B. S. B. DIVERSIFIED COMPANY, INC. MTCA
AGREED ORDER No. DE 2551

ATTACHMENTS:

1. AGREED ORDER No. DE 2551
2. BSB AO Exhibit A.pdf ?
3. ✓ BSB AO Exhibit B _FRIFS-SOW_.pdf
4. ✓ BSB AO Exhibit C (Schedule).pdf
5. ✓ BSB AO Exhibit D (CAPMIP).pdf
6. ✓ BSB AO Exhibit D (CAPMIP figures).pdf – behind "B"

✓ Dangerous Waste Mgmt. Permit

STATE OF WASHINGTON
DANGEROUS WASTE MANAGEMENT PERMIT
FOR REMEDIAL (CORRECTIVE) ACTION

Department of Ecology
Northwest Regional Office
P.O. Box 47775
Olympia, WA 98504-7775

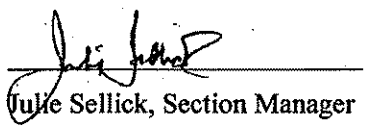
Issued in accordance with the applicable provisions of the Hazardous Waste Management Act of 1976 in Chapter 70.105 Revised Code of Washington (RCW), and the Dangerous Waste Regulations promulgated thereunder in Chapter 173-303 Washington Administrative Code (WAC).

ISSUED TO: B. S. B. Diversified Company, Inc.
565 Fifth Avenue, Fourth Floor
New York, NY 10017-2413

FOR: B. S. B. Diversified Company, Inc.
8202 South 200th Street
Kent, Washington 98032

This Permit is effective as of the effective date of Agreed Order No. DE 2551 (the BSB Agreed Order) and shall remain in effect until ten years thereafter unless modified, revoked and reissued, or terminated in accordance with WAC 173-303-830(3) and (5) or continued in accordance with WAC 173-303-806(7). Upon becoming effective, this Permit replaces Permit No. WAD 07 665 5182 which was issued jointly by the Washington State Department of Ecology and the United States Environmental Protection Agency on November 8, 1988, and became effective on December 22, 1988.

ISSUED BY: WASHINGTON STATE DEPARTMENT OF ECOLOGY



Julie Sellick, Section Manager
Department of Ecology
Hazardous Waste & Toxics Reduction Program
Northwest Regional Office

INTRODUCTION

PERMITTEE: B. S. B. Diversified Company, Inc.

I.D. Number: WAD 07 665 5182

Pursuant to Chapter 70.105 RCW, the Hazardous Waste Management Act of 1976, as amended, and regulations codified in Chapter 173-303 WAC, the Dangerous Waste Regulations, this post closure permit (Permit) is issued to BSB to conduct the remedial action work set forth in the BSB Agreed Order at the facility (Facility), as that term is defined in the BSB Agreed Order. BSB must comply with all conditions of this Permit.

Pursuant to RCW 70.105D.030(1)(d) of the Model Toxics Control Act (MTCA), the Washington State Department of Ecology (Ecology) is designated by the Washington State Legislature to carry out all State programs authorized by the United States Environmental Protection Agency (EPA) pursuant to the federal Resource Conservation and Recovery Act (RCRA), 42 U.S.C. Sec. 6901 et. seq., as amended. Ecology has authority to issue this Permit in accordance with RCW 70.105.130 and is responsible for enforcement of all conditions of this Permit. Anyone may appeal these permit conditions or decisions by Ecology to the Pollution Control Hearings Board in accordance with WAC 173-303-845.

PART I - GENERAL CONDITIONS

I.1 BSB shall comply with all requirements of WAC 173-303-810, which are hereby incorporated by reference into this Permit.

I.2. Modifications to the BSB Agreed Order shall not require a permit modification, except when required by WAC 173-303-830, Appendix I(N)(5) to incorporate a substantial change requiring public comment under WAC 173-340-600. BSB Agreed Order is not appealable to the Pollution Control Hearings Board. BSB Agreed Order may be reviewed only as provided therein and under MTCA, RCW 70.105D.060.

I.3. Compliance with the terms of this Permit does not constitute a defense to any order issued or any action brought under any other state or federal laws governing protection of public health or the environment not related to this Permit. However, compliance with the terms of this Permit does constitute a defense to any action alleging failure to comply with the applicable standards upon which this Permit is based.

I.4. Pursuant to WAC 173-303-806(6), BSB shall submit a new application for a final permit 180 days prior to the expiration date of this Permit, unless Ecology grants a later date provided that such date is not later than the expiration date of the Permit. This Permit and all its conditions will remain in effect beyond the Permit's

expiration date until Ecology has made a final permit determination if (1) BSB has submitted a timely application for a final status permit; (2) Ecology determines that the final permit application is complete as set forth in WAC 173-303-840(1)(b); and (3) Ecology has not made a final permit determination as set forth in WAC 173-303-840.

I.5. If BSB fails to comply with the terms and conditions of the expiring or expired Permit, then Ecology may take action consistent with WAC 173-303-806(7)(b). If BSB fails to submit a timely, complete application as required herein, then those permit conditions necessary to protect human health and the environment will remain in effect beyond the Permit's expiration date in accordance with WAC 173-303-815(2)(b)(ii) until Ecology terminates the conditions.

PART II - REMEDIAL (CORRECTIVE) ACTION

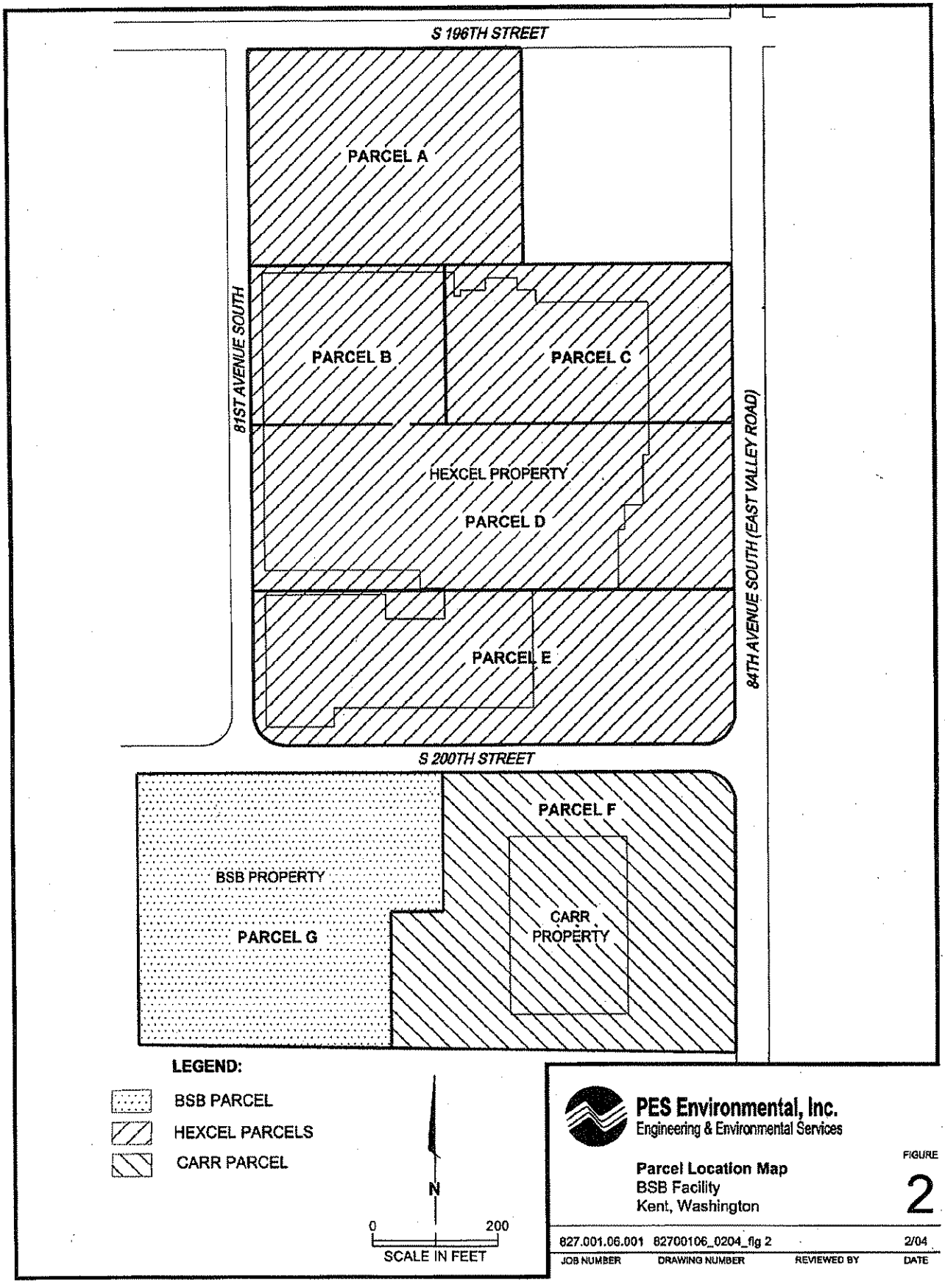
II.1. Ecology is requiring that BSB fulfill corrective action responsibilities for the Facility using MTCA (Chapter 70.105D RCW), as amended, and its implementing regulations (Chapter 173-340 WAC), as provided by WAC 173-303-64630. See Section III.1, *infra*. The actions taken will meet or exceed all substantive corrective action requirements of RCRA, the state Hazardous Waste Management Act, and the Dangerous Waste Regulations.

II.2. BSB's remedial action obligations under the BSB Agreed Order are enforceable conditions of this Permit under the authority of Chapter 70.105 RCW and its implementing regulations, Chapter 173-303 WAC.

PART III - REMEDIAL ACTION CONDITIONS

III.1. The BSB Agreed Order is issued pursuant to MTCA, Chapter 70.105D RCW, as amended, its implementing regulations, Chapter 173-340 WAC, and the Dangerous Waste Regulations, WAC 173-303-64610 through WAC 173-303-64630. The BSB Agreed Order and its attachments are incorporated by reference and fully enforceable under this Permit.

III.2. When Ecology selects final cleanup remedies for the Facility, this Permit will be modified as needed to include the Ecology selected remedies.



PES Environmental, Inc.
Engineering & Environmental Services

Parcel Location Map
BSB Facility
Kent, Washington

FIGURE
2

827.001.06.001	62700106_0204_fig 2		2/04
JOB NUMBER	DRAWING NUMBER	REVIEWED BY	DATE

Exhibit A
Parcel & Property Diagram

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

In the Matter of Remedial Action by:	AGREED ORDER
B. S. B. DIVERSIFIED COMPANY, INC.	No. DE 2551

TO: B. S. B. Diversified Company, Inc.

TABLE OF CONTENTS

I. INTRODUCTION

The mutual objective of the State of Washington, Department of Ecology (Ecology) and B. S. B. Diversified Company, Inc. (BSB) under this Agreed Order (Order) is to provide for Remedial Action at a facility where there has been a release or threatened release of Hazardous Substances. This Order requires BSB to undertake the following Remedial Actions:

(1) Complete and submit a Focused Remedial Investigation/Feasibility Study Report (FRI/FS Report) to summarize existing remedial investigation results and develop and evaluate remedial alternatives for the Property, as described in Section VII of this Order and set forth in Exhibit B to this Order.

(2) Initiate and complete a Deep Aquifer Investigation to determine whether contamination is migrating from the Property through the Deep Aquifer (Layer D), as described in Section VII of this Order and set forth in Exhibit B to this Order.

