001	MW5-1	ASTM D2974-87	1
		EPA 8260	69
6015223002	MW5-2	ASTM D2974-87	1
		EPA 8260	69
6015223003	MW4-1	ASTM D2974-87	1
		EPA 8260	69
6015223004	MW4-2	ASTM D2974-87	1
		EPA 8260	69
6015223005	MW10	ASTM D2974-87	1
		EPA 5035A/8260	1
		EPA 6010	6
		EPA 8260	69
		EPA 8270	5
		EPA 8270 by SIM	19
6015223006	MW11	ASTM D2974-87	1
		EPA 5035A/8260	1
		EPA 6010	6
		EPA 8260	69
		EPA 8270	5
		EPA 8270 by SIM	19
6015223007	MW12	ASTM D2974-87	1
		EPA 5035A/8260	1
		EPA 6010	6
		EPA 8260	69
		EPA 8270	5
		EPA 8270 by SIM	19

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ANALYTICAL RESULTS

Project: GSA Bannister SI
Pace Project No.: 6015223

Sample: MW5-1 Lab ID: 6015223001 Collected: 11/02/06 08:15 Received: 11/03/06 17:05 Matrix: Solid

Solid results reported on dry weight basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Acetone	ND	ug/kg	19.6	1		11/12/06 21:15	67-64-1	
Benzene	ND	ug/kg	4.9	1		11/12/06 21:15	71-43-2	
Bromobenzene	ND	ug/kg	4.9	1		11/12/06 21:15	108-86-1	
Bromochloromethane	ND	ug/kg	4.9	1		11/12/06 21:15	74-97-5	
Bromodichloromethane	ND	ug/kg	4.9	1		11/12/06 21:15	75-27-4	
Bromoform	ND	ug/kg	4.9	1		11/12/06 21:15	75-25-2	
Bromomethane	ND	ug/kg	4.9	1		11/12/06 21:15	74-83-9	
2-Butanone (MEK)	ND	ug/kg	9.8	1		11/12/06 21:15	78-93-3	
n-Butylbenzene	ND	ug/kg	4.9	1		11/12/06 21:15	104-51-8	
sec-Butylbenzene	ND	ug/kg	4.9	1		11/12/06 21:15	135-98-8	
tert-Butylbenzene	ND	ug/kg	4.9	1		11/12/06 21:15	98-06-6	
Carbon disulfide	ND	ug/kg	4.9	1		11/12/06 21:15	75-15-0	
Carbon tetrachloride	ND	ug/kg	4.9	1		11/12/06 21:15	56-23-5	
Chlorobenzene	ND	ug/kg	4.9	1		11/12/06 21:15	108-90-7	
Chloroethane	ND	ug/kg	4.9	1		11/12/06 21:15	75-00-3	
Chloroform	ND	ug/kg	4.9	1		11/12/06 21:15	67-66-3	
Chloromethane	ND	ug/kg	4.9	1		11/12/06 21:15	74-87-3	
2-Chlorotoluene	ND	ug/kg	4.9	1		11/12/06 21:15	95-49-8	
4-Chlorotoluene	ND	ug/kg	4.9	1		11/12/06 21:15	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	4.9	1		11/12/06 21:15	96-12-8	
Dibromochloromethane	ND	ug/kg	4.9	1		11/12/06 21:15	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	4.9	1		11/12/06 21:15	106-93-4	
Dibromomethane	ND	ug/kg	4.9	1		11/12/06 21:15	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	4.9	1		11/12/06 21:15	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	4.9	1		11/12/06 21:15	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	4.9	1		11/12/06 21:15	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	4.9	1		11/12/06 21:15	75-71-8	
1,1-Dichloroethane	ND	ug/kg	4.9	1		11/12/06 21:15	75-34-3	
1,2-Dichloroethane	ND	ug/kg	4.9	1		11/12/06 21:15	107-06-2	
1,2-Dichloroethene (Total)	ND	ug/kg	4.9	1		11/12/06 21:15	540-59-0	
1,1-Dichloroethene	ND	ug/kg	4.9	1		11/12/06 21:15	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	4.9	1		11/12/06 21:15	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	4.9	1		11/12/06 21:15	156-60-5	
1,2-Dichloropropane	ND	ug/kg	4.9	1		11/12/06 21:15	78-87-5	
1,3-Dichloropropane	ND	ug/kg	4.9	1		11/12/06 21:15	142-28-9	
2,2-Dichloropropane	ND	ug/kg	4.9	1		11/12/06 21:15	594-20-7	
1,1-Dichloropropene	ND	ug/kg	4.9	1		11/12/06 21:15	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	4.9	1		11/12/06 21:15	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	4.9	1		11/12/06 21:15	10061-02-6	
Ethylbenzene	ND	ug/kg	4.9	1		11/12/06 21:15	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	4.9	1		11/12/06 21:15	87-68-3	
2-Hexanone	ND	ug/kg	19.6	1		11/12/06 21:15	591-78-6	
Isopropylbenzene (Cumene)	ND	ug/kg	4.9	1		11/12/06 21:15	98-82-8	
p-Isopropyltoluene	ND	ug/kg	4.9	1		11/12/06 21:15	99-87-6	
Methylene chloride	ND	ug/kg	4.9	1		11/12/06 21:15	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	9.8	1		11/12/06 21:15	108-10-1	

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ANALYTICAL RESULTS

Project: GSA Bannister SI
Pace Project No.: 6015223

Sample: MW5-1 Lab ID: 6015223001 Collected: 11/02/06 08:15 Received: 11/03/06 17:05 Matrix: Solid

Solid results reported on dry weight basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Methyl-tert-butyl ether	ND	ug/kg	4.9	1		11/12/06 21:15	1634-04-4	
Naphthalene	ND	ug/kg	9.8	1		11/12/06 21:15	91-20-3	
n-Propylbenzene	ND	ug/kg	4.9	1		11/12/06 21:15	103-65-1	
Styrene	ND	ug/kg	4.9	1		11/12/06 21:15	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	4.9	1		11/12/06 21:15	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	4.9	1		11/12/06 21:15	79-34-5	
Tetrachloroethene	ND	ug/kg	4.9	1		11/12/06 21:15	127-18-4	
Toluene	ND	ug/kg	4.9	1		11/12/06 21:15	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	4.9	1		11/12/06 21:15	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	4.9	1		11/12/06 21:15	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	4.9	1		11/12/06 21:15	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	4.9	1		11/12/06 21:15	79-00-5	
Trichloroethene	ND	ug/kg	4.9	1		11/12/06 21:15	79-01-6	
Trichlorofluoromethane	ND	ug/kg	4.9	1		11/12/06 21:15	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	4.9	1		11/12/06 21:15	96-18-4	
1,2,4-Trimethylbenzene	ND	ug/kg	4.9	1		11/12/06 21:15	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	4.9	1		11/12/06 21:15	108-67-8	
Vinyl chloride	ND	ug/kg	4.9	1		11/12/06 21:15	75-01-4	
Xylene (Total)	ND	ug/kg	4.9	1		11/12/06 21:15	1330-20-7	
Dibromofluoromethane (S)	49	%	82-118	1		11/12/06 21:15	1868-53-7	1e
Toluene-d8 (S)	100	%	88-114	1		11/12/06 21:15	2037-26-5	
4-Bromofluorobenzene (S)	103	%	78-117	1		11/12/06 21:15	460-00-4	
1,2-Dichloroethane-d4 (S)	105	%	79-129	1		11/12/06 21:15	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	19.1	%	0.10	1		11/14/06 00:00		

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ANALYTICAL RESULTS

Project: GSA Bannister SI
Pace Project No.: 6015223

Sample: MW5-2 Lab ID: 6015223002 Collected: 11/02/06 08:45 Received: 11/03/06 17:05 Matrix: Solid

Solid results reported on dry weight basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Acetone	ND	ug/kg	18.8	1		11/12/06 21:31	67-64-1	
Benzene	ND	ug/kg	4.7	1		11/12/06 21:31	71-43-2	
Bromobenzene	ND	ug/kg	4.7	1		11/12/06 21:31	108-86-1	
Bromochloromethane	ND	ug/kg	4.7	1		11/12/06 21:31	74-97-5	
Bromodichloromethane	ND	ug/kg	4.7	1		11/12/06 21:31	75-27-4	
Bromoform	ND	ug/kg	4.7	1		11/12/06 21:31	75-25-2	
Bromomethane	ND	ug/kg	4.7	1		11/12/06 21:31	74-83-9	
2-Butanone (MEK)	ND	ug/kg	9.4	1		11/12/06 21:31	78-93-3	
n-Butylbenzene	ND	ug/kg	4.7	1		11/12/06 21:31	104-51-8	
sec-Butylbenzene	ND	ug/kg	4.7	1		11/12/06 21:31	135-98-8	
tert-Butylbenzene	ND	ug/kg	4.7	1		11/12/06 21:31	98-06-6	
Carbon disulfide	ND	ug/kg	4.7	1		11/12/06 21:31	75-15-0	
Carbon tetrachloride	ND	ug/kg	4.7	1		11/12/06 21:31	56-23-5	
Chlorobenzene	ND	ug/kg	4.7	1		11/12/06 21:31	108-90-7	
Chloroethane	ND	ug/kg	4.7	1		11/12/06 21:31	75-00-3	
Chloroform	ND	ug/kg	4.7	1		11/12/06 21:31	67-66-3	
Chloromethane	ND	ug/kg	4.7	1		11/12/06 21:31	74-87-3	
2-Chlorotoluene	ND	ug/kg	4.7	1		11/12/06 21:31	95-49-8	
4-Chlorotoluene	ND	ug/kg	4.7	1		11/12/06 21:31	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	4.7	1		11/12/06 21:31	96-12-8	
Dibromochloromethane	ND	ug/kg	4.7	1		11/12/06 21:31	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	4.7	1		11/12/06 21:31	106-93-4	
Dibromomethane	ND	ug/kg	4.7	1		11/12/06 21:31	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	4.7	1		11/12/06 21:31	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	4.7	1		11/12/06 21:31	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	4.7	1		11/12/06 21:31	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	4.7	1		11/12/06 21:31	75-71-8	
1,1-Dichloroethane	ND	ug/kg	4.7	1		11/12/06 21:31	75-34-3	
1,2-Dichloroethane	ND	ug/kg	4.7	1		11/12/06 21:31	107-06-2	
1,2-Dichloroethene (Total)	ND	ug/kg	4.7	1		11/12/06 21:31	540-59-0	
1,1-Dichloroethene	ND	ug/kg	4.7	1		11/12/06 21:31	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	4.7	1		11/12/06 21:31	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	4.7	1		11/12/06 21:31	156-60-5	
1,2-Dichloropropane	ND	ug/kg	4.7	1		11/12/06 21:31	78-87-5	
1,3-Dichloropropane	ND	ug/kg	4.7	1		11/12/06 21:31	142-28-9	
2,2-Dichloropropane	ND	ug/kg	4.7	1		11/12/06 21:31	594-20-7	
1,1-Dichloropropene	ND	ug/kg	4.7	1		11/12/06 21:31	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	4.7	1		11/12/06 21:31	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	4.7	1		11/12/06 21:31	10061-02-6	
Ethylbenzene	ND	ug/kg	4.7	1		11/12/06 21:31	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	4.7	1		11/12/06 21:31	87-68-3	
2-Hexanone	ND	ug/kg	18.8	1		11/12/06 21:31	591-78-6	
Isopropylbenzene (Cumene)	ND	ug/kg	4.7	1		11/12/06 21:31	98-82-8	
p-Isopropyltoluene	ND	ug/kg	4.7	1		11/12/06 21:31	99-87-6	
Methylene chloride	ND	ug/kg	4.7	1		11/12/06 21:31	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	9.4	1		11/12/06 21:31	108-10-1	

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ANALYTICAL RESULTS

Project: GSA Bannister SI
Pace Project No.: 6015223

Sample: MW5-2 Lab ID: 6015223002 Collected: 11/02/06 08:45 Received: 11/03/06 17:05 Matrix: Solid
Solid results reported on dry weight basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Methyl-tert-butyl ether	ND	ug/kg	4.7	1		11/12/06 21:31	1634-04-4	
Naphthalene	ND	ug/kg	9.4	1		11/12/06 21:31	91-20-3	
n-Propylbenzene	ND	ug/kg	4.7	1		11/12/06 21:31	103-65-1	
Styrene	ND	ug/kg	4.7	1		11/12/06 21:31	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	4.7	1		11/12/06 21:31	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	4.7	1		11/12/06 21:31	79-34-5	
Tetrachloroethene	ND	ug/kg	4.7	1		11/12/06 21:31	127-18-4	
Toluene	ND	ug/kg	4.7	1		11/12/06 21:31	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	4.7	1		11/12/06 21:31	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	4.7	1		11/12/06 21:31	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	4.7	1		11/12/06 21:31	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	4.7	1		11/12/06 21:31	79-00-5	
Trichloroethene	**27.9**	ug/kg	4.7	1		11/12/06 21:31	79-01-6	
Trichlorofluoromethane	ND	ug/kg	4.7	1		11/12/06 21:31	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	4.7	1		11/12/06 21:31	96-18-4	
1,2,4-Trimethylbenzene	ND	ug/kg	4.7	1		11/12/06 21:31	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	4.7	1		11/12/06 21:31	108-67-8	
Vinyl chloride	ND	ug/kg	4.7	1		11/12/06 21:31	75-01-4	
Xylene (Total)	ND	ug/kg	4.7	1		11/12/06 21:31	1330-20-7	
Dibromofluoromethane (S)	53	%	82-118	1		11/12/06 21:31	1868-53-7	1e
Toluene-d8 (S)	96	%	88-114	1		11/12/06 21:31	2037-26-5	
4-Bromofluorobenzene (S)	99	%	78-117	1		11/12/06 21:31	460-00-4	
1,2-Dichloroethane-d4 (S)	103	%	79-129	1		11/12/06 21:31	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**18.0**	%	0.10	1		11/14/06 00:00		

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ANALYTICAL RESULTS

Project: GSA Bannister SI
Pace Project No.: 6015223

Sample: MW4-1 Lab ID: 6015223003 Collected: 11/02/06 10:45 Received: 11/03/06 17:05 Matrix: Solid

Solid results reported on dry weight basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Acetone	33.2	ug/kg	17.7	1		11/11/06 18:07	67-64-1	
Benzene	ND	ug/kg	4.4	1		11/11/06 18:07	71-43-2	
Bromobenzene	ND	ug/kg	4.4	1		11/11/06 18:07	108-86-1	
Bromochloromethane	ND	ug/kg	4.4	1		11/11/06 18:07	74-97-5	
Bromodichloromethane	ND	ug/kg	4.4	1		11/11/06 18:07	75-27-4	
Bromoform	ND	ug/kg	4.4	1		11/11/06 18:07	75-25-2	
Bromomethane	ND	ug/kg	4.4	1		11/11/06 18:07	74-83-9	
2-Butanone (MEK)	ND	ug/kg	8.9	1		11/11/06 18:07	78-93-3	
n-Butylbenzene	ND	ug/kg	4.4	1		11/11/06 18:07	104-51-8	
sec-Butylbenzene	ND	ug/kg	4.4	1		11/11/06 18:07	135-98-8	
tert-Butylbenzene	ND	ug/kg	4.4	1		11/11/06 18:07	98-06-6	
Carbon disulfide	ND	ug/kg	4.4	1		11/11/06 18:07	75-15-0	
Carbon tetrachloride	ND	ug/kg	4.4	1		11/11/06 18:07	56-23-5	
Chlorobenzene	ND	ug/kg	4.4	1		11/11/06 18:07	108-90-7	
Chloroethane	ND	ug/kg	4.4	1		11/11/06 18:07	75-00-3	
Chloroform	ND	ug/kg	4.4	1		11/11/06 18:07	67-66-3	
Chloromethane	ND	ug/kg	4.4	1		11/11/06 18:07	74-87-3	
2-Chlorotoluene	ND	ug/kg	4.4	1		11/11/06 18:07	95-49-8	
4-Chlorotoluene	ND	ug/kg	4.4	1		11/11/06 18:07	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	4.4	1		11/11/06 18:07	96-12-8	
Dibromochloromethane	ND	ug/kg	4.4	1		11/11/06 18:07	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	4.4	1		11/11/06 18:07	106-93-4	
Dibromomethane	ND	ug/kg	4.4	1		11/11/06 18:07	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	4.4	1		11/11/06 18:07	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	4.4	1		11/11/06 18:07	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	4.4	1		11/11/06 18:07	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	4.4	1		11/11/06 18:07	75-71-8	
1,1-Dichloroethane	ND	ug/kg	4.4	1		11/11/06 18:07	75-34-3	
1,2-Dichloroethane	ND	ug/kg	4.4	1		11/11/06 18:07	107-06-2	
1,2-Dichloroethene (Total)	ND	ug/kg	4.4	1		11/11/06 18:07	540-59-0	
1,1-Dichloroethene	ND	ug/kg	4.4	1		11/11/06 18:07	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	4.4	1		11/11/06 18:07	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	4.4	1		11/11/06 18:07	156-60-5	
1,2-Dichloropropane	ND	ug/kg	4.4	1		11/11/06 18:07	78-87-5	
1,3-Dichloropropane	ND	ug/kg	4.4	1		11/11/06 18:07	142-28-9	
2,2-Dichloropropane	ND	ug/kg	4.4	1		11/11/06 18:07	594-20-7	
1,1-Dichloropropene	ND	ug/kg	4.4	1		11/11/06 18:07	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	4.4	1		11/11/06 18:07	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	4.4	1		11/11/06 18:07	10061-02-6	
Ethylbenzene	ND	ug/kg	4.4	1		11/11/06 18:07	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	4.4	1		11/11/06 18:07	87-68-3	
2-Hexanone	ND	ug/kg	17.7	1		11/11/06 18:07	591-78-6	
Isopropylbenzene (Cumene)	ND	ug/kg	4.4	1		11/11/06 18:07	98-82-8	
p-Isopropyltoluene	ND	ug/kg	4.4	1		11/11/06 18:07	99-87-6	
Methylene chloride	ND	ug/kg	4.4	1		11/11/06 18:07	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	8.9	1		11/11/06 18:07	108-10-1	

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ANALYTICAL RESULTS

Project: GSA Bannister SI
Pace Project No.: 6015223

Sample: MW4-1 **Lab ID: 6015223003** Collected: 11/02/06 10:45 Received: 11/03/06 17:05 Matrix: Solid

Solid results reported on dry weight basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Methyl-tert-butyl ether	ND	ug/kg	4.4	1		11/11/06 18:07	1634-04-4	
Naphthalene	ND	ug/kg	8.9	1		11/11/06 18:07	91-20-3	
n-Propylbenzene	ND	ug/kg	4.4	1		11/11/06 18:07	103-65-1	
Styrene	ND	ug/kg	4.4	1		11/11/06 18:07	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	4.4	1		11/11/06 18:07	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	4.4	1		11/11/06 18:07	79-34-5	
Tetrachloroethene	ND	ug/kg	4.4	1		11/11/06 18:07	127-18-4	
Toluene	ND	ug/kg	4.4	1		11/11/06 18:07	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	4.4	1		11/11/06 18:07	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	4.4	1		11/11/06 18:07	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	4.4	1		11/11/06 18:07	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	4.4	1		11/11/06 18:07	79-00-5	
Trichloroethene	ND	ug/kg	4.4	1		11/11/06 18:07	79-01-6	
Trichlorofluoromethane	ND	ug/kg	4.4	1		11/11/06 18:07	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	4.4	1		11/11/06 18:07	96-18-4	
1,2,4-Trimethylbenzene	ND	ug/kg	4.4	1		11/11/06 18:07	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	4.4	1		11/11/06 18:07	108-67-8	
Vinyl chloride	ND	ug/kg	4.4	1		11/11/06 18:07	75-01-4	
Xylene (Total)	ND	ug/kg	4.4	1		11/11/06 18:07	1330-20-7	
Dibromofluoromethane (S)	51	%	82-118	1		11/11/06 18:07	1868-53-7	1e
Toluene-d8 (S)	108	%	88-114	1		11/11/06 18:07	2037-26-5	
4-Bromofluorobenzene (S)	103	%	78-117	1		11/11/06 18:07	460-00-4	
1,2-Dichloroethane-d4 (S)	112	%	79-129	1		11/11/06 18:07	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	16.2	%	0.10	1		11/14/06 00:00		

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ANALYTICAL RESULTS

Project: GSA Bannister SI
Pace Project No.: 6015223

Sample: MW4-2 | Lab ID: 6015223004 | Collected: 11/02/06 11:00 | Received: 11/03/06 17:05 | Matrix: Solid