(3) Pending a final remedial decision by Ecology, maintain current remedial actions and post-closure care by implementing the BSB Corrective Action and Post Closure Monitoring and Implementation Plan (BSBCAPMIP) at the Property as described in Section VII of this Order and set forth in Exhibit D to this Order.

(4) Perform the Groundwater Extraction System Separation Activities listed in Exhibit C in accordance with the procedures in Exhibit D and the schedule contained in Exhibit C.

After completion and approval of the FRI/FS Report, Ecology intends to prepare one or more draft Cleanup Action Plans (CAPs) for the Facility according to the requirements of Washington Administrative Code (WAC) 173-340-380. The parties contemplate that upon further agreement, Ecology and BSB may then initiate procedures to negotiate a consent decree pursuant to Revised Code of Washington (RCW) 70.105D.040(4) that would provide for the implementation of the CAP to satisfy the requirements of WAC 173-340-400 and concurrently satisfy the corrective action requirements of WAC 173-303-64610.

Ecology believes the actions required by this Order are in the public interest.

II. JURISDICTION

This Order is issued pursuant to the authority of the Model Toxics Control Act (MTCA), Chapter 70.105D RCW, as amended, its implementing regulations, Chapter 173-340 WAC.

III. PARTIES BOUND

This Order shall apply to and be binding upon the Parties to this Order and their successors and assigns. The undersigned representative of each Party hereby certifies that he or she is fully authorized to enter into this Order and to execute and legally bind such Party to comply with the Order. BSB agrees to undertake all actions required by the terms and conditions of this Order. No change in ownership or corporate status shall alter BSB's responsibility under this Order. BSB shall provide a copy of this Order to all agents, contractors, and subcontractors retained to perform work required by this Order, and shall require that all work undertaken by such agents, contractors, and subcontractors complies with this Order.

IV. DEFINITIONS

Unless otherwise specified herein, the definitions set forth in Chapter 70.105D RCW and Chapter 173-340 WAC shall control the meanings of the terms used in this Order.

1. Agreed Order or Order: Refers to this Order and each of the exhibits to this Order. All exhibits are integral and enforceable parts of this Order. The terms "Agreed Order" or "Order" shall include all exhibits to this Order. This Order serves as and replaces the post-closure plan required under WAC 173-303-610(8).

2. BSB: Refers to B. S. B. Diversified Company, Inc., a Delaware corporation.

3. BSB Corrective Action and Postclosure Monitoring and Implementation Plan (BSBCAPMIP): Refers to that document created to establish the corrective action and post-closure care responsibilities of BSB at the Property pending a final remedial decision by Ecology, and set forth in Exhibit D to this Order.

4. BSB/Hexcel Agreed Order: Refers to Agreed Order No. DE 2553 between Ecology, BSB and Hexcel and issued contemporaneously with this Order.

5. Carr: Refers to Carr Prop II, LLC, a Washington Limited Liability Company.

6. Ecology: Refers to the State of Washington, Department of Ecology and the Director, employees and designated agents and representatives thereof.

7. EPA: Refers to the United States Environmental Protection Agency and the Administrator, employees and designated agents and representatives thereof.

8. Facility: Refers to the Hexcel Parcels, Parcel F and Parcel G where Hazardous Substances have been deposited, stored, disposed of, placed, or otherwise come to be located and to wherever Hazardous Substances from releases on the Hexcel Parcels, Parcel F and Parcel G have come to be located.

9. FRI/FS Report: Refers to the Focused Remedial Investigation/Feasibility Study Report BSB is to prepare pursuant to this Order.

10. Hazardous Substance: Refers to "hazardous substance" as defined in RCW 70.l05D.020(7) and, for purposes of this Order only, includes "dangerous waste constituents" listed in WAC 173-303-9905, the ground-water monitoring list in 40 C.F.R. Part 264 Appendix IX and any constituent which caused a waste to be listed or designated as dangerous under the provisions of Chapter 173-303 WAC.

11. Hexcel: Refers to Hexcel Corporation, a Delaware Corporation.

12. Hexcel Enforcement Order: Refers to Enforcement Order No. DE 2552 issued by Ecology to Hexcel contemporaneously with this Order.

13. Hexcel Parcels: Refers to the parcels A, B, C, D, and E currently owned and controlled by Hexcel Corporation, located at 19819 84th Avenue South in Kent, Washington. These parcels are more particularly described in Exhibit A to this Order, which is a detailed parcel diagram.

14. Hytek: Refers to Hytek Finishes Company.

15. MTCA: Refers to the Washington State Model Toxics Control Act, Chapter 70.105D RCW.

16. Order: See "Agreed Order" above.

17. Parcel F: Refers to the parcel F property currently owned and controlled by Carr, located at 8311 South 200th Street in Kent, Washington. This parcel is more particularly described in Exhibit A to this Order, which is a detailed parcel diagram.

18. Parcel G: Refers to the parcel G property currently owned and controlled by BSB, located at 8202 S. 200th Street, Kent, Washington. This parcel is more particularly described in Exhibit A to this Order, which is a detailed parcel diagram.

19. Parties: Refers to Ecology and BSB.

20. Permit: Refers to the Post Closure Permit WAD 07-665-5182 effective December 22, 1988, that Ecology and EPA jointly issued to Hytek under authority of the Washington Hazardous Waste Management Act, Chapter 70.105 RCW, and RCRA.

21. Property: Refers to Parcel G which is more particularly described in Exhibit A to this Order, which is a detailed parcel diagram.

22. RCRA: Refers to the Resource Conservation and Recovery Act, 42 U.S.C. § 6901 *et seq.*

23. RCW: Refers to the Revised Code of Washington.

24. Remedial Action: Refers to "remedial action" as defined in RCW 70.105D.020(21) and, for purposes of this Order only, includes investigations, studies, characterizations, corrective actions and corrective measures undertaken in whole or in part to fulfill the requirements of WAC 173-303-64610.

25. WAC: Refers to the Washington Administrative Code.

V. FINDINGS OF FACT

Ecology makes the following findings of fact, without any express or implied admissions of such facts by BSB.

1. BSB currently owns the Property. The Property is commonly referred to as Parcel G and is bounded on the north by South 200th Street and on the east by Parcel F, a contiguous but separately owned parcel. The parcel locations are indicated on Exhibit A.

2. Parcels A, B, C, D and E are currently owned by Hexcel. Parcel F is currently owned by Carr. Parcels A-E are contiguous parcels located immediately north of, and across

South 200th Street from, Parcels G and F. Parcels A-E are bounded on the south by South 200th Street, on the east by 84th Avenue South (East Valley Road), on the north by South 196th Street and on the west by 81st Avenue South.

3. Before 1988, BSB owned Parcels A through G and the two divisions, Hytek and Heath Tecna Aerospace Company, that were located on those parcels.

4. On January 25, 1988, BSB sold Heath Tecna Aerospace Company and Parcels A through F to the Phoenix Washington Corporation, a wholly owned subsidiary of Ciba-Geigy Corporation. BSB transferred Parcels A through D and Parcel F to Phoenix Washington Corporation upon closing. The Phoenix Washington Corporation was subsequently renamed the Heath Tecna Aerospace Company (Heath Tecna). In 1989, BSB moved its Hytek operation from Parcel E to another location in Kent, Washington. Later, in July 1989, BSB transferred Parcel E to Heath Tecna.

5. Heath Tecna merged into the Ciba-Geigy Corporation. By mid 1996, Hexcel had acquired Parcels A through F from the Ciba-Geigy Corporation and acquired all assets and assumed all liabilities of the Ciba-Geigy Corporation relating to Parcels A through F.

6. In 2003, Hexcel sold Parcel F to Carr.

7. Of the original seven parcels owned by BSB, one parcel, Parcel G, is still owned by BSB, five parcels, Parcels A-E, are currently owned by Hexcel (collectively, the Hexcel Parcels), and one parcel, Parcel F, is currently owned by Carr.

8. Before 1988, Parcels A-G housed BSB's Hytek division and BSB's Heath Tecna Aerospace Company division. BSB's Hytek division provided metal finishing and electroplating services. BSB's Heath Tecna Aerospace Company division manufactured interior aircraft components. Parcels B, C, D and E housed manufacturing buildings where Hazardous Substances were used. Although not proven, historic waste disposal may have occurred on these parcels, potentially including pre-sanitary sewer connection waste disposal and waste disposal in areas outside of the current manufacturing building footprint. *See* Permit Attachments II-A (identifying six solid waste management units (SWMUs) on Parcels D and F). Pipes running under South 200th Street connected the manufacturing building located on Parcel E, and carried Hazardous

Substances, to Parcel G. Hexcel continues to pursue aircraft parts manufacturing in the manufacturing buildings on Parcels B, C, D and E.

9. Parcel G housed impoundments, lagoons, container storage, and similar units for managing waste, including hazardous waste, through storage and disposal. The wastes contained in some of these units included chlorinated compounds. BSB closed the storage and disposal units before 1988. Concentrations of chlorinated compounds remain in the subsurface soils and groundwater under the Facility.

10. Groundwater flow in the area generally runs in a north-northeasterly direction from Parcel G (upgradient), under Parcels A-F (downgradient), and across 84th Avenue South (downgradient). Groundwater beneath Parcels A-G is contaminated with chlorinated compounds, including (in various locations) TCE, Vinyl Chloride, and cis-1,2-DCE. Contaminants have been detected in groundwater east of 84th Avenue South.

11. Parcels A through G were operated as a dangerous waste management facility on or after November 19, 1980 (the date facilities became subject to permitting requirements under RCRA, including authorized state regulations promulgated in Chapter 173-303 WAC).

12. Effective December 22, 1988, Ecology and EPA jointly issued Post Closure Permit WAD 07-665-5182 (Permit) to Hytek (later BSB) under authority of the Washington Hazardous Waste Management Act, Chapter 70.105 RCW, and RCRA. The Permit identified the permitted facility as Parcels G and E, with recognition that Parcel E was subject to a pending transfer to Heath Tecna (later Hexcel). *See* Permit Attachment IV-B at 21. The Permit did not name Heath Tecna and did not define the permitted facility to include Parcels A, B, C, D and F based upon the agencies' acceptance of a private agreement between BSB and Heath Tecna (later Hexcel). *See* Ecology/EPA Response to Comments (November 8, 1988) at 4-5. Under this private agreement, BSB agreed to be named as the sole permittee and Heath Tecna (later Hexcel), agreed to reimburse BSB for certain costs of conducting remedial action on the Hexcel Parcels and to allow BSB access to Parcels A, B, C, D, F (and upon transfer, Parcel E) for conducting remedial action.

13. The Permit assigned groundwater corrective action and monitoring requirements to Parcels A-G, designated a point of compliance at the downgradient property boundary of Parcel G,

and required the achievement of concentration limits in groundwater along 84th Avenue South. Permit Attachment VI-B, page 21.

14. In setting forth the above-described conditions, the Permit did not identify or distinguish between the possible sources of groundwater contamination on Parcel G and the possible sources on the Hexcel Parcels that were or may have been responsible for releases, whether historic or current. *See* Ecology/EPA Response to Comments (November 8, 1988) at 6-7.

15. Pursuant to the Permit and the private agreement, BSB installed a groundwater pump-and-treat system designed to 1) capture contaminated groundwater to prevent it from migrating across South 200th Street from Parcel G, 2) capture contaminated groundwater to prevent it from migrating across 84th Avenue from the Hexcel Parcels, and 3) monitor groundwater conditions at various points. Recovery wells included in this system are located on Parcel G and on the Hexcel Parcels. Monitoring wells included in this system are located on Parcel G, the Hexcel Parcels, and Parcel F. On-site treatment under this system terminated in 1995. The system currently pumps groundwater for discharge to and treatment at a King County publicly owned treatment works.

16. The Permit was issued for an initial ten-year term commencing December 22, 1988. On March 3, 1999, Ecology and EPA issued a letter, still in effect, in which the agencies declared, pursuant to Part I.E.3.b of the Permit: "The B.S.B. Diversified Post Closure Permit issued jointly by the Department of Ecology (Ecology) and the U.S. Environmental Protection Agency (EPA) shall continue in force beyond the expiration date until which time the Post Closure Permit is re-issued."

17. Hexcel and BSB take differing positions regarding whether the private agreement reached in 1988 continues in force. Since November 1999, Ecology and EPA have encouraged Hexcel and BSB to reach private accord on conducting further remedial action and maintaining the system that spans Hexcel's and BSB's properties. To date, Hexcel's and BSB's efforts to reach such an accord have been unsuccessful.

18. Contemporaneously with this Order, Ecology is issuing the Hexcel Enforcement Order, which requires Hexcel to perform Remedial Actions related to the Hexcel Parcels.

19. Contemporaneously with this Order, Ecology, BSB and Hexcel have agreed to the BSB/Hexcel Agreed Order, which requires BSB and Hexcel to perform Remedial Actions related to investigating contamination found east of 84th Avenue South.

20. Contemporaneously with this Order, Ecology is issuing a Washington Hazardous Waste Management Act permit to BSB that incorporates this Order.

VI. ECOLOGY DETERMINATIONS

Ecology makes the following Determinations, which BSB neither admits nor denies:

1. BSB is an "owner or operator," as defined in RCW 70.1 05D.020(12), of a "facility," as defined in RCW 70.105D.020(4).

2. For the purposes of this Order and the Hexcel Enforcement Order, the Facility is being administratively addressed by Ecology along lines of property ownership in order to provide for more expeditious Remedial Action. By addressing the Facility along property ownership lines, Ecology is providing BSB and Hexcel with a delineation of the Remedial Action elements and areas for which they will be directly responsible under this Order and the Hexcel Enforcement Order. This administrative approach does not limit any joint and several liability that BSB may otherwise have for the Hexcel Parcels should Hexcel fail to comply with the Hexcel Enforcement Order, or for any other portions of the Facility.

3. Based on the presence of Hazardous Substances at the Facility and all factors known to Ecology, there is a "release" or "threatened release" of Hazardous Substances at the Facility as defined in RCW 70.105D.020(20) and WAC 173-303-040.

4. Based upon credible evidence, Ecology issued a "potentially liable person" (PLP) status letter to BSB dated May 10, 2004, pursuant to RCW 70.105D.020(16), RCW 70.105D.040, and WAC 173-340-500. On June 3, 2004, BSB responded to Ecology's letter. On June 20, 2005, Ecology issued a letter to BSB determining that under RCW 70.105D.040 BSB is a PLP for the Facility.

5. Pursuant to RCW 70.105D.030(1) and 70.105D.050(1), Ecology may require PLPs to investigate or conduct other remedial actions with respect to any release or threatened release of Hazardous Substances, whenever it believes such action to be in the public interest.

6. Based on the foregoing facts, Ecology believes the Remedial Actions required by this Order are in the public interest.

VII. WORK TO BE PERFORMED

Based on the Findings of Fact and Ecology Determinations, it is hereby ordered that BSB take the following Remedial Actions at the Facility and that these actions be conducted in accordance with Chapter 173-340 WAC unless otherwise specifically provided for herein.

1. BSB shall complete and submit a Focused Remedial Investigation/Feasibility Study (FRI/FS) Report summarizing existing remedial investigation results and developing and evaluating remedial alternatives for the Property, as set forth and in accordance with the requirements in Exhibit B to this Order and in accordance with the schedule set forth in Exhibit C to this Order.

2. BSB shall initiate and complete a Deep Aquifer Investigation to determine whether contamination is migrating from the Property through the Deep Aquifer (Layer D), as set forth and in accordance with the requirements in Exhibit B to this Order and in accordance with the schedule set forth in Exhibit C to this Order.

3. Pending a final remedial decision by Ecology, BSB shall maintain current remedial actions and post-closure care by implementing the BSBCAPMIP, as set forth and in accordance with the requirements in Exhibit D to this Order and in accordance with the schedule set forth in Exhibit C to this Order.

4. BSB shall perform the Groundwater Extraction System Separation Activities listed in Exhibit C in accordance with the procedures in Exhibit D and the schedule contained in Exhibit C.

VIII. TERMS AND CONDITIONS OF ORDER

A. Public Notice

Ecology shall provide public notice required pursuant to Chapter 70.105D RCW and WAC 173-340-600 concurrently for this Order, the Hexcel Enforcement Order, and the BSB/Hexcel Agreed Order.

B. Remedial Action Costs

BSB shall pay to Ecology costs incurred by Ecology pursuant to this Order and consistent with WAC 173-340-550(2). BSB shall pay the required amount, except for those costs that BSB disputes, within ninety (90) days of receiving from Ecology an itemized statement of costs that includes a summary of costs incurred, an identification of involved staff, a general description of work performed, and the amount of time spent by involved staff members on the project. Itemized statements will be prepared quarterly. Failure to pay Ecology's costs, other than disputed costs, within ninety (90) days of receipt of the itemized statement of costs will result in interest charges pursuant to WAC 173-340-550(4). BSB shall pay any disputed costs that remain after completion of the dispute resolution process set forth below within ninety (90) days of a final determination by Ecology.

In order to assure these payments get to the proper Ecology account as soon as possible, the address for mailing via the U.S. Postal Service is:

Cashiering Section
Washington State Department of Ecology
P.O. Box 5128
Lacey, Washington 98509-5128

To send payments by messenger/overnight delivery service, the address to use is:

Cashiering Section
Washington State Department of Ecology
300 Desmond Drive
Lacey, Washington 98503

So it is properly credited, BSB should indicate the check is for cost recovery for the BSB/Hexcel Facility and enclose the bottom portion of Ecology's invoice.

C. Implementation of Remedial Action

Except where necessary to abate an emergency situation, BSB shall not perform any remedial actions at the Facility outside those Remedial Actions required by this Order or the BSB/Hexcel Agreed Order unless Ecology concurs, in writing, with such additional remedial actions.

D. Designated Project Coordinators

The project coordinator for Ecology is

Name:	Hideo Fujita, P.E.
Address:	Department of Ecology Northwest Regional Office 3190 - 160 Avenue SE Bellevue, WA 98008-5452
Telephone:	(425) 649-7068
FAX:	(425) 649-7098
E-mail:	hfuj461@ecy.wa.gov

The project coordinator for BSB is:

Name:	Ronald A. Burt
Address:	Patterson Planning & Services, Inc. 4525 Harding Road, Suite 215 Nashville, TN 37205
Telephone:	(615) 986-2679
FAX:	(615) 620-4510
E-mail:	raburt_pps@yahoo.com

The project coordinator(s) shall be responsible for overseeing the implementation of this Order. The Ecology project coordinator will be Ecology's designated representative for the Facility. To the maximum extent possible, communications between Ecology and BSB, and all documents, including reports, approvals, and other correspondence concerning the activities performed pursuant to the terms and conditions of this Order shall be directed through the project coordinator(s). Ecology and BSB may change their respective project coordinator, but must provide ten (10) days advance written notification of the change to the other party.

E. Performance

All work performed pursuant to this Order shall be under the direction and supervision, as necessary, of a licensed professional engineer or licensed hydrogeologist, or equivalent as approved by Ecology, with appropriate training, experience and expertise in hazardous waste site investigation and cleanup. BSB shall notify Ecology in writing of the identity of such engineer(s), hydrogeologist(s), or others, and of any contractors and subcontractors to be used in carrying out the terms of this Order, in advance of their involvement at the Facility. Any construction work performed pursuant to this Order shall be under the supervision of a professional engineer or a

qualified technician under the direct supervision of a professional engineer. The professional engineer must be registered in the State of Washington, except as provided in RCW 18.43.130.

F. Access

Ecology or any Ecology authorized representative shall have the full authority to enter and freely move about all property at the Property at all reasonable times for the purposes of, *inter alia*: inspecting records, operation logs, and contracts related to the work being performed pursuant to this Order; reviewing BSB's progress in carrying out the terms of this Order; conducting such tests or collecting such samples as Ecology may deem necessary; using a camera, sound recording, or other documentary type equipment to record work done pursuant to this Order; and verifying the data submitted to Ecology by BSB. Ecology or any Ecology authorized representative shall give reasonable notice to BSB before entering the Property unless an emergency prevents such notice.

Hexcel's authorized representatives shall have access to real property at the Property as reasonably necessary to perform work required of Hexcel under the Hexcel Enforcement Order.

All persons who access the Property pursuant to this Section shall comply with the approved health and safety plan, if any.

G. Sampling, Data Reporting, and Availability

With respect to the implementation of this Order, BSB shall make the results of all sampling, laboratory reports, and/or test results generated by it or on its behalf available to Ecology and shall submit these results in accordance with Section VII of this Order.

All sampling data shall be submitted to Ecology according to the requirements of WAC 173-340-840(5). Ground water sampling data shall also be submitted to Ecology according to the requirements of Exhibit D. These submittals shall be provided to Ecology in accordance with Section VII of this Order.

BSB shall provide Hexcel with a copy of each report and submittal that BSB must submit to Ecology pursuant to Section VII of this Order.

If requested by Ecology, BSB shall allow split or duplicate samples to be taken by Ecology and/or its authorized representative of any samples collected by BSB pursuant to the

implementation of this Order. BSB shall notify Ecology seven (7) days in advance of any sample collection or work activity at the Property. Ecology shall, upon request, allow split or duplicate samples of any samples collected by Ecology pursuant to the implementation of this Order to be taken by BSB or its authorized representative provided it does not interfere with Ecology's sampling. Without limitation on Ecology's rights under Section VIII.F. of this Order, Ecology shall notify BSB forty-eight (48) hours prior to any sample collection activity unless an emergency prevents such notice.

In accordance with WAC 173-340-830(2)(a), all hazardous substance analyses shall be conducted by a laboratory accredited under Chapter 173-50 WAC for the specific analyses to be conducted, unless otherwise approved by Ecology.

H. Public Participation

A public participation plan is required for this Facility. Ecology shall review any existing public participation plan to determine its continued appropriateness and whether it requires amendment. If no plan exists, Ecology shall develop a public participation plan alone or in conjunction with BSB and/or Hexcel.

Ecology shall maintain the responsibility for public participation at the Facility. However, regarding work BSB is to perform pursuant to this Order, BSB may choose to assist Ecology by:

1. If agreed to by Ecology, developing appropriate mailing lists and preparing drafts of public notices and fact sheets at important stages of the Remedial Action, such as the submission of work plans, remedial investigation/feasibility study reports, cleanup action plans, and engineering design reports. As appropriate, Ecology will edit, finalize, and distribute such fact sheets and prepare and distribute public notices of Ecology's presentations and meetings;

2. Notifying Ecology's project coordinator before any of the following: issuance of all press releases and fact sheets; performance of other outreach activities; and meetings with the interested public and/or local governments. Likewise, Ecology shall notify BSB before the issuance of all press releases and fact sheets, performance of other outreach activities, and meetings with the interested public and/or local governments. For all press releases, fact sheets, meetings, and other outreach efforts by BSB that do not receive prior Ecology approval, BSB shall

clearly indicate to its audience that the press release, fact sheet, meeting, or other outreach effort was not sponsored or endorsed by Ecology;

3. When requested by Ecology, participating in public presentations on the progress of the Remedial Action at the Facility. Participation may be through attendance at public meetings to assist in answering questions or as a presenter;

4. When requested by Ecology, arranging for and/or continuing information repositories to be located at the following locations:

(a) Kent Regional Library
212 2nd Avenue N.
Kent, Washington 98032

(b) Department of Ecology
Northwest Regional Office
3190 160th Ave SE
Bellevue Washington 98008-5452

At a minimum, copies of all public notices, fact sheets, and press releases; all quality assured monitoring data; remedial action plans and reports, supplemental remedial planning documents, and all other similar documents relating to performance of the Remedial Action required by this Order shall be promptly placed in these repositories.