Solid results reported on dry weight basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Acetone	ND	ug/kg	19.4	1		11/11/06 18:24	67-64-1	
Benzene	ND	ug/kg	4.9	1		11/11/06 18:24	71-43-2	
Bromobenzene	ND	ug/kg	4.9	1		11/11/06 18:24	108-86-1	
Bromochloromethane	ND	ug/kg	4.9	1		11/11/06 18:24	74-97-5	
Bromodichloromethane	ND	ug/kg	4.9	1		11/11/06 18:24	75-27-4	
Bromoform	ND	ug/kg	4.9	1		11/11/06 18:24	75-25-2	
Bromomethane	ND	ug/kg	4.9	1		11/11/06 18:24	74-83-9	
2-Butanone (MEK)	ND	ug/kg	9.7	1		11/11/06 18:24	78-93-3	
n-Butylbenzene	ND	ug/kg	4.9	1		11/11/06 18:24	104-51-8	
sec-Butylbenzene	ND	ug/kg	4.9	1		11/11/06 18:24	135-98-8	
tert-Butylbenzene	ND	ug/kg	4.9	1		11/11/06 18:24	98-06-6	
Carbon disulfide	ND	ug/kg	4.9	1		11/11/06 18:24	75-15-0	
Carbon tetrachloride	ND	ug/kg	4.9	1		11/11/06 18:24	56-23-5	
Chlorobenzene	ND	ug/kg	4.9	1		11/11/06 18:24	108-90-7	
Chloroethane	ND	ug/kg	4.9	1		11/11/06 18:24	75-00-3	
Chloroform	ND	ug/kg	4.9	1		11/11/06 18:24	67-66-3	
Chloromethane	ND	ug/kg	4.9	1		11/11/06 18:24	74-87-3	
2-Chlorotoluene	ND	ug/kg	4.9	1		11/11/06 18:24	95-49-8	
4-Chlorotoluene	ND	ug/kg	4.9	1		11/11/06 18:24	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	4.9	1		11/11/06 18:24	96-12-8	
Dibromochloromethane	ND	ug/kg	4.9	1		11/11/06 18:24	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	4.9	1		11/11/06 18:24	106-93-4	
Dibromomethane	ND	ug/kg	4.9	1		11/11/06 18:24	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	4.9	1		11/11/06 18:24	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	4.9	1		11/11/06 18:24	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	4.9	1		11/11/06 18:24	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	4.9	1		11/11/06 18:24	75-71-8	
1,1-Dichloroethane	ND	ug/kg	4.9	1		11/11/06 18:24	75-34-3	
1,2-Dichloroethane	ND	ug/kg	4.9	1		11/11/06 18:24	107-06-2	
1,2-Dichloroethene (Total)	ND	ug/kg	4.9	1		11/11/06 18:24	540-59-0	
1,1-Dichloroethene	ND	ug/kg	4.9	1		11/11/06 18:24	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	4.9	1		11/11/06 18:24	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	4.9	1		11/11/06 18:24	156-60-5	
1,2-Dichloropropane	ND	ug/kg	4.9	1		11/11/06 18:24	78-87-5	
1,3-Dichloropropane	ND	ug/kg	4.9	1		11/11/06 18:24	142-28-9	
2,2-Dichloropropane	ND	ug/kg	4.9	1		11/11/06 18:24	594-20-7	
1,1-Dichloropropene	ND	ug/kg	4.9	1		11/11/06 18:24	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	4.9	1		11/11/06 18:24	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	4.9	1		11/11/06 18:24	10061-02-6	
Ethylbenzene	ND	ug/kg	4.9	1		11/11/06 18:24	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	4.9	1		11/11/06 18:24	87-68-3	
2-Hexanone	ND	ug/kg	19.4	1		11/11/06 18:24	591-78-6	
Isopropylbenzene (Cumene)	ND	ug/kg	4.9	1		11/11/06 18:24	98-82-8	
p-Isopropyltoluene	ND	ug/kg	4.9	1		11/11/06 18:24	99-87-6	
Methylene chloride	ND	ug/kg	4.9	1		11/11/06 18:24	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	9.7	1		11/11/06 18:24	108-10-1	

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ANALYTICAL RESULTS

Project: GSA Bannister SI
Pace Project No.: 6015223

Sample: MW4-2 Lab ID: 6015223004 Collected: 11/02/06 11:00 Received: 11/03/06 17:05 Matrix: Solid

Solid results reported on dry weight basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Methyl-tert-butyl ether	ND	ug/kg	4.9	1		11/11/06 18:24	1634-04-4	
Naphthalene	ND	ug/kg	9.7	1		11/11/06 18:24	91-20-3	
n-Propylbenzene	ND	ug/kg	4.9	1		11/11/06 18:24	103-65-1	
Styrene	ND	ug/kg	4.9	1		11/11/06 18:24	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	4.9	1		11/11/06 18:24	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	4.9	1		11/11/06 18:24	79-34-5	
Tetrachloroethene	ND	ug/kg	4.9	1		11/11/06 18:24	127-18-4	
Toluene	ND	ug/kg	4.9	1		11/11/06 18:24	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	4.9	1		11/11/06 18:24	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	4.9	1		11/11/06 18:24	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	4.9	1		11/11/06 18:24	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	4.9	1		11/11/06 18:24	79-00-5	
Trichloroethene	ND	ug/kg	4.9	1		11/11/06 18:24	79-01-6	
Trichlorofluoromethane	ND	ug/kg	4.9	1		11/11/06 18:24	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	4.9	1		11/11/06 18:24	96-18-4	
1,2,4-Trimethylbenzene	ND	ug/kg	4.9	1		11/11/06 18:24	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	4.9	1		11/11/06 18:24	108-67-8	
Vinyl chloride	ND	ug/kg	4.9	1		11/11/06 18:24	75-01-4	
Xylene (Total)	ND	ug/kg	4.9	1		11/11/06 18:24	1330-20-7	
Dibromofluoromethane (S)	53	%	82-118	1		11/11/06 18:24	1868-53-7	1e
Toluene-d8 (S)	99	%	88-114	1		11/11/06 18:24	2037-26-5	
4-Bromofluorobenzene (S)	101	%	78-117	1		11/11/06 18:24	460-00-4	
1,2-Dichloroethane-d4 (S)	111	%	79-129	1		11/11/06 18:24	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	20.1	%	0.10	1		11/14/06 00:00		

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ANALYTICAL RESULTS

Project: GSA Bannister SI
Pace Project No.: 6015223

Sample: MW10 Lab ID: 6015223005 Collected: 11/02/06 15:20 Received: 11/03/06 17:05 Matrix: Solid
Solid results reported on dry weight basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	6.0	mg/kg	0.94	1	11/08/06 00:00	11/10/06 19:17	7440-38-2	
Barium	187	mg/kg	0.94	1	11/08/06 00:00	11/10/06 19:17	7440-39-3	
Cadmium	1.4	mg/kg	0.47	1	11/08/06 00:00	11/10/06 19:17	7440-43-9	
Chromium	20.9	mg/kg	0.47	1	11/08/06 00:00	11/10/06 19:17	7440-47-3	
Lead	14.2	mg/kg	0.47	1	11/08/06 00:00	11/10/06 19:17	7439-92-1	
Selenium	ND	mg/kg	1.4	1	11/08/06 00:00	11/10/06 19:17	7782-49-2	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	4.2	1	11/10/06 00:00	11/14/06 17:08	83-32-9	
Acenaphthylene	ND	ug/kg	4.2	1	11/10/06 00:00	11/14/06 17:08	208-96-8	
Anthracene	ND	ug/kg	4.2	1	11/10/06 00:00	11/14/06 17:08	120-12-7	
Benzo(a)anthracene	ND	ug/kg	4.2	1	11/10/06 00:00	11/14/06 17:08	56-55-3	
Benzo(a)pyrene	ND	ug/kg	4.2	1	11/10/06 00:00	11/14/06 17:08	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	4.2	1	11/10/06 00:00	11/14/06 17:08	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	4.2	1	11/10/06 00:00	11/14/06 17:08	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	4.2	1	11/10/06 00:00	11/14/06 17:08	207-08-9	
Chrysene	ND	ug/kg	4.2	1	11/10/06 00:00	11/14/06 17:08	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	4.2	1	11/10/06 00:00	11/14/06 17:08	53-70-3	
Fluoranthene	ND	ug/kg	4.2	1	11/10/06 00:00	11/14/06 17:08	206-44-0	
Fluorene	ND	ug/kg	4.2	1	11/10/06 00:00	11/14/06 17:08	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	4.2	1	11/10/06 00:00	11/14/06 17:08	193-39-5	
Naphthalene	ND	ug/kg	4.2	1	11/10/06 00:00	11/14/06 17:08	91-20-3	
Phenanthrene	ND	ug/kg	4.2	1	11/10/06 00:00	11/14/06 17:08	85-01-8	
Pyrene	ND	ug/kg	4.2	1	11/10/06 00:00	11/14/06 17:08	129-00-0	
Nitrobenzene-d5 (S)	72	%	32-160	1	11/10/06 00:00	11/14/06 17:08	4165-60-0	
2-Fluorobiphenyl (S)	83	%	32-109	1	11/10/06 00:00	11/14/06 17:08	321-60-8	
Terphenyl-d14 (S)	70	%	30-139	1	11/10/06 00:00	11/14/06 17:08	1718-51-0	
8270 MSSV DRO/ORO	Analytical Method: EPA 8270 Preparation Method: EPA 3550							
TPH-ORO	ND	mg/kg	18.9	1	11/14/06 00:00	11/17/06 09:57		
TPH-DRO	ND	mg/kg	18.9	1	11/14/06 00:00	11/17/06 09:57		
Nitrobenzene-d5 (S)	70	%	22-185	1	11/14/06 00:00	11/17/06 09:57	4165-60-0	
2-Fluorobiphenyl (S)	70	%	38-167	1	11/14/06 00:00	11/17/06 09:57	321-60-8	
Terphenyl-d14 (S)	71	%	14-172	1	11/14/06 00:00	11/17/06 09:57	1718-51-0	
8260 MSV GRO and Oxygenates	Analytical Method: EPA 5035A/8260							
TPH-GRO	ND	mg/kg	0.52	1		11/14/06 14:31		
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Acetone	24.5	ug/kg	20.8	1		11/14/06 14:31	67-64-1	
Benzene	ND	ug/kg	5.2	1		11/14/06 14:31	71-43-2	
Bromobenzene	ND	ug/kg	5.2	1		11/14/06 14:31	108-86-1	
Bromochloromethane	ND	ug/kg	5.2	1		11/14/06 14:31	74-97-5	
Bromodichloromethane	ND	ug/kg	5.2	1		11/14/06 14:31	75-27-4	
Bromoform	ND	ug/kg	5.2	1		11/14/06 14:31	75-25-2	

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ANALYTICAL RESULTS

Project: GSA Bannister SI
Pace Project No.: 6015223

Sample: MW10 Lab ID: 6015223005 Collected: 11/02/06 15:20 Received: 11/03/06 17:05 Matrix: Solid
Solid results reported on dry weight basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Bromomethane	ND	ug/kg	5.2	1		11/14/06 14:31	74-83-9	
2-Butanone (MEK)	ND	ug/kg	10.4	1		11/14/06 14:31	78-93-3	
n-Butylbenzene	ND	ug/kg	5.2	1		11/14/06 14:31	104-51-8	
sec-Butylbenzene	ND	ug/kg	5.2	1		11/14/06 14:31	135-98-8	
tert-Butylbenzene	ND	ug/kg	5.2	1		11/14/06 14:31	98-06-6	
Carbon disulfide	ND	ug/kg	5.2	1		11/14/06 14:31	75-15-0	
Carbon tetrachloride	ND	ug/kg	5.2	1		11/14/06 14:31	56-23-5	
Chlorobenzene	ND	ug/kg	5.2	1		11/14/06 14:31	108-90-7	
Chloroethane	ND	ug/kg	5.2	1		11/14/06 14:31	75-00-3	
Chloroform	ND	ug/kg	5.2	1		11/14/06 14:31	67-66-3	
Chloromethane	ND	ug/kg	5.2	1		11/14/06 14:31	74-87-3	
2-Chlorotoluene	ND	ug/kg	5.2	1		11/14/06 14:31	95-49-8	
4-Chlorotoluene	ND	ug/kg	5.2	1		11/14/06 14:31	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	5.2	1		11/14/06 14:31	96-12-8	
Dibromochloromethane	ND	ug/kg	5.2	1		11/14/06 14:31	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	5.2	1		11/14/06 14:31	106-93-4	
Dibromomethane	ND	ug/kg	5.2	1		11/14/06 14:31	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	5.2	1		11/14/06 14:31	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	5.2	1		11/14/06 14:31	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	5.2	1		11/14/06 14:31	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	5.2	1		11/14/06 14:31	75-71-8	
1,1-Dichloroethane	ND	ug/kg	5.2	1		11/14/06 14:31	75-34-3	
1,2-Dichloroethane	ND	ug/kg	5.2	1		11/14/06 14:31	107-06-2	
1,2-Dichloroethene (Total)	13.7	ug/kg	5.2	1		11/14/06 14:31	540-59-0	
1,1-Dichloroethene	ND	ug/kg	5.2	1		11/14/06 14:31	75-35-4	
cis-1,2-Dichloroethene	13.7	ug/kg	5.2	1		11/14/06 14:31	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	5.2	1		11/14/06 14:31	156-60-5	
1,2-Dichloropropane	ND	ug/kg	5.2	1		11/14/06 14:31	78-87-5	
1,3-Dichloropropane	ND	ug/kg	5.2	1		11/14/06 14:31	142-28-9	
2,2-Dichloropropane	ND	ug/kg	5.2	1		11/14/06 14:31	594-20-7	
1,1-Dichloropropene	ND	ug/kg	5.2	1		11/14/06 14:31	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	5.2	1		11/14/06 14:31	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	5.2	1		11/14/06 14:31	10061-02-6	
Ethylbenzene	ND	ug/kg	5.2	1		11/14/06 14:31	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	5.2	1		11/14/06 14:31	87-68-3	
2-Hexanone	ND	ug/kg	20.8	1		11/14/06 14:31	591-78-6	
Isopropylbenzene (Cumene)	ND	ug/kg	5.2	1		11/14/06 14:31	98-82-8	
p-Isopropyltoluene	ND	ug/kg	5.2	1		11/14/06 14:31	99-87-6	
Methylene chloride	ND	ug/kg	5.2	1		11/14/06 14:31	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	10.4	1		11/14/06 14:31	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	5.2	1		11/14/06 14:31	1634-04-4	
Naphthalene	ND	ug/kg	10.4	1		11/14/06 14:31	91-20-3	
n-Propylbenzene	ND	ug/kg	5.2	1		11/14/06 14:31	103-65-1	
Styrene	ND	ug/kg	5.2	1		11/14/06 14:31	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	5.2	1		11/14/06 14:31	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	5.2	1		11/14/06 14:31	79-34-5	

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ANALYTICAL RESULTS

Project: GSA Bannister SI
Pace Project No.: 6015223

Sample: MW10 Lab ID: 6015223005 Collected: 11/02/06 15:20 Received: 11/03/06 17:05 Matrix: Solid
Solid results reported on dry weight basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Tetrachloroethene	ND	ug/kg	5.2	1		11/14/06 14:31	127-18-4	
Toluene	ND	ug/kg	5.2	1		11/14/06 14:31	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	5.2	1		11/14/06 14:31	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	5.2	1		11/14/06 14:31	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	5.2	1		11/14/06 14:31	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	5.2	1		11/14/06 14:31	79-00-5	
Trichloroethene	ND	ug/kg	5.2	1		11/14/06 14:31	79-01-6	
Trichlorofluoromethane	ND	ug/kg	5.2	1		11/14/06 14:31	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	5.2	1		11/14/06 14:31	96-18-4	
1,2,4-Trimethylbenzene	ND	ug/kg	5.2	1		11/14/06 14:31	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	5.2	1		11/14/06 14:31	108-67-8	
Vinyl chloride	15.3	ug/kg	5.2	1		11/14/06 14:31	75-01-4	
Xylene (Total)	ND	ug/kg	5.2	1		11/14/06 14:31	1330-20-7	
Dibromofluoromethane (S)	53	%	82-118	1		11/14/06 14:31	1868-53-7	1e
Toluene-d8 (S)	102	%	88-114	1		11/14/06 14:31	2037-26-5	
4-Bromofluorobenzene (S)	107	%	78-117	1		11/14/06 14:31	460-00-4	
1,2-Dichloroethane-d4 (S)	122	%	79-129	1		11/14/06 14:31	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	20.9	%	0.10	1		11/14/06 00:00		

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ANALYTICAL RESULTS

Project: GSA Bannister SI
Pace Project No.: 6015223

Sample: MW11 Lab ID: 6015223006 Collected: 11/03/06 08:45 Received: 11/03/06 17:05 Matrix: Solid

Solid results reported on dry weight basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	4.9	mg/kg	0.92	1	11/08/06 00:00	11/10/06 19:21	7440-38-2	
Barium	170	mg/kg	0.92	1	11/08/06 00:00	11/10/06 19:21	7440-39-3	
Cadmium	1.0	mg/kg	0.46	1	11/08/06 00:00	11/10/06 19:21	7440-43-9	
Chromium	22.4	mg/kg	0.46	1	11/08/06 00:00	11/10/06 19:21	7440-47-3	
Lead	9.0	mg/kg	0.46	1	11/08/06 00:00	11/10/06 19:21	7439-92-1	
Selenium	ND	mg/kg	1.4	1	11/08/06 00:00	11/10/06 19:21	7782-49-2	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	4.2	1	11/10/06 00:00	11/14/06 17:25	83-32-9	
Acenaphthylene	ND	ug/kg	4.2	1	11/10/06 00:00	11/14/06 17:25	208-96-8	
Anthracene	ND	ug/kg	4.2	1	11/10/06 00:00	11/14/06 17:25	120-12-7	
Benzo(a)anthracene	ND	ug/kg	4.2	1	11/10/06 00:00	11/14/06 17:25	56-55-3	
Benzo(a)pyrene	ND	ug/kg	4.2	1	11/10/06 00:00	11/14/06 17:25	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	4.2	1	11/10/06 00:00	11/14/06 17:25	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	4.2	1	11/10/06 00:00	11/14/06 17:25	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	4.2	1	11/10/06 00:00	11/14/06 17:25	207-08-9	
Chrysene	ND	ug/kg	4.2	1	11/10/06 00:00	11/14/06 17:25	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	4.2	1	11/10/06 00:00	11/14/06 17:25	53-70-3	
Fluoranthene	ND	ug/kg	4.2	1	11/10/06 00:00	11/14/06 17:25	206-44-0	
Fluorene	ND	ug/kg	4.2	1	11/10/06 00:00	11/14/06 17:25	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	4.2	1	11/10/06 00:00	11/14/06 17:25	193-39-5	
Naphthalene	ND	ug/kg	4.2	1	11/10/06 00:00	11/14/06 17:25	91-20-3	
Phenanthrene	ND	ug/kg	4.2	1	11/10/06 00:00	11/14/06 17:25	85-01-8	
Pyrene	ND	ug/kg	4.2	1	11/10/06 00:00	11/14/06 17:25	129-00-0	
Nitrobenzene-d5 (S)	71	%	32-160	1	11/10/06 00:00	11/14/06 17:25	4165-60-0	
2-Fluorobiphenyl (S)	66	%	32-109	1	11/10/06 00:00	11/14/06 17:25	321-60-8	
Terphenyl-d14 (S)	70	%	30-139	1	11/10/06 00:00	11/14/06 17:25	1718-51-0	
8270 MSSV DRO/ORO	Analytical Method: EPA 8270 Preparation Method: EPA 3550							
TPH-ORO	ND	mg/kg	19.0	1	11/14/06 00:00	11/17/06 10:13		
TPH-DRO	ND	mg/kg	19.0	1	11/14/06 00:00	11/17/06 10:13		
Nitrobenzene-d5 (S)	77	%	22-185	1	11/14/06 00:00	11/17/06 10:13	4165-60-0	
2-Fluorobiphenyl (S)	86	%	38-167	1	11/14/06 00:00	11/17/06 10:13	321-60-8	
Terphenyl-d14 (S)	76	%	14-172	1	11/14/06 00:00	11/17/06 10:13	1718-51-0	
8260 MSV GRO and Oxygenates	Analytical Method: EPA 5035A/8260							
TPH-GRO	ND	mg/kg	0.52	1		11/14/06 14:47		
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Acetone	ND	ug/kg	20.7	1		11/14/06 14:47	67-64-1	
Benzene	ND	ug/kg	5.2	1		11/14/06 14:47	71-43-2	
Bromobenzene	ND	ug/kg	5.2	1		11/14/06 14:47	108-86-1	
Bromochloromethane	ND	ug/kg	5.2	1		11/14/06 14:47	74-97-5	
Bromodichloromethane	ND	ug/kg	5.2	1		11/14/06 14:47	75-27-4	
Bromoform	ND	ug/kg	5.2	1		11/14/06 14:47	75-25-2	