I. Retention of Records

During the pendency of this Order and for ten (10) years from the date of completion of work performed pursuant to this Order, BSB shall preserve all records, reports, documents, and underlying data in its possession relevant to the implementation of this Order and shall insert an equivalent record retention requirement into all contracts with project contractors and subcontractors. Upon request of Ecology, BSB shall make all records available to Ecology and allow access for review within a reasonable time.

J. Resolution of Disputes

1. In the event a dispute arises as to an approval, disapproval, proposed change, or other decision or action by Ecology's project coordinator, the Parties shall utilize the dispute resolution procedure set forth below.

(a) Upon receipt of the Ecology project coordinator's written decision, BSB has fourteen (14) days within which to notify Ecology's project coordinator of its objection to the decision.

(b) The Parties' project coordinators shall then confer in an effort to resolve the dispute. If the project coordinators cannot resolve the dispute within fourteen (14) days, Ecology's project coordinator shall issue a written decision.

(c) BSB may then request Ecology management review of the decision. This request shall be submitted in writing to the regional section manager of Ecology's Hazardous Waste and Toxics Reduction Program (Section Manager) within fourteen (14) days of receipt of Ecology's project coordinator's written decision.

(d) Ecology's Section Manager shall conduct a review of the dispute and shall issue a written decision regarding the dispute within sixty (60) days of BSB's request for review.

(e) BSB may then request additional Ecology management review of the Section Manager's written decision. This request shall be submitted in writing to the Program Manager of Ecology's Hazardous Waste and Toxics Reduction Program (Program Manager) within fourteen (14) days of receipt of Ecology Section Manager's decision.

(f) Ecology's Program Manager shall conduct a review of the dispute and shall issue a written decision within thirty (30) days of BSB's request for additional review. The Program Manager's decision shall be Ecology's final decision on the disputed matter.

2.The Parties agree to only utilize the dispute resolution process in good faith and agree to expedite, to the extent possible, the dispute resolution process whenever it is used.

3.Implementation of these dispute resolution procedures shall not provide a basis for delay of any other activities required in this Order unless Ecology agrees in writing to a schedule extension.

K. Extension of Schedule

1. An extension of schedule shall be granted only when a request for an extension is submitted in a timely fashion, generally at least thirty (30) days prior to expiration of the deadline for which the extension is requested, and good cause exists for granting the extension. All

extensions shall be requested in writing. The request shall specify the reason(s) the extension is needed. The request shall specify:

(a) The deadline that is sought to be extended;

(b) The length of the extension sought;

(c) The reason(s) for the extension; and

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

2. The burden shall be on BSB to demonstrate to the satisfaction of Ecology that the request for such extension has been submitted in a timely fashion and that good cause exists for granting the extension. Good cause includes, but is not limited to:

(a) Circumstances beyond the reasonable control and despite the due diligence of BSB including delays caused by unrelated third parties or Ecology, such as (but not limited to) delays by Ecology in reviewing, approving, or modifying documents submitted by BSB; or

(b) Acts of God, including fire, flood, blizzard, extreme temperatures, storm, or other unavoidable casualty; or

(c) Endangerment as described in Section VIII.M of this Order.

However, neither increased costs of performance of the terms of this Order nor changed economic circumstances shall be considered circumstances beyond the reasonable control of BSB.

3. Ecology shall act upon any written request for extension in a timely fashion. Ecology shall give BSB written notification in a timely fashion of any extensions granted pursuant to the Order. A requested extension shall not be effective until approved by Ecology. Unless the extension is a substantial change, it shall not be necessary to amend this Order pursuant to Section VIII.L when a schedule extension is granted.

4. An extension shall only be granted for such period of time as Ecology determines is reasonable under the circumstances. Ecology may grant schedule extensions exceeding ninety (90) days only as a result of:

(a) Delays in the issuance of a necessary permit which was applied for in a timely manner;

(b) Other circumstances deemed exceptional or extraordinary by Ecology; or

(c) Endangerment as described in Section VIII.M of this Order.

L. Amendment of Order

The project coordinators may verbally agree to minor changes to the work to be performed without formally amending this Order. Minor changes will be documented in writing by BSB to Ecology within seven (7) days of verbal agreement.

Except as provided in Section VIII.M of this Order, substantial changes to the work to be performed shall require formal amendment of this Order. This Order may only be formally amended by the written consent of both Ecology and BSB. BSB shall submit a written request for amendment to Ecology for approval. Ecology shall indicate its approval or disapproval in writing and in a timely manner after the written request for amendment is received. If the amendment to the Order represents a substantial change, Ecology will provide additional public notice and opportunity to comment pursuant to WAC 173-340-600(11)(d). If Ecology does not agree to a proposed amendment, the disagreement may be addressed through the dispute resolution procedures described in Section VIII.J of this Order.

M Endangerment

In the event Ecology determines that any activity being performed at the Facility pursuant to this Order is creating or has the potential to create a danger to human health or the environment on or surrounding the Facility, Ecology may order BSB to stop further implementation of this Order for such period of time as needed to abate the danger.

If, for any reason, BSB determines that any activity being performed at the Facility pursuant to this Order is creating or has the potential to create a danger to human health or the environment, BSB may cease such activities. BSB shall notify Ecology's project coordinator as soon as possible, but no later than twenty-four (24) hours after making such determination or ceasing such activities. Upon Ecology's direction BSB shall provide Ecology with documentation of the basis for the determination or cessation of such activities. If Ecology disagrees with BSB's cessation of activities, it may direct BSB to resume such activities.

If Ecology concurs with or orders a work stoppage pursuant to this Section, BSB's obligations with respect to the ceased activities shall be suspended until Ecology determines the danger is abated, and the time for performance of such activities, as well as the time for any other work dependent upon such activities, shall be extended for such period of time as Ecology determines is reasonable under the circumstances. In such event, no formal amendment of this Order shall be required and BSB shall not be subject to any enforcement action for stopping or delaying implementation of this Order. Nothing in this Order shall limit the authority of Ecology, its employees, agents, or contractors to take or require appropriate action in the event of an emergency.

N. Reservation of Rights/No Settlement

This Order is not a settlement under Chapter 70.105D RCW. Ecology's signature on this Order in no way constitutes a covenant not to sue or a compromise of any Ecology rights or authority. Ecology will not, however, bring an action against BSB to recover remedial action costs paid to and received by Ecology under this Order. In addition, Ecology will not take additional enforcement actions against BSB regarding Remedial Actions required by this Order, provided BSB complies with this Order.

Ecology nevertheless reserves its rights under Chapter 70.105D RCW, including the right to seek additional or different remedial actions at the Facility should it deem such actions necessary to protect human health and the environment, and to issue orders requiring such remedial actions. This reservation by Ecology does not constitute an agreement by BSB to perform such additional or different actions. Ecology also reserves all rights regarding the injury to, destruction of, or loss of natural resources resulting from the release or threatened release of Hazardous Substances at the Facility.

O. Disclaimer

By signing this Order and taking actions under this Order, BSB neither admits nor denies at this time Ecology's Findings of Fact and Determinations. Furthermore, the participation of BSB in this Order shall not be considered as admission of liability and is not admissible as evidence against it in any judicial or administrative proceeding other than a proceeding by Ecology to

enforce this Order or any judgment relating to it. BSB reserves all its rights and defenses, including but not limited to its right to assert claims against other potentially liable parties with respect to the Facility and its rights and defenses with respect to any additional actions that Ecology may seek to require at the Facility.

P. Transfer of Interest in Property

No voluntary or involuntary conveyance or relinquishment of title, easement, leasehold, or other interest in any portion of the Facility in which BSB has a property interest shall be consummated by BSB without provision for continued implementation of all requirements of this Order.

Prior to transfer of any legal or equitable interest BSB may have in the Facility or in any portions thereof, BSB shall serve a copy of this Order upon any prospective purchaser, lessee, transferee, assignee, or other successor in such interest. At least thirty (30) days prior to finalization of any transfer, BSB shall notify Ecology of the contemplated transfer. Upon transfer of any interest, BSB shall restrict uses and activities to those consistent with this Order and notify all transferees of the restrictions on the use of the property.

Q. Compliance with Applicable Laws

1. All actions carried out by BSB pursuant to this Order shall be done in accordance with all applicable federal, state, and local requirements, including requirements to obtain necessary permits, except as provided in Paragraph 2 of this Section.

2. Pursuant to RCW 70.105D.090(1), BSB is exempt from the procedural requirements of Chapters 70.94, 70.95, 77.55, and 90.58 RCW and from the procedural requirements of any laws requiring or authorizing local government permits or approvals for the Remedial Action under this Order.

BSB has a continuing obligation to determine whether additional permits or approvals addressed in RCW 70.105D.090(1) would otherwise be required for the Remedial Action under this Order. In the event either Ecology or BSB determines that additional permits or approvals addressed in RCW 70.105D.090(1) would otherwise be required for the Remedial Action under this Order, it shall promptly notify the other party of its determination. Ecology shall determine

whether Ecology or BSB shall be responsible to contact the appropriate state and/or local agencies. If Ecology so requires, BSB shall promptly consult with the appropriate state and/or local agencies and provide Ecology with written documentation from those agencies of the substantive requirements those agencies believe are applicable to the Remedial Action under this Order. Ecology shall make the final determination on the additional substantive requirements that must be met by BSB and on how BSB must meet those requirements. Ecology shall inform BSB in writing of these requirements. Once established by Ecology, the additional requirements shall be enforceable requirements of this Order. BSB shall not begin or continue Remedial Action under this Order that is potentially subject to the additional requirements until Ecology makes its final determination.

Ecology shall ensure that notice and opportunity for comment is provided to the public and appropriate agencies prior to establishing the substantive requirements under this Section.

3. Pursuant to RCW 70.105D.090(2), in the event Ecology determines that the exemption from complying with the procedural requirements of the laws referenced in RCW 70.105D.090(1) would result in the loss of approval from a federal agency which is necessary for the state to administer any federal law, the exemption shall not apply and BSB shall comply with both the procedural and substantive requirements of the specific law at issue. Such a determination by Ecology shall not affect the applicability of the exemption to any of the other statutes referenced in RCW 70.105D.090(1).

R. Financial Assurance

1. BSB shall establish and maintain financial assurance for corrective action in the amount necessary to implement the Remedial Actions required by this Order.

(a) In the absence of final regulations governing financial assurance for corrective action, the Financial Assurance for Corrective Action Proposed Rule, 51 FR 37853 (October 24, 1986), the financial assurance provisions of Corrective Action for Releases from Solid Waste Management Units Advance Notice of Proposed Rulemaking, 61 FR 19432 (May 1, 1996), and the Interim Guidance on Financial Assurance for Facilities Subject to RCRA Corrective Action (U.S. EPA, September 30, 2003), or other guidance that may be available at the time, shall

be used as guidance. The financial assurance provisions of the Corrective Action for Solid Waste Management Units at Hazardous Waste Management Facilities, 55 FR 30798 (July 27, 1990), may be used as secondary guidance at the discretion of Ecology. Unless otherwise specified herein, where the language of this Order conflicts with these proposed rules, notices and guidance documents, the language of this Order shall prevail.

(b) Acceptable financial assurance mechanisms are trust funds, surety bonds guaranteeing performance, letters of credit, insurance, the financial test, corporate guarantee, or other instruments if BSB demonstrates to the satisfaction of Ecology that those instruments provide an acceptable level of financial assurance.

(c) BSB shall provide Ecology's project manager and Ecology's financial assurance officer with documentation of this financial assurance within one hundred twenty (120) days of the effective date of this Order. Unless otherwise provided in any final regulations governing corrective action financial assurance or in the proposed rules, notices and guidance documents identified in Subparagraph 1.(a) above, the date that final original financial assurance documentation is received by Ecology's financial assurance officer is the "financial assurance anniversary date" of this Order.

2. BSB shall adjust the financial assurance coverage and provide Ecology's project manager and Ecology's financial assurance officer with documentation of the updated financial assurance for:

(a) Inflation, annually, within thirty (30) days of the financial assurance anniversary date, as defined in Subparagraph 1.(c) above; and

(b) Changes in cost estimates which shall be submitted to Ecology within thirty (30) days of Ecology's issuance of a modification or revision to the BSBCAPMIP which results in changes to the cost or expected duration of the Remedial Action under this Order. Within one hundred twenty (120) days of Ecology's approval of the change in cost estimate, BSB shall adjust the financial assurance coverage and provide Ecology's project manager and Ecology's financial assurance officer with documentation of the updated financial assurance.

3. BSB shall notify Ecology's project manager and Ecology's financial assurance officer by certified mail of the commencement of a voluntary or involuntary bankruptcy proceeding under Title 11, United States Code, naming BSB as debtor, within ten (10) days after commencement of the proceeding. A guarantor of a corporate guarantee must make such a notification if he is named as debtor as required under the terms of the corporate guarantee.

4. Once BSB has established financial assurance for corrective action with an acceptable mechanism, mentioned above, BSB will be deemed to be without the required financial assurance:

(a) In the event of bankruptcy of the trustee or issuing institution: or

(b) If the authority of the trustee institution to act as trustee has been suspended or revoked; or

(c) If the authority of the institution issuing the surety bond, letter or credit, or insurance policy has been suspended or revoked.

In the event of bankruptcy of the trustee or a suspension or revocation of the authority of the trustee institution to act as a trustee, BSB must establish financial assurance pursuant to this Section within one hundred twenty (120) days after such an event.

5. Ecology's financial assurance officer is:

Name:	Jim Knudson/Kimberley Goetz
Address:	Department of Ecology Hazardous Waste and Toxics Reduction Program P.O. Box 47600 Olympia, Washington 98504-7600
Telephone:	(360) 407-6693
FAX:	(360)407-6715
E-mail:	jknu461ecy.wa.gov

S. Indemnification

BSB agrees to indemnify and save and hold the State of Washington, and its employees, and agents harmless from any and all claims or causes of action for death or injuries to persons or for loss or damage to property arising from or on account of acts or omissions of BSB and its officers, employees, agents, or contractors in entering into and implementing this Order. However, BSB shall not indemnify or save or hold harmless the State of Washington or its employees and

agents from any claims or causes of action arising from or on account of acts or omissions of the State of Washington and its employees or agents in implementing the activities pursuant to this Order.

IX. EFFECTIVE DATE OF ORDER

This Order is effective upon the later of (1) the date the Hexcel Enforcement Order becomes effective or (2) the date Ecology finalizes any revisions made to this Order in response to public comment and signs the Order below. Notwithstanding the foregoing, if Ecology revises this Order or the Hexcel Enforcement Order in response to public comment, BSB may, at its option, withdraw from this Order by providing Ecology with written notice of withdrawal. In the event BSB withdraws from this Order, this Order shall be null and void, of no force or effect, and of no evidentiary value whatsoever.

X. SATISFACTION OF ORDER

The provisions of this Order shall be deemed satisfied upon BSB's receipt of written notification from Ecology of its determination that BSB has completed the Remedial Action required by this Order, as amended by any modifications, and BSB has complied with all other provisions of this Order. BSB may request such determination at any time, and Ecology shall issue such written notification of its determination within sixty (60) days after receipt of said request. The provisions of this Order shall also be deemed satisfied if BSB enters into a consent decree that by its terms replaces this Order.

XI. ENFORCEMENT

Pursuant to RCW 70.105D.050, this Order may be enforced as follows:

1. The Attorney General may bring an action to enforce this Order in a state court.

2. The Attorney General may seek, by filing an action, if necessary, to recover unreimbursed amounts spent by Ecology for Remedial Actions and orders related to the Facility.

3. In the event BSB refuses, without sufficient cause, to comply with any term of this Order, BSB may be liable for

   (a) Up to three times the amount of any costs incurred by the State of Washington as a result of its refusal to comply; and

(b) Civil penalties of up to $25,000 per day for each day it refuses to comply.

4. BSB is not required by this Order to perform or pay for any of the work required under the Hexcel Enforcement Order. Without limitation on any authority or remedy under Chapter 70.105D RCW, Ecology and the Attorney General intend in the first instance to seek performance of or payment for the work required by the Hexcel Enforcement Order from Hexcel, including, if necessary, bringing an action against Hexcel in state court, filing an action to recover unreimbursed amounts spent by Ecology for Remedial Actions, seeking up to three times the amount of any costs incurred by the State of Washington as a result of the refusal to comply, seeking civil penalties of up to $25,000 per day, and exhausting Hexcel's financial assurance mechanism provided pursuant to the Hexcel Enforcement Order.

This Order is not appealable to the Washington Pollution Control Hearings Board. This Order may be reviewed only as provided under RCW 70.105D.060.

B. S. B. DIVERSIFIED COMPANY, INC.

11/9/05
ROBERT D. FARLEY Date
President
565 Fifth Avenue, 4th Floor
New York, NY 10017
(212) 885-1651

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

11/10/05
JULIE SELLICK Date
Section Manager
Hazardous Waste & Toxics Reduction
Northwest Regional Office Regional Office
(425) 649-7053

EXHIBIT B

FOCUSED REMEDIAL INVESTIGATION/FEASIBILITY STUDY SCOPE OF WORK BSB PROPERTY, KENT, WASHINGTON

Summary Requirements and Tasks

I. Focused Remedial Investigation/Feasibility Study

Within seven (7) days of the effective date of the BSB Agreed Order (Order), BSB will submit to Ecology a Draft Focused Remedial Investigation/Feasibility Study (FRI/FS) Report for Ecology's approval. The purpose of the FRI/FS is to summarize existing remedial investigation results in a single document and develop and evaluate a range of cleanup actions (including the enhanced groundwater extraction system) to determine which alternative(s) are most appropriate for Parcel G. The benefits of the cleanup actions will be measured relative to the following cleanup action selection criteria defined in WAC 173-340-360(2):

- **Threshold Requirements**
  - Protect human health and the environment;
  - Comply with cleanup standards (WAC 173-340-700 through –760);
  - Comply with applicable state and federal laws (WAC 173-340-710); and
  - Provide for compliance monitoring.
- **Other Requirements**
  - Use permanent solutions to the maximum extent practicable;
  - Provide for a reasonable restoration time frame; and
  - Consider public concerns.

In addition to these criteria, Ecology's expectations for cleanup actions listed in WAC 173-340-370 will also be considered. If the FRI/FS concludes that more than one alternative meets the cleanup action selection criteria, the FRI/FS will include a disproportionate cost analysis pursuant to WAC 173-340-360(3)(e) to determine if the incremental costs of one alternative over that of a lower cost alternative exceed the incremental degree of benefits achieved by the alternative over that of the other lower cost alternative.

The FRI/FS shall be performed in accordance with WAC 173-340-350 (8) and (9) and will include the following major tasks.

Task 1. Remedial Investigation Summary

The existing data relevant to Parcel G have been collected in a Draft Remedial Investigation Summary (PES, February 15, 2005). The Remedial Investigation Summary will form the Remedial Investigation portion of the FRI/FS report.

Task 2. Feasibility Study Scoping

In this task, the site conceptual model developed as part of the RI Summary will be included as part of the FRI/FS report and used to develop cleanup levels for the relevant exposure pathways for the constituents of concern. One or more cleanup action objectives (CAOs) will then be developed that will provide a basis for evaluating and screening cleanup action technologies and alternatives.

Task 3. Cleanup Technology Identification and Screening

Cleanup technologies that can potentially address, either alone or in conjunction with other technologies, one or more of the CAOs will be identified in this task. The preliminary list of technologies will be screened, as necessary, to limit the number of technologies carried into the alternative development task to those technologies most likely to be effective at Parcel G. The screening process will use the following three criteria: effectiveness, implementability, and cost. During the technology screening process, cost will be used only to differentiate between two or more technologies that generally have similar levels of effectiveness and implementability, but significantly different costs.

Task 4. Cleanup Alternative Development

In this task, the retained cleanup technologies will be assembled into a range of alternatives that address the CAOs. Based on the available information, it is anticipated that at least three and not more than six alternatives will be developed. One of the alternatives developed as part of the FRI/FS will be the enhanced groundwater extraction system described in Patterson Planning and Services (2003).[1] For each alternative, the FRI/FS will provide a description of the actions and technologies utilized, an estimate of the construction and operations and maintenance (O&M) costs, an estimate of the restoration time frame, and an evaluation of the cleanup standards achieved.

Task 5. Cleanup Alternative Evaluation

The alternatives developed in the previous task will be evaluated against the criteria defined in WAC 173-340-360. This evaluation will establish which alternative(s) meet the threshold requirements and establish the range of costs and benefits relative to the other MTCA requirements (e.g., use of permanent solutions to the maximum extent

[1] Patterson Planning & Services, Inc. 2003. Letter titled *Kent Facility, Enhanced Groundwater Extraction System for Parcel G* from R. Burt to H. Fujita of Ecology. February 14.

practicable, restoration time frame). Next, the alternatives will be compared to each other. If more than one alternative is determined to meet the threshold requirements, this inter-alternative comparison will form the basis for a disproportionate cost analysis. The procedures for conducting the disproportionate cost analysis are described in WAC 173-340-360(3)(e).

Task 6. Recommendation of Preferred Cleanup Alternative

Based on the evaluation of alternatives described above, including the disproportionate cost analysis (if required), the FRI/FS will recommend an alternative and provide the rationale for this recommendation.

Task 7. Reporting

Within seven (7) days of the effective date of the Order, BSB will submit to Ecology for its approval a Draft FRI/FS Report that documents the performance of Tasks 1 through 5 above and recommends a cleanup action alternative that achieves the cleanup action objectives for Parcel G. Ecology will then approve, approve with conditions, or disapprove the Draft FRI/FS Report. If Ecology disapproves of the Draft FRI/FS Report, Ecology will provide comments to BSB and the parties will establish a mutually agreed upon date for BSB's resubmittal of the Draft FRI/FS Report, not to exceed ninety (90) days after BSB's receipt of Ecology's comments. BSB will then submit a revised Draft FRI/FS Report that addresses Ecology's comments. BSB will submit its Final FRI/FS Report within 60 days after receiving comments from Ecology that approve or approve with conditions BSB's Draft FRI/FS Report.

II. Deep Aquifer Investigation & Reporting

BSB will investigate whether contamination is migrating from Parcel G through the Deep Aquifer (Layer D).