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ANALYTICAL RESULTS

Project: GSA Bannister SI
Pace Project No.: 6015223

Sample: MW11 Lab ID: 6015223006 Collected: 11/03/06 08:45 Received: 11/03/06 17:05 Matrix: Solid

Solid results reported on dry weight basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Bromomethane	ND	ug/kg	5.2	1		11/14/06 14:47	74-83-9	
2-Butanone (MEK)	ND	ug/kg	10.3	1		11/14/06 14:47	78-93-3	
n-Butylbenzene	ND	ug/kg	5.2	1		11/14/06 14:47	104-51-8	
sec-Butylbenzene	ND	ug/kg	5.2	1		11/14/06 14:47	135-98-8	
tert-Butylbenzene	ND	ug/kg	5.2	1		11/14/06 14:47	98-06-6	
Carbon disulfide	ND	ug/kg	5.2	1		11/14/06 14:47	75-15-0	
Carbon tetrachloride	ND	ug/kg	5.2	1		11/14/06 14:47	56-23-5	
Chlorobenzene	ND	ug/kg	5.2	1		11/14/06 14:47	108-90-7	
Chloroethane	ND	ug/kg	5.2	1		11/14/06 14:47	75-00-3	
Chloroform	ND	ug/kg	5.2	1		11/14/06 14:47	67-66-3	
Chloromethane	ND	ug/kg	5.2	1		11/14/06 14:47	74-87-3	
2-Chlorotoluene	ND	ug/kg	5.2	1		11/14/06 14:47	95-49-8	
4-Chlorotoluene	ND	ug/kg	5.2	1		11/14/06 14:47	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	5.2	1		11/14/06 14:47	96-12-8	
Dibromochloromethane	ND	ug/kg	5.2	1		11/14/06 14:47	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	5.2	1		11/14/06 14:47	106-93-4	
Dibromomethane	ND	ug/kg	5.2	1		11/14/06 14:47	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	5.2	1		11/14/06 14:47	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	5.2	1		11/14/06 14:47	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	5.2	1		11/14/06 14:47	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	5.2	1		11/14/06 14:47	75-71-8	
1,1-Dichloroethane	ND	ug/kg	5.2	1		11/14/06 14:47	75-34-3	
1,2-Dichloroethane	ND	ug/kg	5.2	1		11/14/06 14:47	107-06-2	
1,2-Dichloroethene (Total)	ND	ug/kg	5.2	1		11/14/06 14:47	540-59-0	
1,1-Dichloroethene	ND	ug/kg	5.2	1		11/14/06 14:47	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	5.2	1		11/14/06 14:47	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	5.2	1		11/14/06 14:47	156-60-5	
1,2-Dichloropropane	ND	ug/kg	5.2	1		11/14/06 14:47	78-87-5	
1,3-Dichloropropane	ND	ug/kg	5.2	1		11/14/06 14:47	142-28-9	
2,2-Dichloropropane	ND	ug/kg	5.2	1		11/14/06 14:47	594-20-7	
1,1-Dichloropropene	ND	ug/kg	5.2	1		11/14/06 14:47	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	5.2	1		11/14/06 14:47	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	5.2	1		11/14/06 14:47	10061-02-6	
Ethylbenzene	ND	ug/kg	5.2	1		11/14/06 14:47	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	5.2	1		11/14/06 14:47	87-68-3	
2-Hexanone	ND	ug/kg	20.7	1		11/14/06 14:47	591-78-6	
Isopropylbenzene (Cumene)	ND	ug/kg	5.2	1		11/14/06 14:47	98-82-8	
p-Isopropyltoluene	ND	ug/kg	5.2	1		11/14/06 14:47	99-87-6	
Methylene chloride	ND	ug/kg	5.2	1		11/14/06 14:47	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	10.3	1		11/14/06 14:47	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	5.2	1		11/14/06 14:47	1634-04-4	
Naphthalene	ND	ug/kg	10.3	1		11/14/06 14:47	91-20-3	
n-Propylbenzene	ND	ug/kg	5.2	1		11/14/06 14:47	103-65-1	
Styrene	ND	ug/kg	5.2	1		11/14/06 14:47	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	5.2	1		11/14/06 14:47	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	5.2	1		11/14/06 14:47	79-34-5	

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ANALYTICAL RESULTS

Project: GSA Bannister SI
Pace Project No.: 6015223

Sample: MW11 Lab ID: 6015223006 Collected: 11/03/06 08:45 Received: 11/03/06 17:05 Matrix: Solid
Solid results reported on dry weight basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Tetrachloroethene	ND	ug/kg	5.2	1		11/14/06 14:47	127-18-4	
Toluene	ND	ug/kg	5.2	1		11/14/06 14:47	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	5.2	1		11/14/06 14:47	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	5.2	1		11/14/06 14:47	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	5.2	1		11/14/06 14:47	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	5.2	1		11/14/06 14:47	79-00-5	
Trichloroethene	ND	ug/kg	5.2	1		11/14/06 14:47	79-01-6	
Trichlorofluoromethane	ND	ug/kg	5.2	1		11/14/06 14:47	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	5.2	1		11/14/06 14:47	96-18-4	
1,2,4-Trimethylbenzene	ND	ug/kg	5.2	1		11/14/06 14:47	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	5.2	1		11/14/06 14:47	108-67-8	
Vinyl chloride	ND	ug/kg	5.2	1		11/14/06 14:47	75-01-4	
Xylene (Total)	ND	ug/kg	5.2	1		11/14/06 14:47	1330-20-7	
Dibromofluoromethane (S)	63	%	82-118	1		11/14/06 14:47	1868-53-7	1e
Toluene-d8 (S)	112	%	88-114	1		11/14/06 14:47	2037-26-5	
4-Bromofluorobenzene (S)	108	%	78-117	1		11/14/06 14:47	460-00-4	
1,2-Dichloroethane-d4 (S)	129	%	79-129	1		11/14/06 14:47	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	21.4	%	0.10	1		11/14/06 00:00		

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ANALYTICAL RESULTS

Project: GSA Bannister SI
Pace Project No.: 6015223

Sample: MW12 Lab ID: 6015223007 Collected: 11/03/06 10:40 Received: 11/03/06 17:05 Matrix: Solid

Solid results reported on dry weight basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	5.6	mg/kg	1.0	1	11/08/06 00:00	11/10/06 19:26	7440-38-2	
Barium	177	mg/kg	1.0	1	11/08/06 00:00	11/10/06 19:26	7440-39-3	
Cadmium	1.1	mg/kg	0.50	1	11/08/06 00:00	11/10/06 19:26	7440-43-9	
Chromium	19.7	mg/kg	0.50	1	11/08/06 00:00	11/10/06 19:26	7440-47-3	
Lead	12.2	mg/kg	0.50	1	11/08/06 00:00	11/10/06 19:26	7439-92-1	
Selenium	ND	mg/kg	1.5	1	11/08/06 00:00	11/10/06 19:26	7782-49-2	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550							
Acenaphthene	ND	ug/kg	4.1	1	11/10/06 00:00	11/14/06 17:43	83-32-9	
Acenaphthylene	ND	ug/kg	4.1	1	11/10/06 00:00	11/14/06 17:43	208-96-8	
Anthracene	ND	ug/kg	4.1	1	11/10/06 00:00	11/14/06 17:43	120-12-7	
Benzo(a)anthracene	ND	ug/kg	4.1	1	11/10/06 00:00	11/14/06 17:43	56-55-3	
Benzo(a)pyrene	ND	ug/kg	4.1	1	11/10/06 00:00	11/14/06 17:43	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	4.1	1	11/10/06 00:00	11/14/06 17:43	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	4.1	1	11/10/06 00:00	11/14/06 17:43	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	4.1	1	11/10/06 00:00	11/14/06 17:43	207-08-9	
Chrysene	ND	ug/kg	4.1	1	11/10/06 00:00	11/14/06 17:43	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	4.1	1	11/10/06 00:00	11/14/06 17:43	53-70-3	
Fluoranthene	ND	ug/kg	4.1	1	11/10/06 00:00	11/14/06 17:43	206-44-0	
Fluorene	ND	ug/kg	4.1	1	11/10/06 00:00	11/14/06 17:43	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	4.1	1	11/10/06 00:00	11/14/06 17:43	193-39-5	
Naphthalene	ND	ug/kg	4.1	1	11/10/06 00:00	11/14/06 17:43	91-20-3	
Phenanthrene	ND	ug/kg	4.1	1	11/10/06 00:00	11/14/06 17:43	85-01-8	
Pyrene	ND	ug/kg	4.1	1	11/10/06 00:00	11/14/06 17:43	129-00-0	
Nitrobenzene-d5 (S)	70	%	32-160	1	11/10/06 00:00	11/14/06 17:43	4165-60-0	
2-Fluorobiphenyl (S)	67	%	32-109	1	11/10/06 00:00	11/14/06 17:43	321-60-8	
Terphenyl-d14 (S)	73	%	30-139	1	11/10/06 00:00	11/14/06 17:43	1718-51-0	
8270 MSSV DRO/ORO	Analytical Method: EPA 8270 Preparation Method: EPA 3550							
TPH-ORO	ND	mg/kg	18.8	1	11/14/06 00:00	11/17/06 10:29		
TPH-DRO	ND	mg/kg	18.8	1	11/14/06 00:00	11/17/06 10:29		
Nitrobenzene-d5 (S)	61	%	22-165	1	11/14/06 00:00	11/17/06 10:29	4165-60-0	
2-Fluorobiphenyl (S)	67	%	38-167	1	11/14/06 00:00	11/17/06 10:29	321-60-8	
Terphenyl-d14 (S)	73	%	14-172	1	11/14/06 00:00	11/17/06 10:29	1718-51-0	
8260 MSV GRO and Oxygenates	Analytical Method: EPA 5035A/8260							
TPH-GRO	ND	mg/kg	0.48	1		11/14/06 15:04		
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Acetone	29.4	ug/kg	19.2	1		11/14/06 15:04	67-64-1	
Benzene	ND	ug/kg	4.8	1		11/14/06 15:04	71-43-2	
Bromobenzene	ND	ug/kg	4.8	1		11/14/06 15:04	108-86-1	
Bromochloromethane	ND	ug/kg	4.8	1		11/14/06 15:04	74-97-5	
Bromodichloromethane	ND	ug/kg	4.8	1		11/14/06 15:04	75-27-4	
Bromoform	ND	ug/kg	4.8	1		11/14/06 15:04	75-25-2	

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ANALYTICAL RESULTS

Project: GSA Bannister SI
Pace Project No.: 6015223

Sample: MW12 Lab ID: 6015223007 Collected: 11/03/06 10:40 Received: 11/03/06 17:05 Matrix: Solid

Solid results reported on dry weight basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Bromomethane	ND	ug/kg	4.8	1		11/14/06 15:04	74-83-9	
2-Butanone (MEK)	ND	ug/kg	9.6	1		11/14/06 15:04	78-93-3	
n-Butylbenzene	ND	ug/kg	4.8	1		11/14/06 15:04	104-51-8	
sec-Butylbenzene	ND	ug/kg	4.8	1		11/14/06 15:04	135-98-8	
tert-Butylbenzene	ND	ug/kg	4.8	1		11/14/06 15:04	98-06-6	
Carbon disulfide	ND	ug/kg	4.8	1		11/14/06 15:04	75-15-0	
Carbon tetrachloride	ND	ug/kg	4.8	1		11/14/06 15:04	56-23-5	
Chlorobenzene	ND	ug/kg	4.8	1		11/14/06 15:04	108-90-7	
Chloroethane	ND	ug/kg	4.8	1		11/14/06 15:04	75-00-3	
Chloroform	ND	ug/kg	4.8	1		11/14/06 15:04	67-66-3	
Chloromethane	ND	ug/kg	4.8	1		11/14/06 15:04	74-87-3	
2-Chlorotoluene	ND	ug/kg	4.8	1		11/14/06 15:04	95-49-8	
4-Chlorotoluene	ND	ug/kg	4.8	1		11/14/06 15:04	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	4.8	1		11/14/06 15:04	96-12-8	
Dibromochloromethane	ND	ug/kg	4.8	1		11/14/06 15:04	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	4.8	1		11/14/06 15:04	106-93-4	
Dibromomethane	ND	ug/kg	4.8	1		11/14/06 15:04	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	4.8	1		11/14/06 15:04	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	4.8	1		11/14/06 15:04	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	4.8	1		11/14/06 15:04	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	4.8	1		11/14/06 15:04	75-71-8	
1,1-Dichloroethane	ND	ug/kg	4.8	1		11/14/06 15:04	75-34-3	
1,2-Dichloroethane	ND	ug/kg	4.8	1		11/14/06 15:04	107-06-2	
1,2-Dichloroethene (Total)	ND	ug/kg	4.8	1		11/14/06 15:04	540-59-0	
1,1-Dichloroethene	ND	ug/kg	4.8	1		11/14/06 15:04	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	4.8	1		11/14/06 15:04	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	4.8	1		11/14/06 15:04	156-60-5	
1,2-Dichloropropane	ND	ug/kg	4.8	1		11/14/06 15:04	78-87-5	
1,3-Dichloropropane	ND	ug/kg	4.8	1		11/14/06 15:04	142-28-9	
2,2-Dichloropropane	ND	ug/kg	4.8	1		11/14/06 15:04	594-20-7	
1,1-Dichloropropene	ND	ug/kg	4.8	1		11/14/06 15:04	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	4.8	1		11/14/06 15:04	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	4.8	1		11/14/06 15:04	10061-02-6	
Ethylbenzene	ND	ug/kg	4.8	1		11/14/06 15:04	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	4.8	1		11/14/06 15:04	87-68-3	
2-Hexanone	ND	ug/kg	19.2	1		11/14/06 15:04	591-78-6	
Isopropylbenzene (Cumene)	ND	ug/kg	4.8	1		11/14/06 15:04	98-82-8	
p-Isopropyltoluene	ND	ug/kg	4.8	1		11/14/06 15:04	99-87-6	
Methylene chloride	ND	ug/kg	4.8	1		11/14/06 15:04	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	9.6	1		11/14/06 15:04	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	4.8	1		11/14/06 15:04	1634-04-4	
Naphthalene	ND	ug/kg	9.6	1		11/14/06 15:04	91-20-3	
n-Propylbenzene	ND	ug/kg	4.8	1		11/14/06 15:04	103-65-1	
Styrene	ND	ug/kg	4.8	1		11/14/06 15:04	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	4.8	1		11/14/06 15:04	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	4.8	1		11/14/06 15:04	79-34-5	

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ANALYTICAL RESULTS

Project: GSA Bannister SI
Pace Project No.: 6015223

Sample: MW12 Lab ID: 6015223007 Collected: 11/03/06 10:40 Received: 11/03/06 17:05 Matrix: Solid

Solid results reported on dry weight basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Tetrachloroethene	ND	ug/kg	4.8	1		11/14/06 15:04	127-18-4	
Toluene	ND	ug/kg	4.8	1		11/14/06 15:04	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	4.8	1		11/14/06 15:04	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	4.8	1		11/14/06 15:04	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	4.8	1		11/14/06 15:04	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	4.8	1		11/14/06 15:04	79-00-5	
Trichloroethene	ND	ug/kg	4.8	1		11/14/06 15:04	79-01-6	
Trichlorofluoromethane	ND	ug/kg	4.8	1		11/14/06 15:04	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	4.8	1		11/14/06 15:04	96-18-4	
1,2,4-Trimethylbenzene	ND	ug/kg	4.8	1		11/14/06 15:04	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	4.8	1		11/14/06 15:04	108-67-8	
Vinyl chloride	ND	ug/kg	4.8	1		11/14/06 15:04	75-01-4	
Xylene (Total)	ND	ug/kg	4.8	1		11/14/06 15:04	1330-20-7	
Dibromofluoromethane (S)	51	%	82-118	1		11/14/06 15:04	1868-53-7	1e
Toluene-d8 (S)	105	%	88-114	1		11/14/06 15:04	2037-26-5	
4-Bromofluorobenzene (S)	107	%	78-117	1		11/14/06 15:04	460-00-4	
1,2-Dichloroethane-d4 (S)	127	%	79-129	1		11/14/06 15:04	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	20.1	%	0.10	1		11/14/06 00:00		

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QUALITY CONTROL DATA

Project: GSA Bannister SI
Pace Project No.: 6015223

QC Batch: MPRP/2989 Analysis Method: EPA 6010
QC Batch Method: EPA 3050 Analysis Description: 6010 MET
Associated Lab Samples: 6015223005, 6015223006, 6015223007

METHOD BLANK: 123545
Associated Lab Samples: 6015223005, 6015223006, 6015223007

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Arsenic	mg/kg	ND	1.0	
Barium	mg/kg	ND	1.0	
Cadmium	mg/kg	ND	0.50	
Chromium	mg/kg	ND	0.50	
Lead	mg/kg	ND	0.50	
Selenium	mg/kg	ND	1.5	

LABORATORY CONTROL SAMPLE: 123546

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/kg	50	48.4	97	80-120	
Barium	mg/kg	50	51.8	104	80-120	
Cadmium	mg/kg	50	51.8	104	80-120	
Chromium	mg/kg	50	51.9	104	80-120	
Lead	mg/kg	50	52.4	105	80-120	
Selenium	mg/kg	50	51.6	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 123547 123548

Parameter	Units	6015351001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	mg/kg	ND	590	595	541	546	92	92	75-125			
Barium	mg/kg	271	590	595	969	936	118	112	75-125			
Cadmium	mg/kg	ND	590	595	596	592	101	99	75-125			
Chromium	mg/kg	27.9	590	595	620	610	100	98	75-125			
Lead	mg/kg	33.6	590	595	589	591	94	94	75-125			
Selenium	mg/kg	ND	590	595	543	558	91	93	75-125			

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QUALITY CONTROL DATA

Project: GSA Bannister SI
Pace Project No.: 6015223

QC Batch: MSV/5787 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV 5035A Volatile Organics
Associated Lab Samples: 6015223001, 6015223002

METHOD BLANK: 123690
Associated Lab Samples: 6015223001, 6015223002

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	5.0	
1,1,1-Trichloroethane	ug/kg	ND	5.0	
1,1,2,2-Tetrachloroethane	ug/kg	ND	5.0	
1,1,2-Trichloroethane	ug/kg	ND	5.0	
1,1-Dichloroethane	ug/kg	ND	5.0	
1,1-Dichloroethene	ug/kg	ND	5.0	
1,1-Dichloropropene	ug/kg	ND	5.0	
1,2,3-Trichlorobenzene	ug/kg	ND	5.0	
1,2,3-Trichloropropane	ug/kg	ND	5.0	
1,2,4-Trichlorobenzene	ug/kg	ND	5.0	
1,2,4-Trimethylbenzene	ug/kg	ND	5.0	
1,2-Dibromo-3-chloropropane	ug/kg	ND	5.0	
1,2-Dibromoethane (EDB)	ug/kg	ND	5.0	
1,2-Dichlorobenzene	ug/kg	ND	5.0	
1,2-Dichloroethane	ug/kg	ND	5.0	
1,2-Dichloroethene (Total)	ug/kg	ND	5.0	
1,2-Dichloropropane	ug/kg	ND	5.0	
1,3,5-Trimethylbenzene	ug/kg	ND	5.0	
1,3-Dichlorobenzene	ug/kg	ND	5.0	
1,3-Dichloropropane	ug/kg	ND	5.0	
1,4-Dichlorobenzene	ug/kg	ND	5.0	
2,2-Dichloropropane	ug/kg	ND	5.0	
2-Butanone (MEK)	ug/kg	ND	10.0	
2-Chlorotoluene	ug/kg	ND	5.0	
2-Hexanone	ug/kg	ND	20.0	
4-Chlorotoluene	ug/kg	ND	5.0	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	10.0	
Acetone	ug/kg	ND	20.0	
Benzene	ug/kg	ND	5.0	
Bromobenzene	ug/kg	ND	5.0	
Bromochloromethane	ug/kg	ND	5.0	
Bromodichloromethane	ug/kg	ND	5.0	
Bromoform	ug/kg	ND	5.0	
Bromomethane	ug/kg	ND	5.0	
Carbon disulfide	ug/kg	ND	5.0	
Carbon tetrachloride	ug/kg	ND	5.0	
Chlorobenzene	ug/kg	ND	5.0	
Chloroethane	ug/kg	ND	5.0	
Chloroform	ug/kg	ND	5.0	
Chloromethane	ug/kg	ND	5.0	
cis-1,2-Dichloroethene	ug/kg	ND	5.0	
cis-1,3-Dichloropropene	ug/kg	ND	5.0	
Dibromochloromethane	ug/kg	ND	5.0	

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QUALITY CONTROL DATA

Project: GSA Bannister SI
Pace Project No.: 6015223

METHOD BLANK: 123690

Associated Lab Samples: 6015223001, 6015223002

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Dibromomethane	ug/kg	ND	5.0	
Dichlorodifluoromethane	ug/kg	ND	5.0	
Ethylbenzene	ug/kg	ND	5.0	
Hexachloro-1,3-butadiene	ug/kg	ND	5.0	
Isopropylbenzene (Cumene)	ug/kg	ND	5.0	
Methyl-tert-butyl ether	ug/kg	ND	5.0	
Methylene chloride	ug/kg	ND	5.0	
n-Butylbenzene	ug/kg	ND	5.0	
n-Propylbenzene	ug/kg	ND	5.0	
Naphthalene	ug/kg	ND	10.0	
p-Isopropyltoluene	ug/kg	ND	5.0	
sec-Butylbenzene	ug/kg	ND	5.0	
Styrene	ug/kg	ND	5.0	
tert-Butylbenzene	ug/kg	ND	5.0	
Tetrachloroethene	ug/kg	ND	5.0	
Toluene	ug/kg	ND	5.0	
trans-1,2-Dichloroethene	ug/kg	ND	5.0	
trans-1,3-Dichloropropene	ug/kg	ND	5.0	
Trichloroethene	ug/kg	ND	5.0	
Trichlorofluoromethane	ug/kg	ND	5.0	
Vinyl chloride	ug/kg	ND	5.0	
Xylene (Total)	ug/kg	ND	5.0	
1,2-Dichloroethane-d4 (S)	%	100	79-129	
4-Bromofluorobenzene (S)	%	99	78-117	
Dibromofluoromethane (S)	%	98	82-118	
Toluene-d8 (S)	%	97	88-114	

LABORATORY CONTROL SAMPLE: 123691

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	50	55.3	111	89-122	
1,1,1-Trichloroethane	ug/kg	50	53.5	107	80-131	
1,1,2,2-Tetrachloroethane	ug/kg	50	53.8	108	66-128	
1,1,2-Trichloroethane	ug/kg	50	55.7	111	82-126	
1,1-Dichloroethane	ug/kg	50	52.5	105	78-127	
1,1-Dichloroethene	ug/kg	50	50.7	101	65-144	
1,1-Dichloropropene	ug/kg	50	55.2	110	82-128	
1,2,3-Trichlorobenzene	ug/kg	50	50.2	100	73-135	
1,2,3-Trichloropropane	ug/kg	50	47.5	95	72-121	
1,2,4-Trichlorobenzene	ug/kg	50	49.2	98	68-135	
1,2,4-Trimethylbenzene	ug/kg	50	49.3	99	70-127	
1,2-Dibromo-3-chloropropane	ug/kg	50	50.8	102	71-131	
1,2-Dibromoethane (EDB)	ug/kg	50	58.1	116	88-119	
1,2-Dichlorobenzene	ug/kg	50	51.4	103	82-122	
1,2-Dichloroethane	ug/kg	50	54.5	109	86-120	

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QUALITY CONTROL DATA

Project: GSA Bannister SI
Pace Project No.: 6015223

LABORATORY CONTROL SAMPLE: 123691

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethene (Total)	ug/kg	100	106	106	82-125	
1,2-Dichloropropane	ug/kg	50	55.0	110	78-124	
1,3,5-Trimethylbenzene	ug/kg	50	49.4	99	74-125	
1,3-Dichlorobenzene	ug/kg	50	48.1	96	76-122	
1,3-Dichloropropane	ug/kg	50	51.7	103	81-125	
1,4-Dichlorobenzene	ug/kg	50	48.5	97	77-120	
2,2-Dichloropropane	ug/kg	50	51.5	103	76-129	
2-Butanone (MEK)	ug/kg	100	98.5	99	68-135	
2-Chlorotoluene	ug/kg	50	52.3	105	81-125	
2-Hexanone	ug/kg	100	108	108	64-138	
4-Chlorotoluene	ug/kg	50	48.7	97	72-125	
4-Methyl-2-pentanone (MIBK)	ug/kg	100	103	103	74-132	
Acetone	ug/kg	100	90.8	91	65-119	
Benzene	ug/kg	50	54.9	110	81-124	
Bromobenzene	ug/kg	50	52.6	105	82-130	
Bromochloromethane	ug/kg	50	59.8	120	88-122	
Bromodichloromethane	ug/kg	50	55.7	111	88-126	
Bromoform	ug/kg	50	49.6	99	76-122	
Bromomethane	ug/kg	50	42.9	86	62-137	
Carbon disulfide	ug/kg	100	98.4	98	49-140	
Carbon tetrachloride	ug/kg	50	55.4	111	77-132	
Chlorobenzene	ug/kg	50	51.8	104	86-120	
Chloroethane	ug/kg	50	50.6	101	67-128	
Chloroform	ug/kg	50	48.5	97	84-116	
Chloromethane	ug/kg	50	41.0	82	41-127	
cis-1,2-Dichloroethene	ug/kg	50	50.3	101	84-120	
cis-1,3-Dichloropropene	ug/kg	50	55.2	110	85-123	
Dibromochloromethane	ug/kg	50	57.3	115	86-127	
Dibromomethane	ug/kg	50	59.1	118	89-121	
Dichlorodifluoromethane	ug/kg	50	34.5	69	14-129	
Ethylbenzene	ug/kg	50	52.9	106	85-122	
Hexachloro-1,3-butadiene	ug/kg	50	56.4	113	78-133	
Isopropylbenzene (Cumene)	ug/kg	50	48.7	97	76-117	
Methyl-tert-butyl ether	ug/kg	50	50.8	102	73-110	
Methylene chloride	ug/kg	50	51.1	102	70-120	
n-Butylbenzene	ug/kg	50	49.4	99	70-132	
n-Propylbenzene	ug/kg	50	49.7	99	76-125	
Naphthalene	ug/kg	50	51.0	102	59-146	
p-Isopropyltoluene	ug/kg	50	50.1	100	73-123	
sec-Butylbenzene	ug/kg	50	51.1	102	77-127	
Styrene	ug/kg	50	53.8	108	84-125	
tert-Butylbenzene	ug/kg	50	44.8	90	71-130	
Tetrachloroethene	ug/kg	50	52.7	105	79-133	
Toluene	ug/kg	50	53.6	107	83-120	
trans-1,2-Dichloroethene	ug/kg	50	56.2	112	73-136	
trans-1,3-Dichloropropene	ug/kg	50	55.2	110	81-125	
Trichloroethene	ug/kg	50	51.4	103	90-124	
Trichlorofluoromethane	ug/kg	50	46.9	94	60-147	

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QUALITY CONTROL DATA

Project: GSA Bannister SI
Pace Project No.: 6015223

LABORATORY CONTROL SAMPLE: 123691

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Vinyl chloride	ug/kg	50	44.3	89	48-137	
Xylene (Total)	ug/kg	150	159	106	85-119	
1,2-Dichloroethane-d4 (S)	%			100	79-129	
4-Bromofluorobenzene (S)	%			99	78-117	
Dibromofluoromethane (S)	%			105	82-118	
Toluene-d8 (S)	%			105	88-114	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 125376 125377

Parameter	Units	6015284016 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,1-Dichloroethane	ug/kg	ND	57.1	55.5	57.2	57.4	100	103	50-136	0	25	
Benzene	ug/kg	ND	57.1	55.5	62.8	58.1	110	105	46-138	8	25	
Chlorobenzene	ug/kg	ND	57.1	55.5	55.8	53.7	98	97	24-137	4	27	
Toluene	ug/kg	ND	57.1	55.5	57.3	55.7	100	100	34-142	3	26	
Trichloroethene	ug/kg	ND	57.1	55.5	59.4	62.7	104	113	33-141	5	25	
1,2-Dichloroethane-d4 (S)	%						98	98	79-129			
4-Bromofluorobenzene (S)	%						105	100	78-117			
Dibromofluoromethane (S)	%						98	103	82-118			
Toluene-d8 (S)	%						101	99	88-114			

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QUALITY CONTROL DATA

Project: GSA Bannister SI
Pace Project No.: 6015223

QC Batch: OEXT/4521 Analysis Method: EPA 8270 by SIM
QC Batch Method: EPA 3550 Analysis Description: 8270 MSSV PAH by SIM
Associated Lab Samples: 6015223005, 6015223006, 6015223007

METHOD BLANK: 124374
Associated Lab Samples: 6015223005, 6015223006, 6015223007

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Acenaphthene	ug/kg	ND	3.3	
Acenaphthylene	ug/kg	ND	3.3	
Anthracene	ug/kg	ND	3.3	
Benzo(a)anthracene	ug/kg	ND	3.3	
Benzo(a)pyrene	ug/kg	ND	3.3	
Benzo(b)fluoranthene	ug/kg	ND	3.3	
Benzo(g,h,i)perylene	ug/kg	ND	3.3	
Benzo(k)fluoranthene	ug/kg	ND	3.3	
Chrysene	ug/kg	ND	3.3	
Dibenz(a,h)anthracene	ug/kg	ND	3.3	
Fluoranthene	ug/kg	ND	3.3	
Fluorene	ug/kg	ND	3.3	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	3.3	
Naphthalene	ug/kg	ND	3.3	
Phenanthrene	ug/kg	ND	3.3	
Pyrene	ug/kg	ND	3.3	
2-Fluorobiphenyl (S)	%	74	32-109	
Nitrobenzene-d5 (S)	%	78	32-160	
Terphenyl-d14 (S)	%	78	30-139	

LABORATORY CONTROL SAMPLE: 124375

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Acenaphthene	ug/kg	33.3	20.9	63	56-107	
Acenaphthylene	ug/kg	33.3	21.6	65	55-114	
Anthracene	ug/kg	33.3	19.9	60	45-125	
Benzo(a)anthracene	ug/kg	33.3	22.1	66	56-119	
Benzo(a)pyrene	ug/kg	33.3	20.7	62	55-116	
Benzo(b)fluoranthene	ug/kg	33.3	23.1	69	46-142	
Benzo(g,h,i)perylene	ug/kg	33.3	24.0	72	36-129	
Benzo(k)fluoranthene	ug/kg	33.3	22.7	68	52-134	
Chrysene	ug/kg	33.3	21.3	64	56-116	
Dibenz(a,h)anthracene	ug/kg	33.3	23.6	71	41-134	
Fluoranthene	ug/kg	33.3	22.5	68	56-119	
Fluorene	ug/kg	33.3	21.1	63	60-109	
Indeno(1,2,3-cd)pyrene	ug/kg	33.3	26.3	79	33-135	
Naphthalene	ug/kg	33.3	20.8	62	58-107	
Phenanthrene	ug/kg	33.3	20.2	61	62-111	2e
Pyrene	ug/kg	33.3	23.4	70	53-117	
2-Fluorobiphenyl (S)	%			70	32-109	
Nitrobenzene-d5 (S)	%			74	32-160	

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QUALITY CONTROL DATA

Project: GSA Bannister SI
Pace Project No.: 6015223

LABORATORY CONTROL SAMPLE: 124375

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Terphenyl-d14 (S)	%			73	30-139	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 124376 124377

Parameter	Units	6015055012 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Acenaphthene	ug/kg	ND	42.6	42.5	28.6	27.5	67	65	26-125	4	24	
Acenaphthylene	ug/kg	ND	42.6	42.5	30.2	27.0	71	64	42-111	11	23	
Anthracene	ug/kg	ND	42.6	42.5	28.6	27.8	67	65	34-123	3	31	
Benzo(a)anthracene	ug/kg	ND	42.6	42.5	31.9	29.8	75	70	33-127	7	45	
Benzo(a)pyrene	ug/kg	ND	42.6	42.5	26.3	27.0	62	64	33-132	3	42	
Benzo(b)fluoranthene	ug/kg	ND	42.6	42.5	33.6	30.5	79	72	43-121	10	44	
Benzo(g,h,i)perylene	ug/kg	ND	42.6	42.5	32.0	30.7	75	72	21-140	4	37	
Benzo(k)fluoranthene	ug/kg	ND	42.6	42.5	32.1	30.7	75	72	21-165	5	35	
Chrysene	ug/kg	ND	42.6	42.5	30.9	31.0	73	73	23-132	0	39	
Dibenz(a,h)anthracene	ug/kg	ND	42.6	42.5	30.3	31.5	71	74	27-134	4	30	
Fluoranthene	ug/kg	ND	42.6	42.5	38.5	34.1	85	74	27-134	12	39	
Fluorene	ug/kg	ND	42.6	42.5	30.7	27.5	72	65	40-112	11	38	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	42.6	42.5	34.8	36.8	82	87	21-138	6	32	
Naphthalene	ug/kg	ND	42.6	42.5	27.8	27.5	65	65	31-134	1	39	
Phenanthrene	ug/kg	ND	42.6	42.5	30.5	30.5	65	65	29-145	0	44	
Pyrene	ug/kg	ND	42.6	42.5	35.9	34.5	84	81	19-141	4	43	
2-Fluorobiphenyl (S)	%						70	67	32-109			
Nitrobenzene-d5 (S)	%						75	71	32-160			
Terphenyl-d14 (S)	%						72	75	30-139			

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QUALITY CONTROL DATA

Project: GSA Bannister SI
Pace Project No.: 6015223

QC Batch: MSV/5824 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV 5035A Volatile Organics
Associated Lab Samples: 6015223003, 6015223004

METHOD BLANK: 124601
Associated Lab Samples: 6015223003, 6015223004

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	5.0	
1,1,1-Trichloroethane	ug/kg	ND	5.0	
1,1,2,2-Tetrachloroethane	ug/kg	ND	5.0	
1,1,2-Trichloroethane	ug/kg	ND	5.0	
1,1-Dichloroethane	ug/kg	ND	5.0	
1,1-Dichloroethene	ug/kg	ND	5.0	
1,1-Dichloropropene	ug/kg	ND	5.0	
1,2,3-Trichlorobenzene	ug/kg	ND	5.0	
1,2,3-Trichloropropane	ug/kg	ND	5.0	
1,2,4-Trichlorobenzene	ug/kg	ND	5.0	
1,2,4-Trimethylbenzene	ug/kg	ND	5.0	
1,2-Dibromo-3-chloropropane	ug/kg	ND	5.0	
1,2-Dibromoethane (EDB)	ug/kg	ND	5.0	
1,2-Dichlorobenzene	ug/kg	ND	5.0	
1,2-Dichloroethane	ug/kg	ND	5.0	
1,2-Dichloroethene (Total)	ug/kg	ND	5.0	
1,2-Dichloropropane	ug/kg	ND	5.0	
1,3,5-Trimethylbenzene	ug/kg	ND	5.0	
1,3-Dichlorobenzene	ug/kg	ND	5.0	
1,3-Dichloropropane	ug/kg	ND	5.0	
1,4-Dichlorobenzene	ug/kg	ND	5.0	
2,2-Dichloropropane	ug/kg	ND	5.0	
2-Butanone (MEK)	ug/kg	ND	10.0	
2-Chlorotoluene	ug/kg	ND	5.0	
2-Hexanone	ug/kg	ND	20.0	
4-Chlorotoluene	ug/kg	ND	5.0	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	10.0	
Acetone	ug/kg	ND	20.0	
Benzene	ug/kg	ND	5.0	
Bromobenzene	ug/kg	ND	5.0	
Bromochloromethane	ug/kg	ND	5.0	
Bromodichloromethane	ug/kg	ND	5.0	
Bromoform	ug/kg	ND	5.0	
Bromomethane	ug/kg	ND	5.0	
Carbon disulfide	ug/kg	ND	5.0	
Carbon tetrachloride	ug/kg	ND	5.0	
Chlorobenzene	ug/kg	ND	5.0	
Chloroethane	ug/kg	ND	5.0	
Chloroform	ug/kg	ND	5.0	
Chloromethane	ug/kg	ND	5.0	
cis-1,2-Dichloroethene	ug/kg	ND	5.0	
cis-1,3-Dichloropropene	ug/kg	ND	5.0	
Dibromochloromethane	ug/kg	ND	5.0	

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QUALITY CONTROL DATA

Project: GSA Bannister SI
Pace Project No.: 6015223

METHOD BLANK: 124601

Associated Lab Samples: 6015223003, 6015223004

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Dibromomethane	ug/kg	ND	5.0	
Dichlorodifluoromethane	ug/kg	ND	5.0	
Ethylbenzene	ug/kg	ND	5.0	
Hexachloro-1,3-butadiene	ug/kg	ND	5.0	
Isopropylbenzene (Cumene)	ug/kg	ND	5.0	
Methyl-tert-butyl ether	ug/kg	ND	5.0	
Methylene chloride	ug/kg	ND	5.0	
n-Butylbenzene	ug/kg	ND	5.0	
n-Propylbenzene	ug/kg	ND	5.0	
Naphthalene	ug/kg	ND	10.0	
p-Isopropyltoluene	ug/kg	ND	5.0	
sec-Butylbenzene	ug/kg	ND	5.0	
Styrene	ug/kg	ND	5.0	
tert-Butylbenzene	ug/kg	ND	5.0	
Tetrachloroethene	ug/kg	ND	5.0	
Toluene	ug/kg	ND	5.0	
trans-1,2-Dichloroethene	ug/kg	ND	5.0	
trans-1,3-Dichloropropene	ug/kg	ND	5.0	
Trichloroethene	ug/kg	ND	5.0	
Trichlorofluoromethane	ug/kg	ND	5.0	
Vinyl chloride	ug/kg	ND	5.0	
Xylene (Total)	ug/kg	ND	5.0	
1,2-Dichloroethane-d4 (S)	%	102	79-129	
4-Bromofluorobenzene (S)	%	98	78-117	
Dibromofluoromethane (S)	%	103	82-118	
Toluene-d8 (S)	%	101	88-114	

LABORATORY CONTROL SAMPLE: 124602

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	50	57.0	114	89-122	
1,1,1-Trichloroethane	ug/kg	50	57.2	114	80-131	
1,1,2,2-Tetrachloroethane	ug/kg	50	52.2	104	66-128	
1,1,2-Trichloroethane	ug/kg	50	53.0	106	82-126	
1,1-Dichloroethane	ug/kg	50	49.6	99	78-127	
1,1-Dichloroethene	ug/kg	50	54.4	109	65-144	
1,1-Dichloropropene	ug/kg	50	56.2	112	82-128	
1,2,3-Trichlorobenzene	ug/kg	50	57.3	115	73-135	
1,2,3-Trichloropropane	ug/kg	50	50.1	100	72-121	
1,2,4-Trichlorobenzene	ug/kg	50	58.5	117	68-135	
1,2,4-Trimethylbenzene	ug/kg	50	52.8	106	70-127	
1,2-Dibromo-3-chloropropane	ug/kg	50	53.6	107	71-131	
1,2-Dibromoethane (EDB)	ug/kg	50	57.3	115	88-119	
1,2-Dichlorobenzene	ug/kg	50	53.8	108	82-122	
1,2-Dichloroethane	ug/kg	50	54.1	108	86-120	