Task 1. Deep Aquifer Monitoring Well Network Work Plan

Within forty-five (45) days of the effective date of the Order, Ecology will consult with BSB regarding the deep aquifer investigation and BSB will submit to Ecology for its approval a Draft Deep Aquifer Investigation Work Plan. This work plan shall address the following items:

1. The groundwater monitoring wells to be abandoned (groundwater monitoring well decommissioning will be done in accordance to WAC 173-160-460);

2. The installation and location of up to two new deep aquifer groundwater monitoring wells (new groundwater well installations will be done in accordance to WAC 173-160-400 & -420);

3. The deep aquifer wells to be included in the network for groundwater level measurements and sampling;

4. The duration of the quarterly sampling needed to determine the deep aquifer groundwater quality;

5. The analytical laboratory, constituent analyses, and laboratory methods that will be used to analyze the groundwater samples; and

6. The implementation of, including an implementation schedule for, the quarterly deep aquifer groundwater level measurements and sampling, and the preparation and submittal of quarterly deep aquifer data reports and a deep aquifer data evaluation report.

Ecology will approve, approve with conditions, or disapprove the Draft Work Plan. If Ecology disapproves of the Draft Work Plan, then Ecology will provide comments to BSB and the parties will establish a mutually agreed upon date for BSB's resubmittal of the Draft Work Plan, not to exceed thirty (30) days after BSB's receipt of Ecology's comments. BSB will then submit a revised Draft Work Plan that addresses Ecology's comments. BSB will implement the Work Plan, through the first quarterly measurement and sampling event, within 60 days after receiving comments from Ecology that approve or approve with conditions BSB's Draft Work Plan for the Deep Aquifer. The balance of the Work Plan will be implemented pursuant to the schedule in Exhibit C to the Order.

Task 2. Deep Aquifer Data Reports

BSB will submit quarterly data reports for the deep aquifer investigation. The quarterly data reports will be transmitted to Ecology within 30 days of receipt of the laboratory analytical report. The data tables, groundwater contour map, and the data validation memo will be transmitted to Ecology with a brief cover letter describing the sampling event. Each quarterly report shall include the following information:

1. The quarter's groundwater chemistry data (validated and tabulated) with a memo summarizing the data validation; and

2. Tabulated groundwater elevation data, with a groundwater contour map for the wells used in the monitoring network in the deep aquifer.

Task 3. Deep Aquifer Data Evaluation

After the fourth quarterly sampling event, BSB will prepare a Deep Aquifer Data Evaluation Report discussing the investigation and providing conclusions and recommendations about groundwater quality in the deep aquifer. The Deep Aquifer Data Evaluation Report will be submitted to Ecology within 45 days of the receipt of the fourth quarter analytical laboratory report. The Deep Aquifer Data Evaluation report shall include the following:

1. An evaluation of the analytical and hydrogeologic data, the CG-1 through CG-4 capture zone relative to the deep aquifer, and a conceptual site model for the deep aquifer.

2. Updated groundwater chemistry contour maps.

If the deep aquifer evaluation indicates that contamination may be migrating from Parcel G through the deep aquifer, BSB will consult with Ecology regarding potential further investigations, evaluations, and/or remedial action for the deep aquifer. Ecology will determine if additional investigations, evaluations, and/or remedial action for the deep aquifer are required.

If Ecology determines that additional investigation work in the deep aquifer is required, BSB will submit a scope of work and schedule to Ecology within 45 days of Ecology's determination. In addition, Ecology may request that BSB prepare and submit a supplement to the Focused Remedial Investigation/Feasibility Study that incorporates the deep aquifer investigation work.

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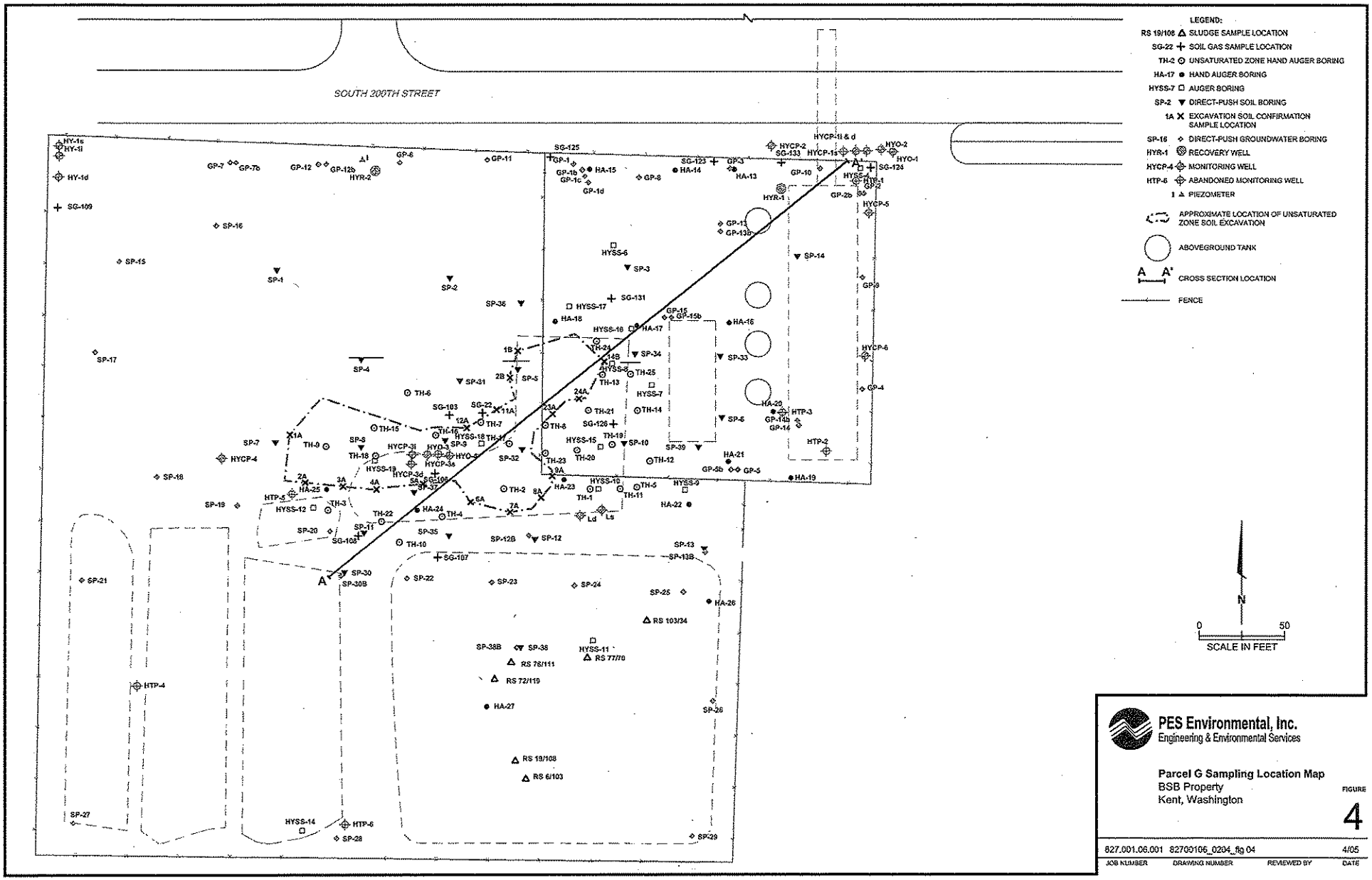

PES Environmental, Inc.
Engineering & Environmental Services

Parcel G Sampling Location Map
BSB Property
Kent, Washington

FIGURE
4

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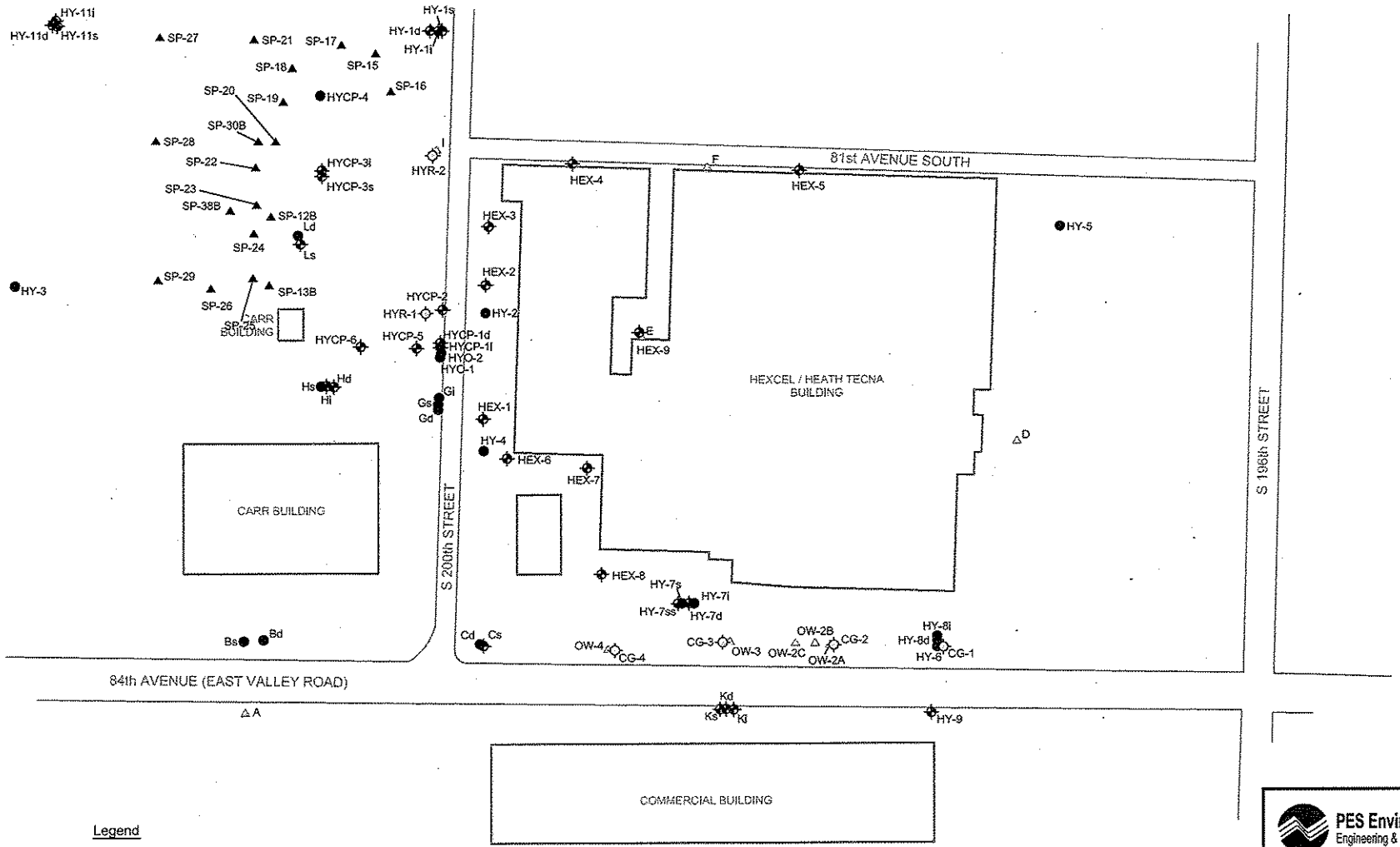

Legend

- HY-11s — Groundwater Sampling and Groundwater Level Monitoring Well
- CG-2 — Recovery Well
- HYCP-4 — Water Level Monitoring Well
- OW-2A — Observation Well