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QUALITY CONTROL DATA

Project: GSA Bannister SI
Pace Project No.: 6015223

LABORATORY CONTROL SAMPLE: 124602

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethene (Total)	ug/kg	100	102	102	82-125	
1,2-Dichloropropane	ug/kg	50	53.4	107	78-124	
1,3,5-Trimethylbenzene	ug/kg	50	52.0	104	74-125	
1,3-Dichlorobenzene	ug/kg	50	52.7	105	76-122	
1,3-Dichloropropane	ug/kg	50	52.6	105	81-125	
1,4-Dichlorobenzene	ug/kg	50	51.6	103	77-120	
2,2-Dichloropropane	ug/kg	50	56.5	113	76-129	
2-Butanone (MEK)	ug/kg	100	88.9	89	68-135	
2-Chlorotoluene	ug/kg	50	55.8	112	81-125	
2-Hexanone	ug/kg	100	98.1	98	64-138	
4-Chlorotoluene	ug/kg	50	52.5	105	72-125	
4-Methyl-2-pentanone (MIBK)	ug/kg	100	96.4	96	74-132	
Acetone	ug/kg	100	84.3	84	65-119	
Benzene	ug/kg	50	54.3	109	81-124	
Bromobenzene	ug/kg	50	53.5	107	82-130	
Bromochloromethane	ug/kg	50	54.7	109	86-122	
Bromodichloromethane	ug/kg	50	58.0	116	88-126	
Bromoform	ug/kg	50	52.2	104	76-122	
Bromomethane	ug/kg	50	50.1	100	62-137	
Carbon disulfide	ug/kg	100	98.3	98	49-140	
Carbon tetrachloride	ug/kg	50	58.1	116	77-132	
Chlorobenzene	ug/kg	50	53.1	106	86-120	
Chloroethane	ug/kg	50	50.4	101	67-128	
Chloroform	ug/kg	50	50.2	100	84-116	
Chloromethane	ug/kg	50	42.2	84	41-127	
cis-1,2-Dichloroethene	ug/kg	50	49.9	100	84-120	
cis-1,3-Dichloropropene	ug/kg	50	57.7	115	85-123	
Dibromochloromethane	ug/kg	50	58.9	118	88-127	
Dibromomethane	ug/kg	50	58.9	118	89-121	
Dichlorodifluoromethane	ug/kg	50	37.1	74	14-129	
Ethylbenzene	ug/kg	50	54.3	109	85-122	
Hexachloro-1,3-butadiene	ug/kg	50	61.9	124	78-133	
Isopropylbenzene (Cumene)	ug/kg	50	49.6	99	76-117	
Methyl-tert-butyl ether	ug/kg	50	47.2	94	73-110	
Methylene chloride	ug/kg	50	49.8	100	70-120	
n-Butylbenzene	ug/kg	50	55.4	111	70-132	
n-Propylbenzene	ug/kg	50	54.0	108	76-125	
Naphthalene	ug/kg	50	56.0	112	59-146	
p-Isopropyltoluene	ug/kg	50	53.2	106	73-123	
sec-Butylbenzene	ug/kg	50	53.7	107	77-127	
Styrene	ug/kg	50	55.3	111	84-125	
tert-Butylbenzene	ug/kg	50	49.3	99	71-130	
Tetrachloroethene	ug/kg	50	58.1	116	79-133	
Toluene	ug/kg	50	53.7	107	83-120	
trans-1,2-Dichloroethene	ug/kg	50	52.6	105	73-136	
trans-1,3-Dichloropropene	ug/kg	50	56.3	113	81-125	
Trichloroethene	ug/kg	50	52.9	106	90-124	
Trichlorofluoromethane	ug/kg	50	51.5	103	60-147	

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QUALITY CONTROL DATA

Project: GSA Bannister SI
Pace Project No.: 6015223

LABORATORY CONTROL SAMPLE: 124602

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Vinyl chloride	ug/kg	50	47.4	95	48-137	
Xylene (Total)	ug/kg	150	159	106	85-119	
1,2-Dichloroethane-d4 (S)	%			97	79-129	
4-Bromofluorobenzene (S)	%			102	78-117	
Dibromofluoromethane (S)	%			104	82-118	
Toluene-d8 (S)	%			102	88-114	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 125260 125261

Parameter	Units	6015328001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,1-Dichloroethane	ug/kg	ND	65.7	65.1	64.7	63.8	99	98	50-136	1	25	
Benzene	ug/kg	ND	65.7	65.1	66.8	65.6	102	101	46-138	2	25	
Chlorobenzene	ug/kg	ND	65.7	65.1	54.5	57.1	83	88	24-137	5	27	
Toluene	ug/kg	ND	65.7	65.1	63.2	63.3	90	91	34-142	0	26	
Trichloroethene	ug/kg	ND	65.7	65.1	58.2	62.3	89	96	33-141	7	25	
1,2-Dichloroethane-d4 (S)	%						94	89	79-129			
4-Bromofluorobenzene (S)	%						98	95	78-117			
Dibromofluoromethane (S)	%						96	95	82-118			
Toluene-d8 (S)	%						96	94	88-114			

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QUALITY CONTROL DATA

Project: GSA Bannister SI
Pace Project No.: 6015223

QC Batch: OEXT/4559 — Analysis Method: EPA 8270
QC Batch Method: EPA 3550 — Analysis Description: 8270 MSSV TPH ORO
Associated Lab Samples: 6015223005, 6015223006, 6015223007

METHOD BLANK: 125596
Associated Lab Samples: 6015223005, 6015223006, 6015223007

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
TPH-DRO	mg/kg	ND	15.0	
TPH-ORO	mg/kg	ND	15.0	
2-Fluorobiphenyl (S)	%	79	38-167	
Nitrobenzene-d5 (S)	%	82	22-185	
Terphenyl-d14 (S)	%	71	14-172	

LABORATORY CONTROL SAMPLE: 125597

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
TPH-DRO	mg/kg	667	711	107	49-135	
2-Fluorobiphenyl (S)	%			121	38-167	
Nitrobenzene-d5 (S)	%			327	22-185	3e
Terphenyl-d14 (S)	%			83	14-172	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 125598 125599

Parameter	Units	6015223005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
TPH-DRO	mg/kg	ND	842	843	980	869	116	103	29-153	12	31	
2-Fluorobiphenyl (S)	%						127	122	38-167			
Nitrobenzene-d5 (S)	%						335	319	22-185			3e
Terphenyl-d14 (S)	%						81	80	14-172			

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QUALITY CONTROL DATA

Project: GSA Bannister SI
Pace Project No.: 6015223

QC Batch: PMST/1798 Analysis Method: ASTM D2974-87
QC Batch Method: ASTM D2974-87 Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 6015223001, 6015223002, 6015223003, 6015223004, 6015223005, 6015223006, 6015223007

METHOD BLANK: 125604
Associated Lab Samples: 6015223001, 6015223002, 6015223003, 6015223004, 6015223005, 6015223006, 6015223007

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Percent Moisture	%	ND	0.10	

SAMPLE DUPLICATE: 125605

Parameter	Units	6015223001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	19.1	18.4	4	20	

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QUALITY CONTROL DATA

Project: GSA Bannister SI
Pace Project No.: 6015223

QC Batch: MSV/5866 — Analysis Method: EPA 8260
QC Batch Method: EPA 8260 — Analysis Description: 8260 MSV 5035A Volatile Organics
Associated Lab Samples: 6015223005, 6015223006, 6015223007

METHOD BLANK: 125695
Associated Lab Samples: 6015223005, 6015223006, 6015223007

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	5.0	
1,1,1-Trichloroethane	ug/kg	ND	5.0	
1,1,2,2-Tetrachloroethane	ug/kg	ND	5.0	
1,1,2-Trichloroethane	ug/kg	ND	5.0	
1,1-Dichloroethane	ug/kg	ND	5.0	
1,1-Dichloroethene	ug/kg	ND	5.0	
1,1-Dichloropropene	ug/kg	ND	5.0	
1,2,3-Trichlorobenzene	ug/kg	ND	5.0	
1,2,3-Trichloropropane	ug/kg	ND	5.0	
1,2,4-Trichlorobenzene	ug/kg	ND	5.0	
1,2,4-Trimethylbenzene	ug/kg	ND	5.0	
1,2-Dibromo-3-chloropropane	ug/kg	ND	5.0	
1,2-Dibromoethane (EDB)	ug/kg	ND	5.0	
1,2-Dichlorobenzene	ug/kg	ND	5.0	
1,2-Dichloroethane	ug/kg	ND	5.0	
1,2-Dichloroethene (Total)	ug/kg	ND	5.0	
1,2-Dichloropropane	ug/kg	ND	5.0	
1,3,5-Trimethylbenzene	ug/kg	ND	5.0	
1,3-Dichlorobenzene	ug/kg	ND	5.0	
1,3-Dichloropropane	ug/kg	ND	5.0	
1,4-Dichlorobenzene	ug/kg	ND	5.0	
2,2-Dichloropropane	ug/kg	ND	5.0	
2-Butanone (MEK)	ug/kg	ND	10.0	
2-Chlorotoluene	ug/kg	ND	5.0	
2-Hexanone	ug/kg	ND	20.0	
4-Chlorotoluene	ug/kg	ND	5.0	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	10.0	
Acetone	ug/kg	ND	20.0	
Benzene	ug/kg	ND	5.0	
Bromobenzene	ug/kg	ND	5.0	
Bromochloromethane	ug/kg	ND	5.0	
Bromodichloromethane	ug/kg	ND	5.0	
Bromoform	ug/kg	ND	5.0	
Bromomethane	ug/kg	ND	5.0	
Carbon disulfide	ug/kg	ND	5.0	
Carbon tetrachloride	ug/kg	ND	5.0	
Chlorobenzene	ug/kg	ND	5.0	
Chloroethane	ug/kg	ND	5.0	
Chloroform	ug/kg	ND	5.0	
Chloromethane	ug/kg	ND	5.0	
cis-1,2-Dichloroethene	ug/kg	ND	5.0	
cis-1,3-Dichloropropene	ug/kg	ND	5.0	
Dibromochloromethane	ug/kg	ND	5.0	

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QUALITY CONTROL DATA

Project: GSA Bannister SI
Pace Project No.: 6015223

METHOD BLANK: 125695

Associated Lab Samples: 6015223005, 6015223006, 6015223007

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Dibromomethane	ug/kg	ND	5.0	
Dichlorodifluoromethane	ug/kg	ND	5.0	
Ethylbenzene	ug/kg	ND	5.0	
Hexachloro-1,3-butadiene	ug/kg	ND	5.0	
Isopropylbenzene (Cumene)	ug/kg	ND	5.0	
Methyl-tert-butyl ether	ug/kg	ND	5.0	
Methylene chloride	ug/kg	ND	5.0	
n-Butylbenzene	ug/kg	ND	5.0	
n-Propylbenzene	ug/kg	ND	5.0	
Naphthalene	ug/kg	ND	10.0	
p-Isopropyltoluene	ug/kg	ND	5.0	
sec-Butylbenzene	ug/kg	ND	5.0	
Styrene	ug/kg	ND	5.0	
tert-Butylbenzene	ug/kg	ND	5.0	
Tetrachloroethene	ug/kg	ND	5.0	
Toluene	ug/kg	ND	5.0	
trans-1,2-Dichloroethene	ug/kg	ND	5.0	
trans-1,3-Dichloropropene	ug/kg	ND	5.0	
Trichloroethene	ug/kg	ND	5.0	
Trichlorofluoromethane	ug/kg	ND	5.0	
Vinyl chloride	ug/kg	ND	5.0	
Xylene (Total)	ug/kg	ND	5.0	
1,2-Dichloroethane-d4 (S)	%	108	79-129	
4-Bromofluorobenzene (S)	%	102	78-117	
Dibromofluoromethane (S)	%	102	82-118	
Toluene-d8 (S)	%	100	88-114	

LABORATORY CONTROL SAMPLE: 125696

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	50	49.5	99	89-122	
1,1,1-Trichloroethane	ug/kg	50	53.4	107	80-131	
1,1,2,2-Tetrachloroethane	ug/kg	50	46.7	93	66-128	
1,1,2-Trichloroethane	ug/kg	50	51.4	103	82-126	
1,1-Dichloroethane	ug/kg	50	44.5	89	78-127	
1,1-Dichloroethene	ug/kg	50	50.3	101	65-144	
1,1-Dichloropropene	ug/kg	50	49.8	100	82-128	
1,2,3-Trichlorobenzene	ug/kg	50	52.7	105	73-135	
1,2,3-Trichloropropane	ug/kg	50	43.5	87	72-121	
1,2,4-Trichlorobenzene	ug/kg	50	53.3	107	68-135	
1,2,4-Trimethylbenzene	ug/kg	50	48.2	96	70-127	
1,2-Dibromo-3-chloropropane	ug/kg	50	48.0	96	71-131	
1,2-Dibromoethane (EDB)	ug/kg	50	51.8	104	88-119	
1,2-Dichlorobenzene	ug/kg	50	49.5	99	82-122	
1,2-Dichloroethane	ug/kg	50	51.6	103	88-120	

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QUALITY CONTROL DATA

Project: GSA Bannister SI
Pace Project No.: 6015223

LABORATORY CONTROL SAMPLE: 125696

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethene (Total)	ug/kg	100	93.2	93	82-125	
1,2-Dichloropropane	ug/kg	50	46.8	94	78-124	
1,3,5-Trimethylbenzene	ug/kg	50	47.3	95	74-125	
1,3-Dichlorobenzene	ug/kg	50	46.2	92	76-122	
1,3-Dichloropropane	ug/kg	50	48.2	96	81-125	
1,4-Dichlorobenzene	ug/kg	50	46.9	94	77-120	
2,2-Dichloropropane	ug/kg	50	54.5	109	76-129	
2-Butanone (MEK)	ug/kg	100	87.6	88	68-135	
2-Chlorotoluene	ug/kg	50	49.7	99	81-125	
2-Hexanone	ug/kg	100	91.8	92	64-138	
4-Chlorotoluene	ug/kg	50	47.0	94	72-125	
4-Methyl-2-pentanone (MIBK)	ug/kg	100	91.8	92	74-132	
Acetone	ug/kg	100	80.6	81	65-119	
Benzene	ug/kg	50	45.8	92	81-124	
Bromobenzene	ug/kg	50	50.6	101	82-130	
Bromochloromethane	ug/kg	50	48.8	98	86-122	
Bromodichloromethane	ug/kg	50	53.9	108	88-128	
Bromoform	ug/kg	50	48.7	97	76-122	
Bromomethane	ug/kg	50	39.8	80	62-137	
Carbon disulfide	ug/kg	100	88.6	89	49-140	
Carbon tetrachloride	ug/kg	50	53.7	107	77-132	
Chlorobenzene	ug/kg	50	48.5	97	86-120	
Chloroethane	ug/kg	50	41.6	83	67-126	
Chloroform	ug/kg	50	46.0	92	84-116	
Chloromethane	ug/kg	50	32.6	65	41-127	
cis-1,2-Dichloroethene	ug/kg	50	45.2	90	84-120	
cis-1,3-Dichloropropene	ug/kg	50	52.1	104	85-123	
Dibromochloromethane	ug/kg	50	51.8	104	86-127	
Dibromomethane	ug/kg	50	52.6	105	89-121	
Dichlorodifluoromethane	ug/kg	50	26.6	53	14-129	
Ethylbenzene	ug/kg	50	51.0	102	85-122	
Hexachloro-1,3-butadiene	ug/kg	50	57.5	115	78-133	
Isopropylbenzene (Cumene)	ug/kg	50	47.3	95	76-117	
Methyl-tert-butyl ether	ug/kg	50	43.4	87	73-110	
Methylene chloride	ug/kg	50	42.7	85	70-120	
n-Butylbenzene	ug/kg	50	49.4	99	70-132	
n-Propylbenzene	ug/kg	50	48.2	96	76-125	
Naphthalene	ug/kg	50	50.3	101	59-146	
p-Isopropyltoluene	ug/kg	50	48.3	97	73-123	
sec-Butylbenzene	ug/kg	50	50.1	100	77-127	
Styrene	ug/kg	50	49.7	99	84-125	
tert-Butylbenzene	ug/kg	50	42.9	86	71-130	
Tetrachloroethene	ug/kg	50	52.8	106	79-133	
Toluene	ug/kg	50	48.8	98	83-120	
trans-1,2-Dichloroethene	ug/kg	50	48.0	96	73-136	
trans-1,3-Dichloropropene	ug/kg	50	51.4	103	81-125	
Trichloroethene	ug/kg	50	47.7	95	90-124	
Trichlorofluoromethane	ug/kg	50	49.1	98	60-147	

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QUALITY CONTROL DATA

Project: GSA Bannister SI
Pace Project No.: 6015223

LABORATORY CONTROL SAMPLE: 125696

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Vinyl chloride	ug/kg	50	36.8	74	48-137	
Xylene (Total)	ug/kg	150	149	100	85-119	
1,2-Dichloroethane-d4 (S)	%			106	79-129	
4-Bromofluorobenzene (S)	%			106	78-117	
Dibromofluoromethane (S)	%			103	82-118	
Toluene-d8 (S)	%			102	88-114	

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QUALITY CONTROL DATA

Project: GSA Bannister SI
Pace Project No.: 6015223

QC Batch: MSV/5869 Analysis Method: EPA 5035A/8260
QC Batch Method: EPA 5035A/8260 Analysis Description: 8260 MSV GRO and Oxygenates
Associated Lab Samples: 6015223005, 6015223006, 6015223007

METHOD BLANK: 125706
Associated Lab Samples: 6015223005, 6015223006, 6015223007

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
TPH-GRO	mg/kg	ND	0.50	

LABORATORY CONTROL SAMPLE: 125707

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
TPH-GRO	mg/kg	4	3.2	81	70-121	

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QUALIFIERS

Project: GSA Bannister SI
Pace Project No.: 6015223

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

ANALYTE QUALIFIERS

1e	Surrogate recovery outside control limits due to Sodium Phosphate Tribasic preservative.
2e	Analyte recovery in the laboratory control sample (LCS) was below QC limits. Batch accepted based on valid recovery of analyte in MS/MSD.
3e	Surrogate recovery outside QC limits due to DRO/ORO concentration.

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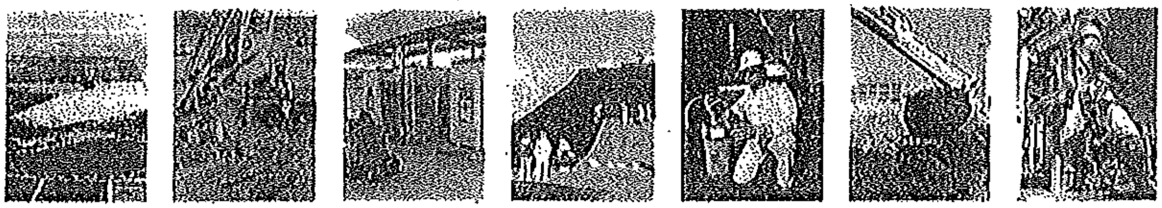
QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: GSA Bannister SI
Pace Project No.: 6015223

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
6015223005	MW10	EPA 3050	MPRP/2969	EPA 6010	ICP/2684
6015223006	MW11	EPA 3050	MPRP/2969	EPA 6010	ICP/2684
6015223007	MW12	EPA 3050	MPRP/2969	EPA 6010	ICP/2684
6015223001	MW5-1	EPA 8260	MSV/5787		
6015223002	MW5-2	EPA 8260	MSV/5787		
6015223005	MW10	EPA 3550	OEXT/4521	EPA 8270 by SIM	MSSV/2282
6015223006	MW11	EPA 3550	OEXT/4521	EPA 8270 by SIM	MSSV/2282
6015223007	MW12	EPA 3550	OEXT/4521	EPA 8270 by SIM	MSSV/2282
6015223003	MW4-1	EPA 8260	MSV/5824		
6015223004	MW4-2	EPA 8260	MSV/5824		
6015223005	MW10	EPA 3550	OEXT/4559	EPA 8270	MSSV/2297
6015223006	MW11	EPA 3550	OEXT/4559	EPA 8270	MSSV/2297

SCS ENGINEERS



ADDENDUM 1 TO PRELIMINARY ASSESSMENT/SITE INSPECTION REPORT

High Voltage Line Investigation and Vapor Intrusion Assessment

BANNISTER FEDERAL COMPLEX
1500 East Bannister Road
Kansas City, Missouri

Presented to:

U.S. GENERAL SERVICES ADMINISTRATION
1500 E. Bannister Road, Room 2101
Kansas City, Missouri 64131-3088

Presented by:

SCS ENGINEERS
10975 El Monte, Suite 100
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May 2008
File No. 02200070.57

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1.0 INTRODUCTION

SCS Engineers has been contracted by our client, the U.S. General Services Administration (GSA), to conduct a combined Preliminary Assessment/Site Inspection (PA/SI) of the GSA-managed property at the Bannister Federal Complex (BFC), 1500 East Bannister Road, Kansas City, Missouri. The BFC is located within the city limits, 12 miles south of downtown Kansas City, Missouri, on Bannister Road. The complex is comprised of 300 acres used by a number of Federal agencies. Approximately half of the Complex is used by the U.S. Department of Energy (DOE) as the Kansas City Plant (KCP), which is operated by Honeywell Federal Manufacturing and Technologies to manufacture and procure electrical, electromechanical, mechanical, and plastic components. The DOE KCP property is not addressed in the PA/SI.

The *Site Inspection Work Plan, GSA-Managed Property, Bannister Federal Complex* (SI Work Plan) was prepared in October 2006, and field work was completed in 2006 and 2007. The *Preliminary Assessment/Site Inspection, GSA-Managed Property, Bannister Federal Complex, Kansas City, Missouri* (PA/SI Report) was prepared in August 2007. Please refer to that report for site background information, potential sources and pathways investigated, and sampling locations and chemical analytical results from the SI. This addendum was prepared to present the results of additional investigation activities conducted at the site to address recommendations of the PA/SI Report.

1.1 PURPOSE OF THE ADDITIONAL SAMPLING

The PA/SI Report made the following recommendations:

- On the basis of the preliminary screening of concentrations of chlorinated volatile organic compounds (CVOCs) detected in soil and groundwater in the vicinity of Building 50, it is recommended that assessment of the indoor inhalation of vapor emissions pathway be conducted following U.S. Environmental Protection Agency (EPA) protocols. Neither Building 50 nor Building 52 has a basement. However, the source of the contamination in this area appears to be next to or under Building 50, and a sensitive population (children) occupies Building 52. Air monitoring is recommended in both these buildings. The need for further source delineation in the area of Building 50 should be assessed after the results of the air monitoring have been reviewed.

- Although the surface water pathway is no longer complete, it is recommended that the source of the contaminants entering Manhole C30R-01 be identified, if possible. No source material was identified on site during extensive hydraulic probing and test pit excavation in the vicinity of the former underground storage tanks (USTs), Building 50, the former unit substation, and the storm sewer itself. The only indication of a potential source in this vicinity was the relatively high concentration of polychlorinated biphenyls (PCBs) detected in a soil sample in one of the probes (SB104) along the abandoned high voltage line south of the former unit substation. Additional investigation of this line is recommended.

Addendum Number 1 to the Site Inspection Work Plan (SI WP Addendum 1) was prepared in October 2007 to specify the sampling activities to be performed to address these recommendations. This addendum presents the results of those sampling activities.

2.0 VAPOR INTRUSION ASSESSMENT

The vapor intrusion assessment consisted of two air monitoring events conducted in Buildings 50 and 52 on January 27, 2008, and March 12, 2008. Except as noted in this section, monitoring was conducted as specified in SI WP Addendum 1.

2.1 VAPOR INTRUSION ASSESSMENT RATIONALE AND APPROACH

Because concentrations of CVOCs detected in some soil and groundwater samples in the vicinity of Building 50 exceeded screening levels for vapor intrusion (which are based on residential exposure), it was determined that further assessment of this pathway was required. The highest concentrations of CVOCs were detected in groundwater at the northeast corner of Building 50, and the source is suspected to be in this area (possibly under the building). On the basis of groundwater samples collected during the PA/SI, the groundwater beneath and adjacent to Building 52 does not contain concentrations of CVOCs above the MRBCA vapor intrusion screening levels. However, that building is located within 100 feet of the groundwater containing CVOCs in excess of the screening levels and is occupied by a sensitive population.

The vapor intrusion evaluation was conducted on Buildings 50 and 52 by conducting air monitoring at several locations inside each building, as well as outside to evaluate background conditions. Indoor air monitoring was selected as the best method to evaluate vapor intrusion in this instance, primarily because the buildings are currently occupied, and a direct measure of indoor air concentrations was desired for risk evaluation. Similarly, although neither building is a residence, it was considered appropriate to follow EPA, rather than Occupational Safety and Health Act (OSHA) protocols for indoor air monitoring, because of the sensitive population present in Building 52.

The buildings are slab-on-grade construction, so occupied subsurface areas were not a concern. In addition, the buildings both have commercial heating, ventilation, and air conditioning (HVAC) systems, so seasonal variations were unlikely to affect sample results. On the basis of building use, interference from other sources of CVOCs was also not anticipated in the areas to be sampled.

Other chemicals stored and/or used in the buildings were identified at the time air monitoring was conducted. In addition, building occupants were notified of the proposed sampling and requested to refrain from activities that could interfere with air sampling results for 48 hours prior to and during sampling.

2.2 AIR SAMPLING PROTOCOL AND DEVIATIONS FROM SI WP ADDENDUM 1

Indoor air monitoring was conducted by collecting two samples in each building over an 8-hour working day using Summa canisters. Monitoring and analysis were conducted using EPA method TO-15 selective ion monitoring (SIM) for trichloroethylene (TCE), cis-1,2 dichloroethylene (CDCE), trans-1,2 dichloroethylene (TDCE), and vinyl chloride (VC). The method detection limits for these compounds by this method are well below the following Missouri Risk-Based Corrective Action (MRBCA) target levels (TLs) for residential indoor air: 0.0128 mg/m^3 for TCE, 0.0209 mg/m^3 for CDCE, 0.0418 mg/m^3 for TDCE, and 0.00291 mg/m^3 for VC.

Sampling was performed in accordance with *Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air – Second Edition*, EPA/625/R-96010b, January 1999, and the AirToxics' *Canister and Tedlar Bags Guide to Air Sampling and Analysis.* Cleaned and 100 percent Certified in Train canisters were provided by AirToxics Ltd, along with all necessary fittings, gauges and pre-set flow controllers.

The locations of the canisters during the first sampling round are shown on Figure 1. During the first round, two samples and a duplicate were collected in Building 50 and two samples were collected in Building 52. One background sample was collected near the inlet to the HVAC system on the roof of Building 50. One of the two samples in Building 50 was located in the receptionist's cubicle on the northeast corner of the building. This is the portion of the building closest to the locations where the highest concentrations of CVOCs have been detected in groundwater samples. The duplicate sample was also collected at this location. The samplers in Building 52 were set up in the two play rooms on the south side of the building that are the closest to the CVOC groundwater plume.

The vapor intrusion assessment was conducted in accordance with the SI WP Addendum 1, with the following exceptions:

1. Only one exterior background sample was collected. Since the HVAC system inlets for each building are located in close proximity on the building roofs, background samples for each inlet did not seem warranted.

2. The blank canister was eliminated, since according to AirToxics' *Canister and Tedlar Bags Guide to Air Sampling and Analysis*, it would not provide the desired information regarding potential cross contamination of samples during field work or transport.

3. A second round of air monitoring was conducted in Building 52 after the concentration of TCE detected in one room exceeded the MRBCA TLs for indoor air.

The second round of sampling followed the protocols specified in SI WP Addendum 1. However, no duplicate or ambient background sample was collected, and samples were only collected in Building 52. The locations of the samples collected during the second sampling round are also shown of Figure 1. Two of the samples were collected in the same locations as the original samples. The remaining samples were distributed in child-occupied rooms throughout the daycare center. Photographs of all the sample locations are included in Appendix A.

A decision was made after the second round of samples had been collected to analyze the samples for perchloroethylene (PCE), as well as the other four CVOCs. Although PCE is not a contaminant of concern in the groundwater, it was thought it might be associated with the TCE detected during the first round of sampling in Building 52. PCE is used in dry cleaning and other processes and can produce TCE as a degradation product.

An extensive review of products used in Building 52 was performed before and during the second round of sampling to identify any potential sources of TCE. This review is discussed in Section 2.4.

2.3 VAPOR INTRUSION SAMPLE RESULTS

The concentrations of compounds detected during the two rounds of sampling are summarized in Table 1. The complete laboratory data packages are included in Appendix B.

Table 1. Vapor Intrusion Sample Results Summary

	Sample Round 1								
	52-1	52-2	50-1	50-1D	50-2	50-3			MRCBA TL
Compound									
TCE	**110**	2.2	4.2	4.2	5.0	0.51			12.8
	Sample Round 2								
	52-3	52-4	52-5	52-6	52-7	52-8	52-9	52-10	
TCE	<0.18	0.18	0.50	0.49	<0.20	<0.20	<0.18	<0.20	12.8
PCE	0.48	0.58	0.63	0.65	0.47	0.56	0.46	0.51	4.27

Notes:
1. All concentrations in micrograms per meter cubed (µg/m3).
2. PCE was not analyzed in the first round of samples.
3. Concentration in bold exceeded MRBCA TL.

No CDCE, TDCE, or VC was detected in any of the samples during either sampling round. TCE was detected in all the samples during the first round, with the lowest concentration detected in the exterior ambient air sample. The highest concentration of TCE detected was in sample 52-1, which was collected in the play room on the southeast corner of Building 52. This concentration (110 µg/m^3) exceeded the MRBCA TL of 12.8 µg/m^3. TCE was detected in only three of the eight samples collected in Building 52 during the second sampling round. All detected concentrations were an order of magnitude or more lower than the concentrations detected during the first round in either building, and all were below the MRBCA TL. PCE was detected in all the samples, but at concentrations below the MRBCA TL.

2.4 SURVEY OF PRODUCTS IN USE

A review of products in use in Building 52 was performed before and during the second round of air sampling. To the extent possible, each product was researched to identify the chemical components. The objective of this review was to identify any potential sources of TCE. According to the Agency for Toxic Substances and Disease Registry's *Toxicological Profile for Trichloroethylene*, September 1997, TCE is used as a solvent in adhesives, lubricants, paints, varnishes, paint strippers, pesticides, and cold metal cleaners. It is also used in fabric scouring, dying, and finishing. In addition, it is used in producing polyvinyl chloride, pharmaceuticals, polychlorinated aliphatics, flame retardant chemicals, and insecticides. Consumer products found to contain TCE include typewriter correction fluids, paint remover/stripper, adhesives, spot removers, and rug cleaning fluids.

A brand name list of the products identified in Building 52 is provided in Table 2.

Table 2. Products Used in Building 52

Clorox	Goo Gone	**Abel All in One**	Ecolab UltraKlene for Dishwashers	Butcher's Percolator General Purpose Cleaner
Crayola Washable Paint	409 All Purpose Cleaner	**Abel Crystal Clear Glass Cleaner**	National Chemical Laboratories Extreme Heavy Duty Spot Cleaner	Butcher's Raindance Low Foam Neutral Floor Cleaner
Elmer's Glue All	Easy Off Oven Cleaner	**Abel Miracle Creme**	**Wind Fresh Laundry Soap**	Butchers High Noon Urethane Fortified Floor Cleaner
Baby Wipes	Glade Plug In	Comet	Sta-Flo Liquid Starch	Verticide Disinfectant Bowl Cleaner
Lysol All Purpose	Palmolive Dishwashing Liquid	RenlScent Spring Breeze Air Freshener	**Professional Contractors Mint-Clean Disinfectant Cleaner**	Limeaway
Sharpie	Odoban	Nilofresh Rug and Room Deodorizer	Butchers Speed Track Clean-Burnish Floor Cleaner	

Material Safety Data Sheets (MSDS) or technical data sheets were obtained for all products, with the exception of those identified in bold print. Neither PCE nor TCE was identified as a component in any of the products. The data sheets are included in Appendix C.

2.5 AIR DATA QUALITY REVIEW

Sampling was performed following procedures specified in the SCS Quality Assurance Plan (QAP), the SCS Kansas Office standard Quality Assurance Project Plan (QAPP), SI WP Addendum 1, *Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air – Second Edition*, EPA/625/R-96010b, January 1999, and the Air Toxics' *Canister and Tedlar Bags Guide to Air Sampling and Analysis*. Laboratory QA/QC procedures are specified in the analytical methods and in the Air Toxics, LTD QAP.

Standard data quality documentation was provided for the analytical data from this investigation. Analyses followed EPA-approved procedures and method-specific QA. Laboratory documentation included sample data summary sheets and surrogate spike, laboratory control sample (LCS), and method blank (MB) results required by the analytical method.

Data quality was reviewed for conformance with guidelines established in *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review*, 1999 to the extent applicable to volatile organic compounds in air and for the level of data quality documentation requested. The following elements were reviewed: detection limits, precision, accuracy, representativeness, completeness, holding times, MB, and LCS. As previously discussed, all detection limits were below applicable MRBCA TLs. The relative percent difference between the original sample 50-1 and the duplicate 50-1D was 0, indicating a high degree of precision, and surrogate recoveries were all within acceptable ranges, indicating a high degree of accuracy. No compounds were detected in the method blanks and the laboratory control sample results were all within acceptable ranges. All the samples were successfully collected and analyzed, so completeness was 100 percent. The samples were collected by the same personnel and analyzed by the same laboratory using the same analytical methods, so the data are considered to be comparable. All the samples were analyzed within the specified holding times. On the basis of this review, the overall quality of the data relative to the contaminants of concern is acceptable. Three minor data quality issues were noted:

- The canisters were not certified for PCE, so the laboratory could not verify if detected concentrations were false positives. Since PCE was not a contaminant of concern, and since neither it nor TCE was detected above the MRBCA TLs in the second round of sampling, the PCE results were not significant to the vapor intrusion evaluation[1].

- The laboratory commented that the chain of custody form for the second round of sampling was not signed by the field sampler. This was based on the fact that both samplers signed the form to relinquish it to the overnight courier. The laboratory interpreted this as a gap in the COC (i.e., one sampler relinquishing it to the other). The samplers have verified that they both relinquished the samples to the overnight courier. This does not affect the usability of the data.

- Sample 52-4 was shut down after 5 hours and 44 minutes, because the pressure had dropped to 4 inches at that time. Since the concentration detected in this sample is consistent with other samples and since the sample time was almost 75 percent of the planned sample time, this does affect the usability of the data.

[1] If high concentrations of both PCE and TCE had been detected, the results might have been useful in identifying the source of the contaminants.

3.0 HIGH VOLTAGE LINE INVESTIGATION

The investigation of the high voltage line was conducted as specified in SI WP Addendum 1 on October 29, 2007. The de-energizing of the line was confirmed before excavation began.

3.1 HIGH VOLTAGE LINE INVESTIGATION RATIONALE AND APPROACH

The high voltage line was investigated in a continuing attempt to identify the source of the contaminated material observed entering Manhole C30R-01. Previous soil sampling along the line using a hydraulic probe had detected a relatively high concentration of Aroclor 1260 [293 milligrams per kilogram (mg/kg)] in one location (SB104, Figure 3). The objective of this investigation was to collect a sample of material from the interior of the high voltage line conduit and to collect additional samples of soil near the conduit in the area of SB104.

3.2 HIGH VOLTAGE LINE INVESTIGATION PROTOCOL

The investigation consisted of first excavating to expose the concrete conduit encasement at a depth of 26 inches below ground surface (bgs) in the location of previous boring SB104 (Figure 3). The conduit encasement was approximately 30 inches wide and 12 inches deep and contained three conduit lines. The surrounding soil contained construction debris and soil fill, but no odor or staining of the soil was noted. Utility trenches or other structures that might serve to transport contamination were not observed in the area of the excavation. Three soil samples were collected in the excavation outside the conduit. Sample S-1 was collected above the conduit encasement at a depth of approximately 1.5 feet bgs. Samples S-2 and S-3 were collected adjacent to the top and west side of the conduit encasement, respectively.

A jack hammer was used to open the conduit encasement. No electrical lines were present and no liquid was observed in the conduits. One sample of solid material (S-4) was collected inside the conduit. One soil sample was also collected from the excavated soil for characterization for disposal. The excavation was backfilled with clean fill and sod was placed on the excavated area.

The samples were transported to Pace Laboratories by SCS personnel for analysis for PCBs by SW-846 Method 8082. There were no deviations from the planned scope of the investigation as specified in SI WP Addendum 1. Photographs taken during the investigation are included in Appendix D.

3.3 HIGH VOLTAGE LINE SAMPLE RESULTS

PCB Aroclor 1260 was detected in two of the soil samples [0.0759 milligrams per kilogram (mg/kg) in S-1 and 0.105 mg/kg in S-2] and in the sample from inside the conduit (0.804 mg/kg). However, the concentrations detected were all well below the MRBCA Default Target Level (DTL) of 2.2 mg/kg. Aroclor 1260 was also detected at a concentration of 0.406 mg/kg in the composite sample for waste characterization for disposal (S-5). The complete analytical results are included in Appendix E and waste disposal documentation is included in Appendix F.

3.4 HIGH VOLTAGE LINE DATA QUALITY

Sampling was performed following procedures specified in the SCS QAP, the SCS Kansas Office standard QAPP, and the SI WP Addendum 1. Laboratory QA/QC procedures are specified in the analytical methods and in the Pace Laboratories QAP.

Standard data quality documentation was provided for the analytical data from this investigation. Analyses followed EPA-approved procedures and method-specific QA. Laboratory documentation includes sample data summary sheets and surrogate spike, LCS, MB, and batch matrix spike (MS) and matrix spike duplicate (MSD) results required by the analytical method.

Data quality for the PCB results was reviewed for conformance with guidelines established in *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review*, 1999 to the extent applicable to the level of data quality documentation requested. The following elements were reviewed: detection limits, precision, accuracy, representativeness, completeness, holding times, MB, LCS, and MS/MSD. All PCB detection limits were below applicable MRBCA DTL, which is for total PCBs, rather than Aroclor-specific. No field or laboratory duplicate samples were collected or reported, so precision could not be evaluated. Surrogate recoveries were within acceptable ranges, with the exception of tetrachloro-m-xylene in sample S-2, indicating a high degree of accuracy. The slightly high tetrachloro-m-xylene recovery in S-2 does not affect the usability of the data.

No PCBs were detected in the method blank and the laboratory control sample results were within acceptable ranges. The MSD recovery for Aroclor 1260 and the relative percent difference between the MS and MSD results for this compound were above the acceptable ranges. However, since the LCS recoveries were within acceptable ranges, no data were qualified on the basis of the MSD results. All the samples were successfully collected and analyzed, so completeness was 100 percent. The samples were collected by the same personnel and analyzed by the same laboratory using the same analytical methods used in previous investigations at the site, so the data are considered to be comparable. All the samples were analyzed within the specified holding times. On the basis of this review, the overall quality of the data is acceptable.

4.0 CONCLUSIONS AND RECOMMENDATIONS

4.1 VAPOR INTRUSION INVESTIGATION

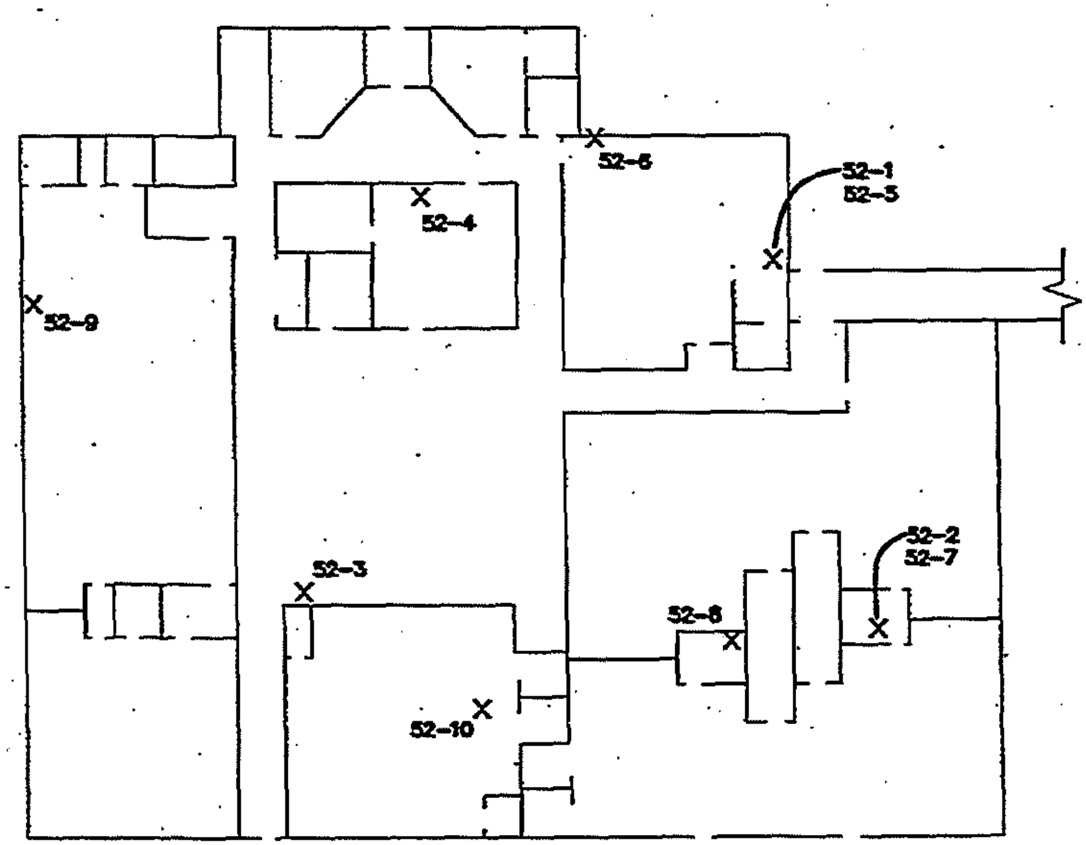
Although TCE was detected above the MRBCA TL in one air sample collected in Building 52 during the first round of sampling, neither TCE nor any of the other CVOCs analyzed was detected in any of the samples collected during the second round. Since TCE was detected only once in one room in one building that is not located directly above the groundwater plume, it is unlikely that vapor intrusion is the source of this compound. Although a review of products used in Building 52 did not identify a potential source of TCE, it is likely that the high concentration detected in sample 52-1 is associated with something that was present or used in that particular room. As discussed in Section 2.4, TCE is used in a variety of manufacturing processes and consumer products.