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SCALE IN FEET

PES Environmental, Inc.
Engineering & Environmental Services

EMPA Groundwater Monitoring Network
BSB Facility
Kent, Washington

FIGURE 5

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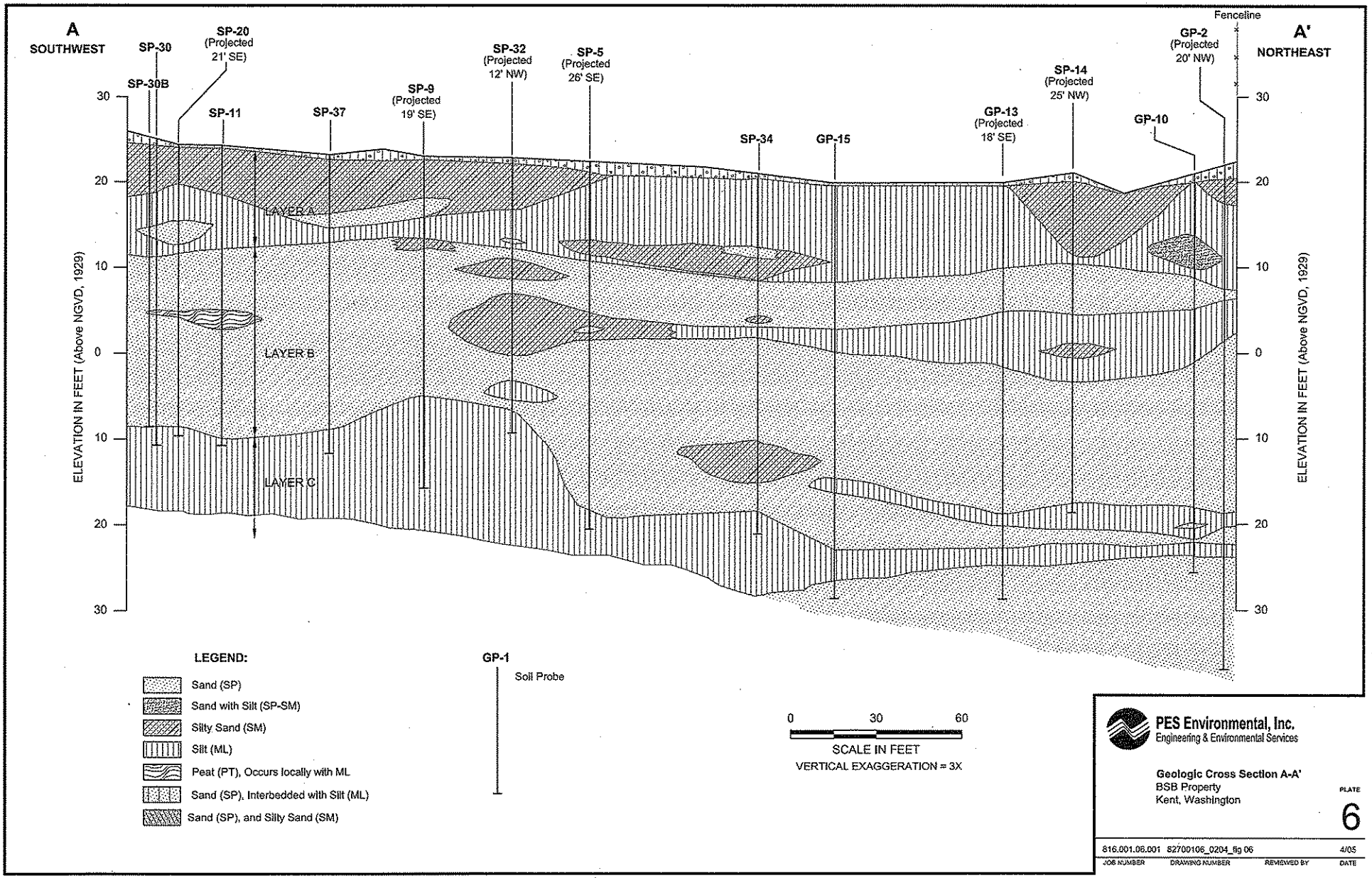

PES Environmental, Inc.
Engineering & Environmental Services

Geologic Cross Section A-A'
BSB Property
Kent, Washington

PLATE
6

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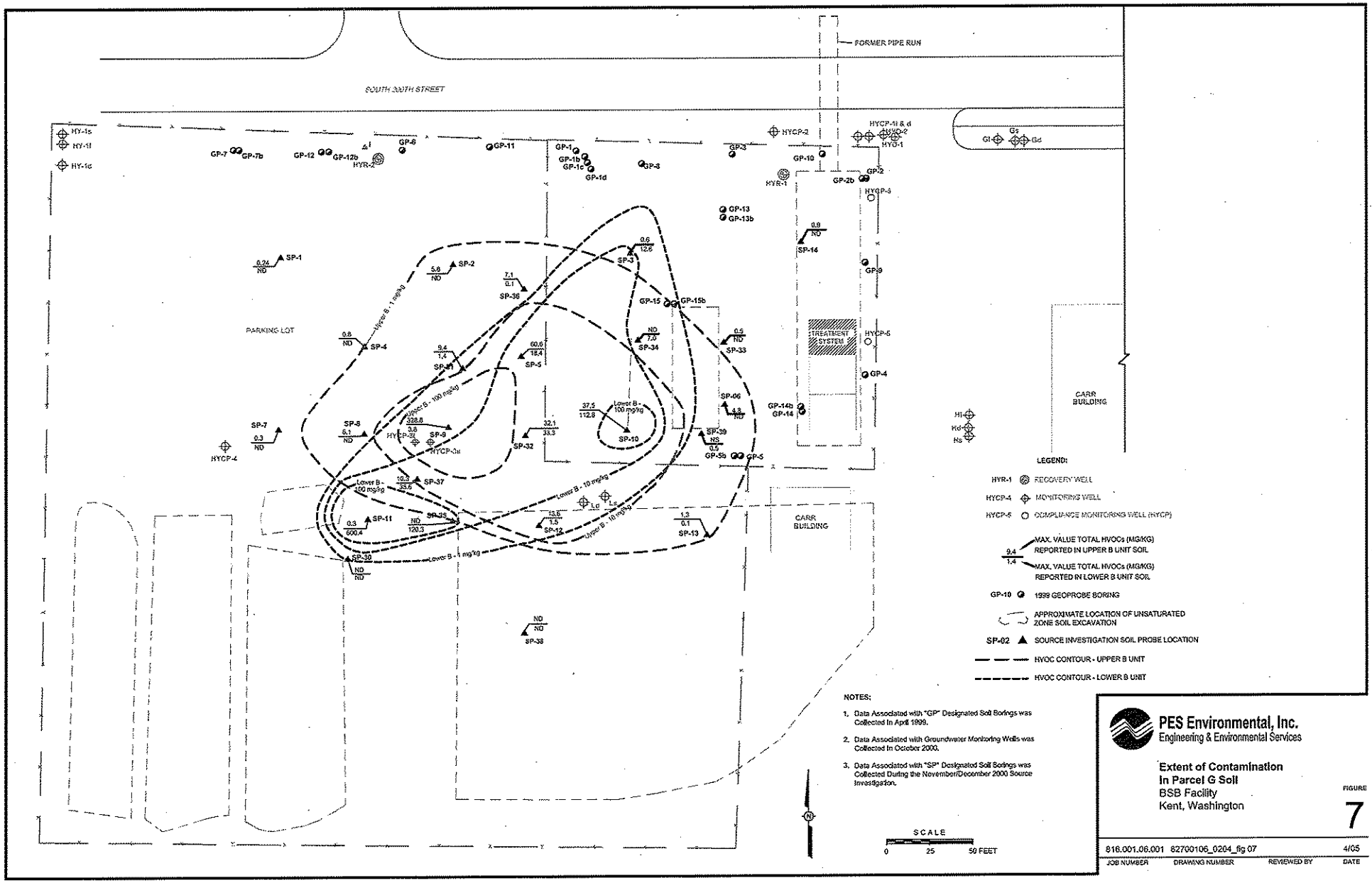

PES Environmental, Inc.
Engineering & Environmental Services

Extent of Contamination
In Parcel G Soil
BSB Facility
Kent, Washington

FIGURE
7

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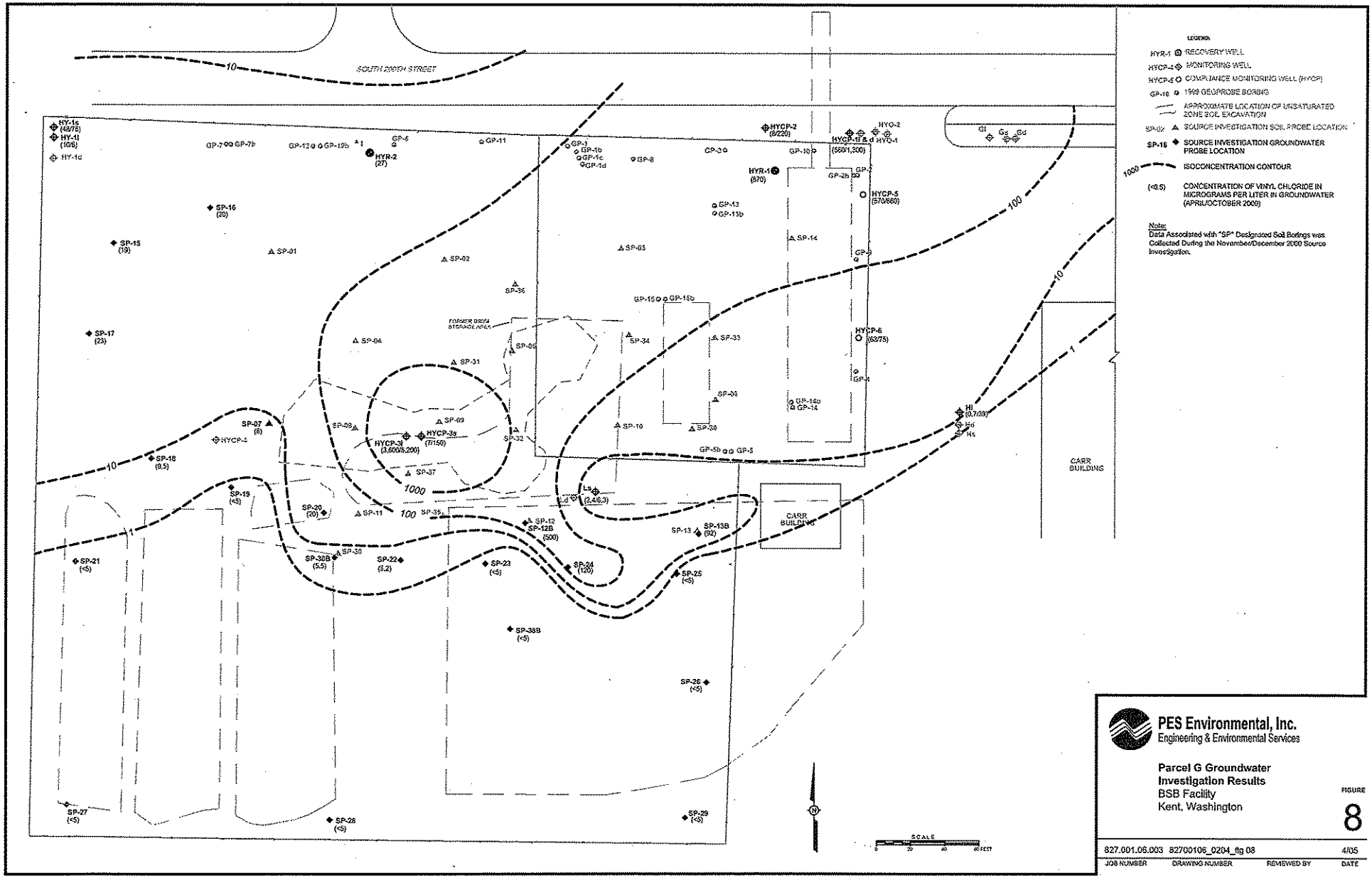