No further action is recommended regarding potential vapor intrusion associated with the contaminated groundwater in the vicinity of Buildings 50 and 52.

4.2 HIGH VOLTAGE LINE INVESTIGATION

The high voltage line investigation did not identify a potential source or transport mechanism for the contaminated material observed entering Manhole C30R-01. Extensive hydraulic probing and test pit excavation have been conducted in an attempt to locate this source. No further action is recommended at this time. It is recommended that additional investigation be conducted in the future, if planned demolition or construction activities would result in subsurface disturbance in the area of Building 50 or the storm sewer in Freedom Drive.

FIGURES



LEGEND

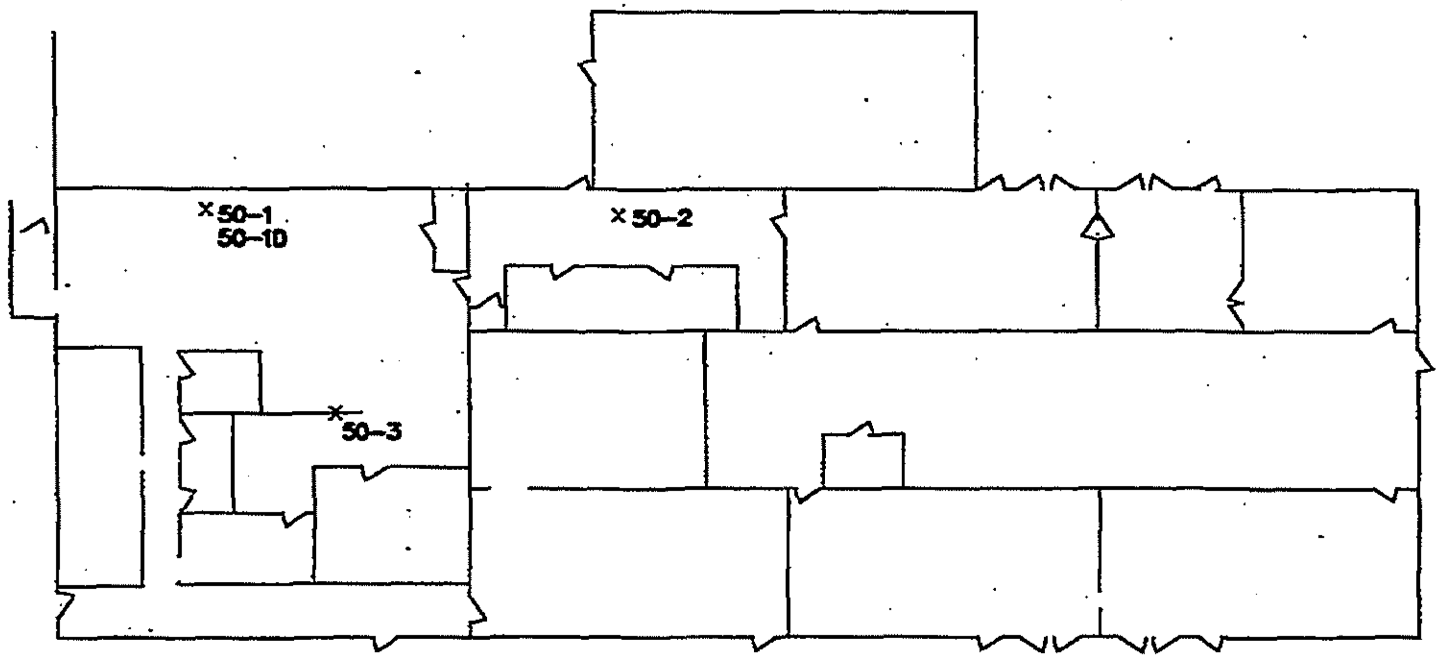
X 52-3 DENOTES SAMPLE LOCATION

NOTES:
SAMPLES 52-1 AND 52-2 COLLECTED ON 01/27/2006
REMAINING SAMPLES COLLECTED ON 03-12-2006

SCS ENGINEERS

FIGURE 1
BUILDING 52 AIR SAMPLING LOCATIONS
BANNISTER FEDERAL COMPLEX

O:\JWCS\ES\02\20007057-01\02000707057-05



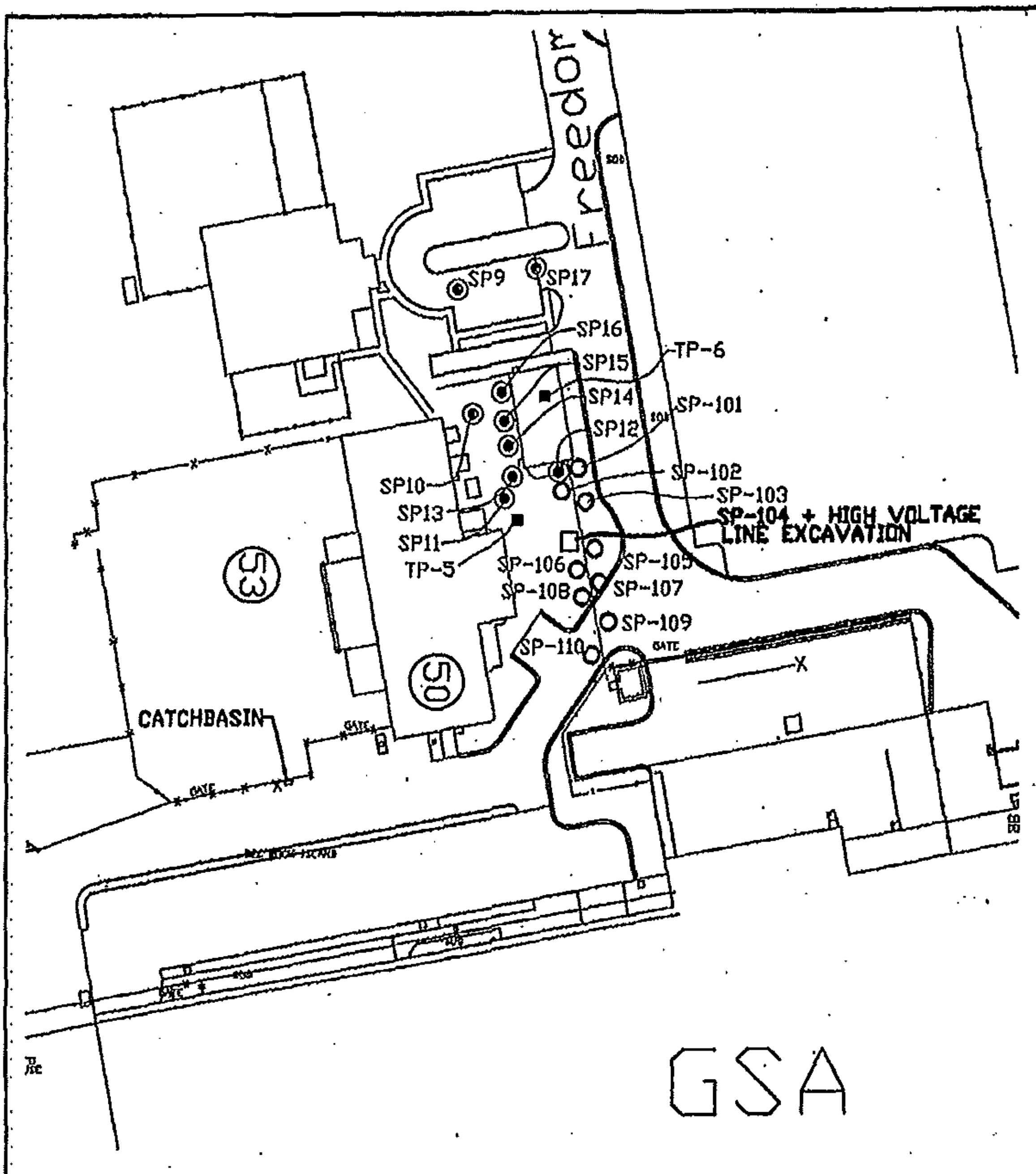
LEGEND
×52-3 DENOTES SAMPLE LOCATION

NOTES:
ALL SAMPLES COLLECTED 01/27/08
SAMPLES 50-1, 50-1D, AND 50-2 ON INTERIOR OF BUILDING
SAMPLE 50-3 ON ROOF

o:\DWGS\ES\02\20000070.57-01\02000070.57-08

SCS ENGINEERS

FIGURE 2
BUILDING 50 AIR SAMPLING LOCATIONS
BANNISTER FEDERAL COMPLEX



LEGEND

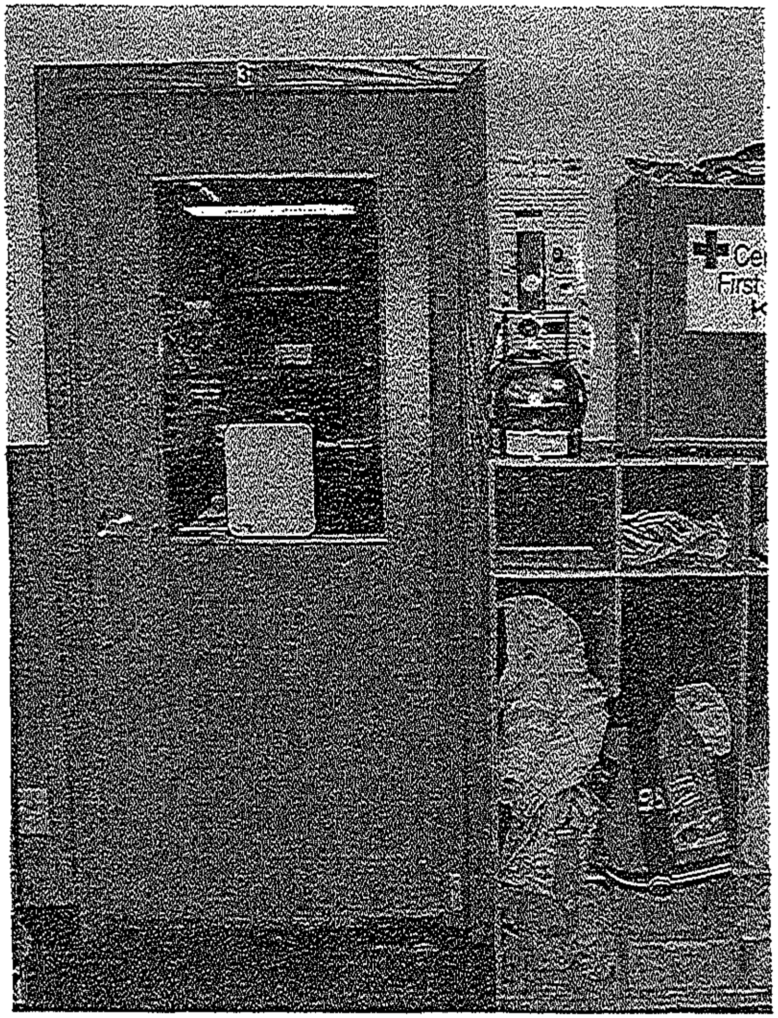
SP15	PROBE 2006
SP-206	PROBE 2007
BLDG	SOIL/SEDIMENT SAMPLE
TP-3	TEST PIT

SCS ENGINEERS DSN. BY D. ENGLISH CHK. BY D. BREVER DWN. BY B.PHILLIPS REV:	BANNISTER FEDERAL COMPLEX GSA PA/SI PROJ. NO. 02200070.57 JULY 2007	FIGURE 8 SAMPLING LOCATIONS SW BANNISTER FEDERAL COMPLEX

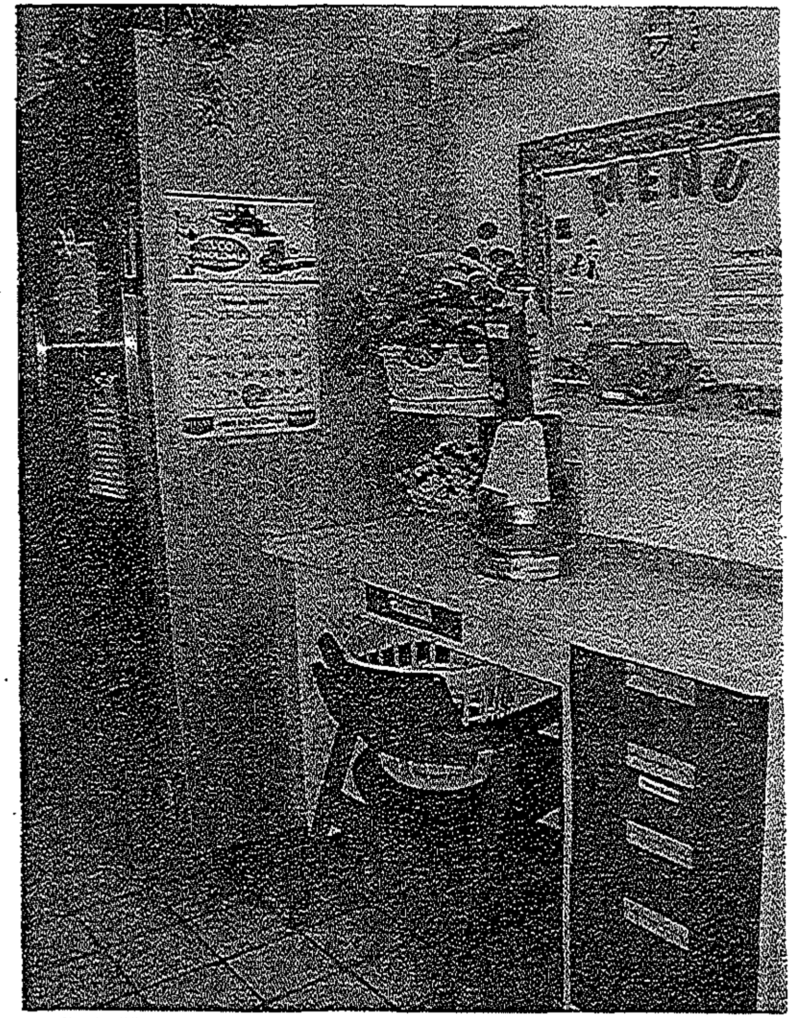
APPENDICES

APPENDIX A

AIR MONITORING PHOTOGRAPHS



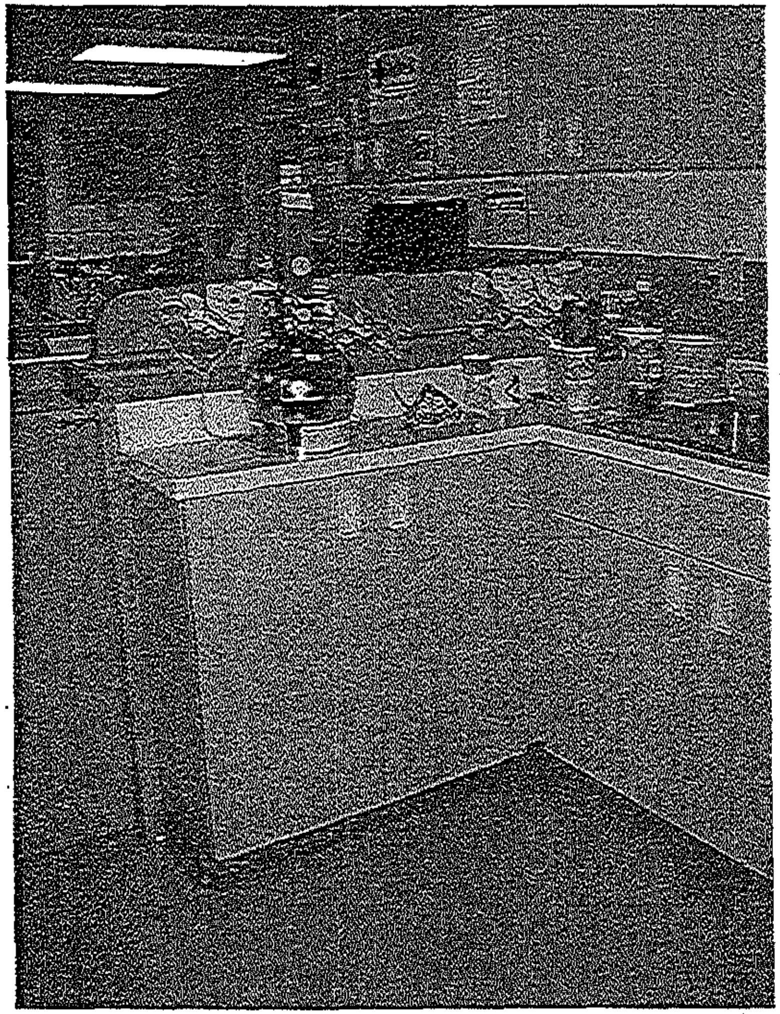
Photograph 1. Location of sample 52-3.



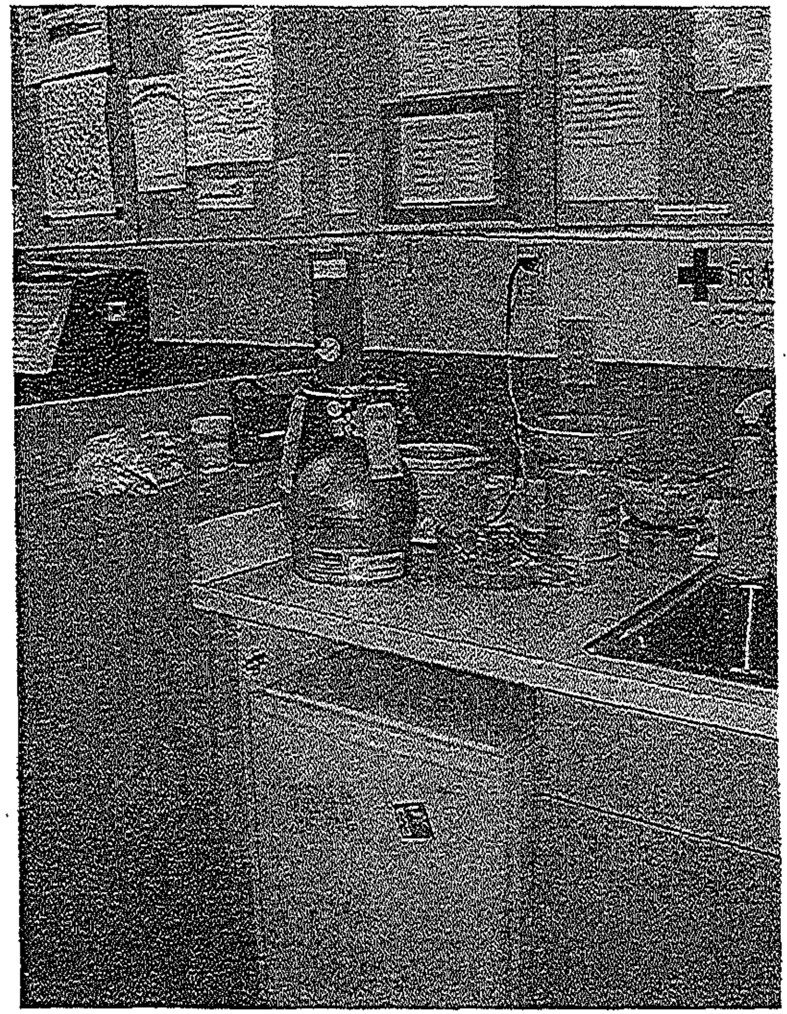
Photograph 2. Location of sample 52-4.

Photograph 3. Location of sample 52-5.

Photograph 4. Location of sample 52-6.

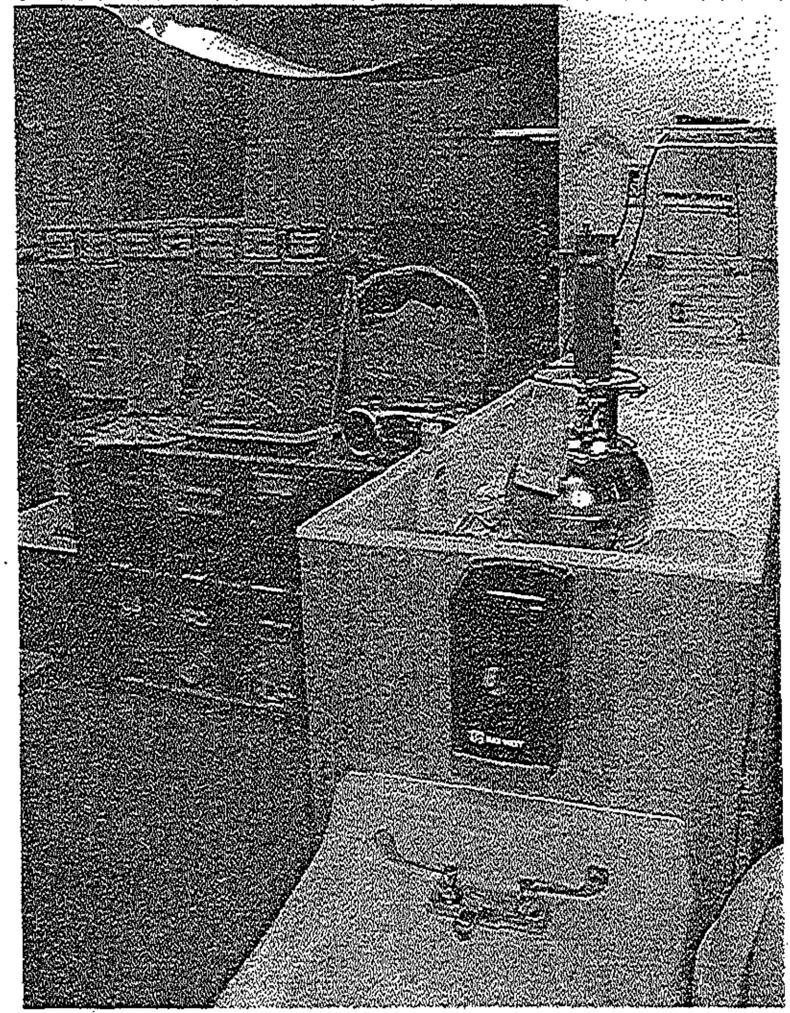


Photograph 5. Location of sample 52-7.



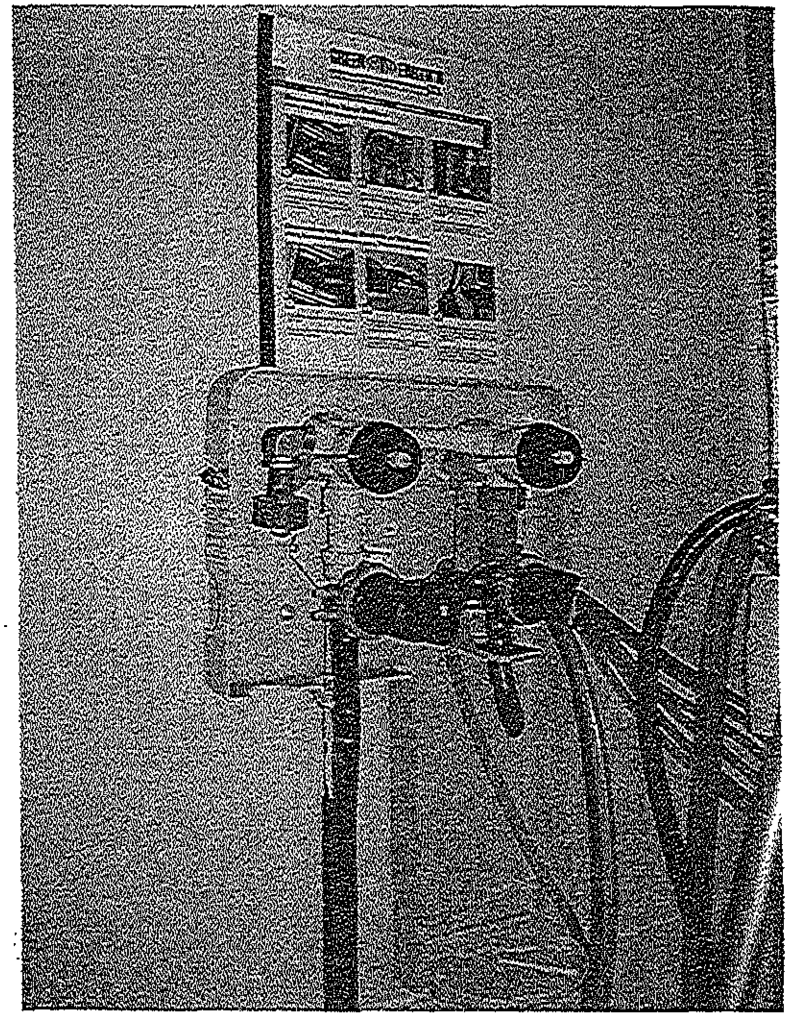
Photograph 6. Location of sample 52-8.

Photograph 7. Location of sample 52-9.



Photograph 8. Location of sample 52-10.

Photograph 9. Starch in laundry room.



Photograph 10. Meter/pump dispenser in laundry room – not functional.

Photograph 11. Laundry room in NE corner of building 52.

ENVIRONMENTAL WORK AGREEMENT

ATTACHMENT 4

STATEMENT OF WORK

For

SITE REASSESSMENT

For the

GENERAL SERVICES ADMINISTRATION-KANSAS CITY SITE (GSA-KC)
EPA CERCLIS ID #MO0470000530
RW47-95228601

I. Introduction

The GSA-KC site is located at 1500 East Bannister Road, Kansas City, Missouri. The GSA-KC site is one of many separate Superfund sites that is located at the Bannister Federal Complex (BFC). The GSA-KC site is managed by the GSA.

In May 2008, the GSA completed a combined Preliminary Assessment and Site Inspection (PA/SI) report for the GSA managed portion of the BFC. The objectives of this PA/SI include the following:

- Characterize and evaluate significant site sources.
- Characterize and evaluate significant pathways.
- Evaluate releases and targets exposed to contamination.
- Collect sufficient field data to support Hazard Ranking System (HRS) scoring and completion of an EPA Preliminary Ranking Evaluation Scope (PREscore) at a later date, if appropriate.

The conclusions and recommendations from this report are provided in the May 2008 PA/SI report.

This PA/SI report was reviewed by the Environmental Protection Agency (EPA), the Missouri Department of Natural Resources (MDNR) and the Missouri Department of Health and Senior Services (MDHSS). These regulatory reviews were conducted at different times, however, the conclusions and recommendations were generally accepted but did include requests to conduct additional groundwater monitoring to find the source of groundwater contamination and to implement a more comprehensive evaluation of the vapor intrusion pathway in Buildings 50 and 52.

Since the completion of the May 2008 PA/SI report, the recommendations from the report have not been implemented by the GSA due to fiscal restraints. The GSA and the regulatory agencies have recently come to a mutual understanding that the recommendations in the report and the additional investigation requested by the regulatory agencies need to be conducted immediately. The GSA has requested EPA to complete some of the recommendations in the PA/SI report and conduct some of the additional investigations as recommended by the regulatory agencies.

II. Objective and Scope

At the request of the GSA, EPA will conduct a Site Reassessment that will focus EPA's investigation on Buildings 50 and 52 and the general area surrounding these buildings. The objective of the Site Reassessment is to comply with the recommendations in the PA/SI report and fulfill additional requests by the regulatory agencies. The tasks to be completed at buildings 50 and 52 include indoor air and vapor intrusion sampling, groundwater sampling from existing monitoring wells, groundwater sampling from temporary monitoring wells installed by EPA, soil and soil gas sampling, outdoor air sampling and air quality monitoring.

Technical and oversight support will be provided for the installation of vapor intrusion mitigation systems in Buildings 50 and 52. The GSA will acquire a general contractor to perform the installation of the systems, but has requested that EPA provide support.

EPA will provide support to GSA in public meetings, public availability sessions, and other community relations activities during the performance period of this agreement. This support will include community relations planning, preparation of fact sheets and meeting handouts, participation in planning meetings and other activities as requested by GSA.

The Site Reassessment will be conducted in phases, with the first phase to focus on the indoor air and vapor intrusion sampling of Buildings 50 and 52. The next phase will include a subsequent indoor air and vapor intrusion sampling of these buildings to evaluate the effectiveness of the installed vapor mitigation systems and to further evaluate the indoor air quality. The next phase is expected to be performed in March 2010.

The field investigation of the soil and groundwater is expected to begin by early summer. This phase will include groundwater sampling from existing monitoring wells located around Buildings 50 and 52 as well as groundwater sampling from temporary monitoring wells installed by EPA around Buildings 50 and 52, soil and soil gas sampling, outdoor air sampling and air quality monitoring.

It is planned that several additional indoor air and vapor intrusion sampling events will be conducted for Buildings 50 and 52. These sampling events are expected to occur in July and October 2010.

III. General Task Requirements

For the purpose of this Statement of Work (SOW), the EPA and their contractor will, in accordance with applicable laws, regulations, guidance and policies, furnish fully trained personnel, services, materials, equipment, property, facilities, knowledge, and expertise to successfully complete the tasks required under this SOW. The EPA and their contractor shall ensure that any and all services or products be delivered and provided under this contract in compliance with all applicable Federal, state, and local laws, regulations, guidance and policies and any changes to those laws which become effective after the effective date of this contract.

In conducting this work the EPA and their contractor(s) are expected to propose the most appropriate and cost-effective procedures and methodologies using accepted engineering practices and controls. Throughout the performance of the work, the EPA and their contractor(s) will be responsible for performing services and providing products using the most cost-effective mix of qualified personnel applicable to meet the needs of the SOW.

For EPA and their contractor(s) to complete this work, they will require that appropriate documents are provided and that proper access is granted or obtained for those buildings and surrounding areas that will be involved in this Site Reassessment investigation.

IV. Tasks

The EPA is expected to complete the following tasks under this SOW. During the course of this work it may be necessary to either modify a task or add additional tasks. All significant changes to a task or the addition of a new task will require the acceptance of both GSA and EPA.

1. Review of appropriate reports and information that will assist EPA and their contractor(s) in the investigation activities and/or for other support.
2. Coordination with GSA personnel in the planning, scheduling and implementation of all investigation activities.
3. Completion of Quality Assurance and Project Plans (QAPPs) to include sampling plans for all separate sampling activities.
4. Conduct sub-slab and indoor air evaluations for Buildings 50 and 52. There may be up to four separate sampling events (seasonal).
5. Conduct groundwater sampling from existing monitoring wells around Buildings 50 and 52.
6. Conduct soil and soil gas investigation in the area surrounding Buildings 50 and 52.
7. Conduct an air quality evaluation around Buildings 50 and 52.
8. Technical and oversight support in the installation of vapor mitigation systems for Buildings 50 and 52.
9. Analyze the potential need for any removal actions from the soil and groundwater investigations around Buildings 50 and 52.
10. Prepare and submit to GSA a report for each major sampling event. These reports will provide a narrative of the sampling activity, maps and figures, data results and provide the findings and conclusions with any recommendations.
11. Participation in meetings and public or media events as requested by GSA.

V. Period of Performance

Period of Performance (POP) is from January 15, 2010 to September 30, 2011.

VI. GSA and EPA Primary Contacts

U. S. General Services Administrative	David Hartshorn 816-823-2227 david.hartshorn@gsa.gov
U. S. Environmental Protection Agency	Ronald King 913-551-7568 king.ronald@epa.gov
U.S. Environmental Protection Agency	Marie Rabenau 913-551-7968 rabenau.marie@epa.gov

David Hartshorn
Date: 11 MAR 2010
Safety & Environmental Coordinator
GSA

Ronald King
Date: March 12, 2010
Site Assessment Team Leader
EPA

Concur: **Ray J. Wessling, Jr.** 3/11/2010
Contracting Officer **Date**
GSA

Reimbursable Agreement Between General Services Administration (GSA) And The U.S. Environmental Protection Agency (EPA)

I. PURPOSE

This Letter of Agreement, between the U.S. General Services Administration (GSA), Heartland Region, and the U.S. Environmental Protection Agency (EPA), Region VII is to provide environmental regulatory oversight and support. This letter of agreement and supporting obligating document (referenced as Statement of Work for Site Reassessment) attached is in place to transfer GSA funds in an amount not to exceed $300,000 maximum to EPA.

Under this Agreement, GSA will issue a Statement of Work (SOW) for the tasks to be completed in conjunction with EPA (not to exceed $300,000). If the work under this agreement is anticipated to exceed $300,000 a modification to the agreement will be issued (and signed by both parties). In order for a particular SOW to become valid, the program points of contact for both GSA and EPA must agree, sign, and date the SOW. The work to be accomplished under this Agreement is associated with the Preliminary Assessment and Site Inspection Report which was completed on the GSA-managed portion of the Bannister Federal Complex, 1500 E. Bannister Road, Kansas City, Missouri and recommendations from the Missouri Department of Natural Resources to conduct additional investigations. This work includes the investigation on Buildings 50, and 52 and the general area surrounding these buildings, the technical and oversight support for the installation of vapor intrusion mitigation systems in Buildings 50 and 52 and support to GSA in public meetings, public availability sessions, and other community relations activities during the performance period of this agreement.

II. SCOPE

The period of performance is January 15, 2010 through September 30, 2011. EPA shall provide services as outlined in the SOW attached hereto. With your acceptance of this agreement; please sign both originals, keep one for your records, and return the other to the attention of Courtney Springer, Contracting Officer. GSA's technical representative for this effort will be Dave L. Hartshorn (816-823-2227).

III. POINTS OF CONTACT

EPA and GSA points of contact will work with each other to ensure that all services are provided and paid for in accordance with the terms of this agreement.

Program Points of Contact:

Agency:	GSA	EPA
Name:	Dave L. Hartshorn	Ronald E. King
Title:	Safety & Environmental Coordinator	Site Assessment Team Leader
Address:	1500 E. Bannister Road (6PME) Kansas City, MO 64131	901 N. 5th Street Kansas City, KS 66101
Telephone:	816-823-2227	913-551-7568
eMail:	david.hartshorn@gsa.gov	king.ronald@epa.gov

Fiscal Points of Contact:

Agency:	GSA	EPA
Name:	Ken McDonald	Marie Rabenau
Title:	Financial Management Specialist	Program Analyst
Address:	1500 E. Bannister Road Kansas City, MO 64131	901 N. 5th St. Kansas City, KS 66101
Telephone:	816-823-4302	913-551-7968
eMail:	kenneth.mcdonald@gsa.gov	Rabenau.Marie@epa.gov

IV. FUNDING

The following financial and authorization information serves to process this agreement. Billing will be made thru the Intra-governmental Payments and Collection System (IPAC). Billing will be processed monthly as services are received and verified. GSA's billing office information is as follows:

ALC:	47000017	TAS:	47x4542.001	DUNS:	177084642
TIN:	750814970	BOAC:	476192	ABC:	4715

Accounting Code:
PX0012158.2010.192X.P0621500.PG61.PGA21.536.06020803 NTE $300,000

V. INVOICE

BPA's Cincinnati Finance Center will bill GSA on a quarterly basis through IPAC. Approximately three working days prior to the IPAC billing, EPA Region 7 will provide an itemized cost summary to GSA for review. The cost summary shall provide sufficient detail to illustrate the cost for the type of work completed (i.e. cost of labor (number of hours worked times the labor rate), cost of contract, travel, etc...). If there is any dispute in the bill, GSA reserves its rights to charge back for any discrepancies. GSA's accounting reference number is PX0012158, and must be referenced on the IPAC billing.

VI. AUTHORITY

This agreement is entered into pursuant to the Authority of the Economy Act of 1932, as amended (31 U.S.0 1535), adheres to the Federal Acquisition Regulation (FAR) 6.002. To the best of our knowledge, the work requested will not place the EPA and its contractor in direct competition with the domestic private sector.

GSA's authority for this Agreement is 40 U.S.C. 592, Federal Building Fund Act.

VII. AUTHORIZING SIGNATURES AND DATES

General Services Administration

3/11/2010

Ray Wessling
Contracting Officer (6PMC)
GSA/PBS Heartland Region

Environmental Protection Agency

3/12/10

for Karen Sherrill
Grants Management Officer
Environmental Protection Agency

Certification of availability of funds in the amount not to exceed $300,000:

Kenneth J McDonald

Kenneth J. McDonald
Funds Certifying Official
GSA/PBS Heartland Region

3/11/2010
Date

Interagency Agreement Data Entry Form

1. Name and Address of Other Agency:

   U.S. Environmental Protection Agency, Region 7
   901 N. 5th Street
   Kansas City, Kansas 66101

2. Other Agency Project Officer (Name, Address, Telephone):

   Robert Clark
   U.S. General Services Administration
   1500 East Bannister Road
   Kansas City, Missouri 64131
   816-926-5211

3. Other Agency Authorizing Official Name/Title: **Kevin Santee, Tenant Services Branch Chief**

4. Project Title: **General Services Administration-Kansas City Site (GSA-KC)**

5. EPA Project Officer (Name, Telephone Number)
   Project Officer – Marie Rabenau – 913-551-7968
   Project Manager – Ron King – 913-551-7568

6. Project Period Start: **January 15, 2010**	Project Period End: **September 30, 2011**
7. Budget Period Start: **January 15, 2010**	Budget Period End: **September 30, 2011**

8. Statutory Authority: **CERCLA: Secs. 105(a)(4) & 115 read together with Executive Order 12580 as amended**

Type of Funds	Previous $ Amount	$ Amount This Action	Amended $ Amount
8. EPA Funds		$	$
9. EPA In-Kind Amount		$-0-	
10. Other Agency Funds		$290,650.00	
11. Other Agency In-Kind		$-0-	
12. Total Project Cost		$290,650.00	$

13. Budget Categories	Itemization This Action
a. Personnel	$100,000.00
b. Fringe Benefits	$
c. Travel	$
d. Equipment	
e. Supplies	
f. Procurement/Assistance	$150,000.00
g. Construction	
h. Other	
i. Total Direct Charges	$250,000.00
j. Indirect Costs: Rate 16.26% % Base $	$ 40,650.00
k. Total: (Other Agency Share 100%) (EPA Share 0 %)	$290,650.00

14. Is equipment authorized to be furnished by EPA or leased, purchased, or rented with EPA funds? (Attach a list of all equipment costing $1000 or more.)

■ Yes ☐ No

15. a. Are any of these funds being used on extramural agreements?

■ Yes ☐ No

b. Type of Extramural Agreement:

☐ Grant ☐ Cooperative Agreement ■ Procurement (including small purchase order)

c. Contractor/Recipient Name:	d. Total Extramural $ Amount Under This Project:	e. Percent Funded by EPA
Tetra Tech EMI	$150,000	100%

16. Funding Methods and Billing Instructions

(i) ☐ Funds-Out Agreement (Note: EPA Location Code (ALC) - 68010727)

(a) ☐ Disbursement Agreement

☐ Repayment*

☐ Monthly ☐ Quarterly ☐ Upon Completion of Work

☐ Advance**

☐ Allocation Transfer-Out***

(ii) XX Funds-In Agreement

(a) XX Reimbursement Agreement

XX Repayment ☐ Advance

(b) ☐ Allocation Transfer-In

*Request for repayment of actual costs must be itemized on SF 1081 or SF 1080 and submitted to the Financial Management Center, Cincinnati, OH 45268

**Only available for use by Federal agencies on working capital fund or with appropriate justification of need for this type of payment method. Unexpended funds at the completion of work will be returned to EPA. Quarterly cost reports will be forwarded to the Financial Management Center, EPA, Cincinnati, OH 45268.

***Used to transfer obligational authority or transfer of function between Federal agencies. Must receive prior approval by the Office of the Comptroller, Budget Division, Budget Formulation and Control Branch, EPA Management Division, PM-226-F, EPA, Washington, S.C. 20460.

F:\SF MIPR IAGs\IAG Data Entry Form.wpd

IN THE MATTER OF General Services Administration Bannister Federal Complex, Respondent
Docket No. CERCLA-07-2010-0006

CERTIFICATE OF SERVICE

I certify that a true and correct copy of the foregoing Environmental Work Agreement for Site Investigations, Removal Assessment and Response Actions was sent this day in the following manner to the addressees:

Copy hand delivered to
Attorney for Complainant:

Jim Stevens
Assistant Regional Counsel
Region 7
United States Environmental Protection Agency
901 N. 5th Street
Kansas City, Kansas 66101

Copy by Certified Mail Return Receipt to:

Courtney Springer, Project Manager
General Services Administration
1500 East Bannister Road
Kansas City, Missouri 64131

Dated: 5/3/10

Kathy Robinson

Kathy Robinson
Hearing Clerk, Region 7