PES Environmental, Inc.
Engineering & Environmental Services

Parcel G Groundwater Investigation Results
BSB Facility
Kent, Washington

FIGURE
8

827.001.06.003	82700106_0204_fig 08		4/05
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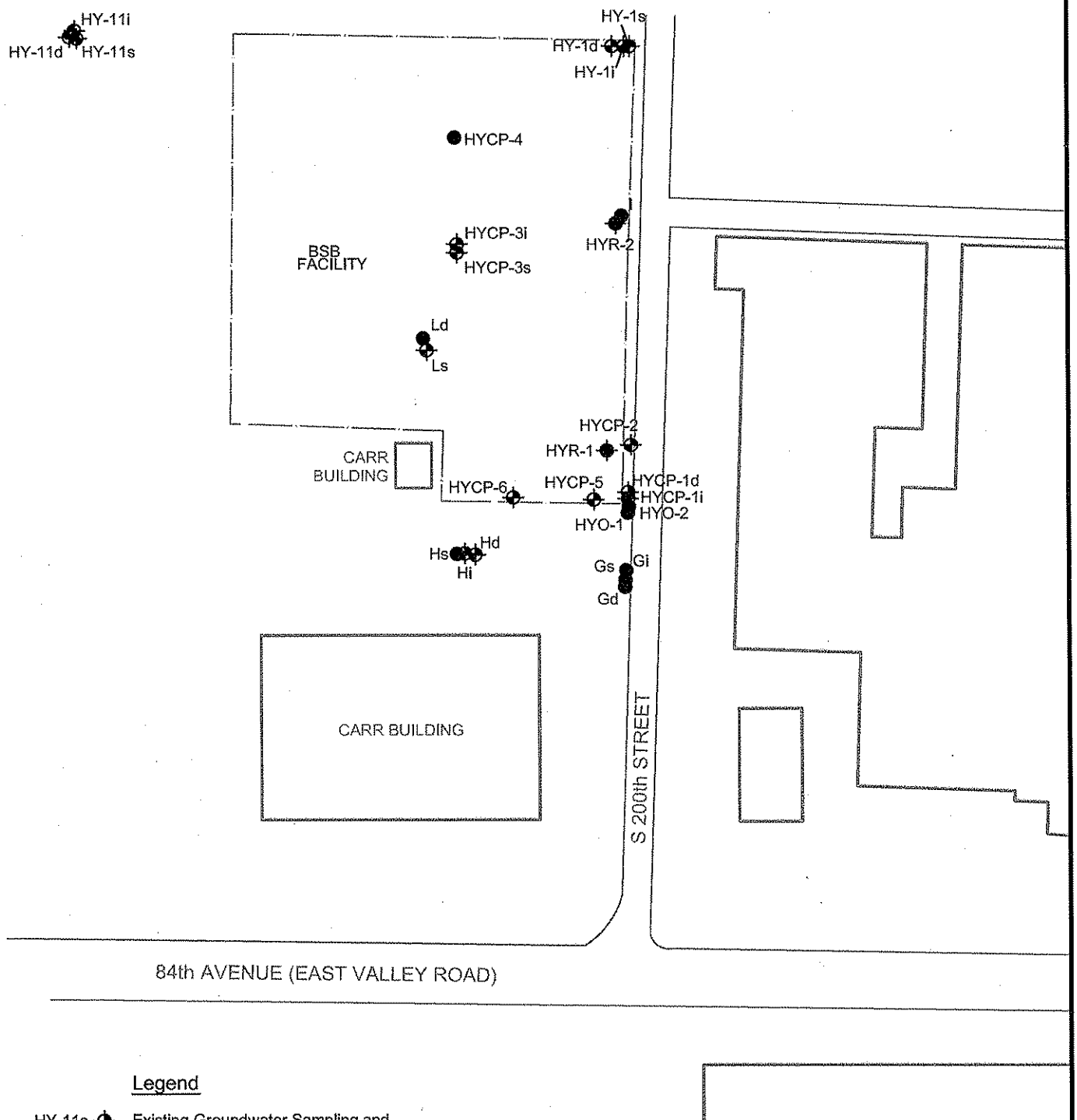

Legend

HY-11s — Existing Groundwater Sampling and Groundwater Level Monitoring Well

HYR-1 — Interim Recovery Well

HYCP-4 — Interim Water Level Monitoring Well

N

0 150

SCALE IN FEET

PES Environmental, Inc.
Engineering & Environmental Services

Interim Groundwater Extraction and Monitoring Network
BSB Facility
Kent, Washington

FIGURE
9

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JOB NUMBER	DRAWING NUMBER	REVIEWED BY	DATE

PES Environmental, Inc.
Engineering & Environmental Services

EXHIBIT D

A Report Prepared for:

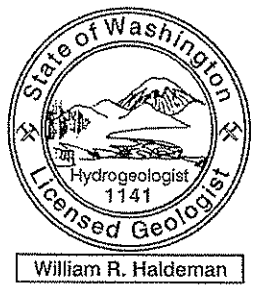
B.S.B. Diversified Company, Inc.
565 Fifth Avenue, Fourth Floor
New York, New York 10017-2413

INTERIM CORRECTIVE ACTION AND POSTCLOSURE MONITORING AND IMPLEMENTATION PLAN BSB PROPERTY KENT, WASHINGTON

JUNE 20, 2005

By:

Brian O'Neal, P.E.
Associate Engineer



William Haldeman, LHG
Senior Hydrogeologist

827.001.06

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1.0 INTRODUCTION AND BACKGROUND

1.1 Purpose

B.S.B Diversified Company Inc. (BSB) has prepared this Interim Corrective Action and Postclosure Monitoring and Implementation Plan (CAPMIP) to support interim remedial actions on BSB's property in Kent, Washington, pursuant to an Agreed Order with the Washington State Department of Ecology (Ecology) issued contemporaneously with this CAPMIP. The objective of the interim remedial actions is hydraulic containment of a chlorinated organics plume using groundwater extraction. The CAPMIP describes the operations and maintenance, evaluation, and reporting activities associated with the remedial actions.

1.2 Property Location and Description

The BSB property (also referred to as Parcel G) is located at 8202 South 200th Street in Kent, Washington (Figure 1). Parcel G is located in Township 22 North, Range 4 East, Section 1H at a latitude of 47 degrees 25' 22" North and a longitude of 122 degrees 13' 51" West. The 4.2-acre parcel is currently a fenced, vacant lot that slopes gently to the north. The area surrounding Parcel G is topographically flat and is zoned "Limited Industrial". Parcel G is bounded on the north by South 200th Street immediately to the north and the Hexcel Corporation (Hexcel) industrial facility. Commercial and industrial park properties are located to the west and south of Parcel G, and the Carr industrial facility is immediately to the east of Parcel G.

1.3 History and Development

1.3.1 History

The Hytek Finishes Company (Hytek), a division of Criton Technologies, operated a metal finishing and electroplating plant at 8202 South 200th Street (now part of the Hexcel Facility). Criton Technologies also had an adjacent composite products manufacturing division named Heath Tecna Aerospace Company at 19819 84th Avenue South. The Hytek division ceased treatment, storage, and disposal (TSD) operations regulated under RCRA in 1985. In 1987, BSB obtained both the Hytek and Heath Tecna Aerospace divisions, including real property described as Parcels A through G (Figure 2). In 1988, BSB sold the Heath Tecna Aerospace division and Parcels A through F to the Phoenix Washington Corporation, a wholly owned subsidiary of Ciba-Geigy. The Phoenix Washington Corporation subsequently changed its name to Heath Tecna Aerospace Company. BSB relocated Hytek's operations off-site and sold the division in 1989, retaining ownership of Parcel G. By mid 1996, Hexcel had acquired Heath Tecna Aerospace Company, including Parcels A through F, and had assumed all obligations of Heath Tecna regarding Parcels A through F. Parcel F, located adjacent to Parcel G to the east, was sold by Hexcel in August 2003 to Carr Prop II, LLC.

1.3.2 Prior Operations

A variety of industrial and hazardous wastes that were generated on Parcels A through E were formerly treated and stored in a waste treatment area located on Parcel G (Figure 3). The wastewater treated contained metals, cyanide, and certain volatile and semi-volatile organics. The waste treatment area was located in the northeast and southern portions of Parcel G; a parking lot was located in the northwest portion of the parcel. The waste treatment area contained an equalizing lagoon (also called a settling basin, holding basin, or holding lagoon), a sludge settling lagoon, sludge drying beds, treatment tanks, and a drum storage area. The waste treatment area was equipped to treat large volumes of dilute wastewater as well as highly concentrated plating baths. The processes that were available included reduction/oxidation of chromium, cyanide and nickel; neutralization of acids; precipitation of heavy metals; and dewatering of metal hydroxide sludges. Waste handling reportedly occurred on Parcel G between the mid 1950s, when electroplating operations were begun on the property north of South 200th Street, and 1985, when Hytek TSD activities ceased.

1.4 Previous Investigations

In 1980, the United States Environmental Protection Agency (USEPA) initiated site investigations at the former Hytek facility. Soil, soil gas, groundwater, sludge, and effluent samples were collected to investigate the former waste treatment area on Parcel G between 1981 and 1989. Figure 4 provides a site map showing the previous Parcel G exploration locations. Groundwater monitoring wells were installed on Parcel G and the Hexcel property between 1981 and 1989, extending from the southeast side of the former waste treatment area to the east side of 84th Avenue South (Figure 5). Groundwater samples have been collected from these wells since 1981. In 1999 and 2000, BSB collected additional soil and groundwater samples (designated by the prefixes "GP" and "SP" on Figure 4) to investigate the Parcel G source area.

1.5 Hydrogeology

Figure 4 presents the location of cross section A-A' (Figure 6) across Parcel G oriented roughly parallel to the direction of groundwater flow. The geologic cross section is based on boring logs from existing groundwater wells and the GP and SP borings drilled in 1999 and 2000.

The geologic materials beneath Parcel G consist of interbedded sand and silt layers. Six hydrogeologic units (designated Layers A through F) have been identified at Parcel G. Layers A, C, E, and F are fine-grained and exhibit low permeability. Layers B and D are composed of relatively high permeability sand. Supplemental data collected during a Parcel G investigation conducted in November and December 2000 revealed that Layer B in the area of Parcel G is largely divided into two subunits separated by a low-permeability silt layer. Layer C separates Layers B and D. Layer F is the deepest unit explored at Parcel G and forms a continuous aquitard approximately 100 feet (ft) thick (based on well logs for deep wells in the vicinity of Parcel G).

For the purpose of assessing contaminant distributions and water quality trends, the Parcel G hydrogeology is divided into "shallow," "intermediate," and "deep" zones. The shallow and intermediate aquifer zones are found in the upper and lower parts of Layer B, and the deep

aquifer zone is found in Layer D. Layer C acts as an aquitard between the intermediate and deep aquifer zones. Groundwater is encountered at a shallow depth (i.e., 5 to 10 feet) beneath Parcel G, with groundwater flow generally to the northeast. Groundwater monitoring wells completed in Layer B are generally referred to as shallow wells (Table 1). At locations where two wells are "nested" within Layer B, or where a Layer A well and a Layer B well are present, the lower (Layer B) well is referred to as an intermediate well. Groundwater monitoring wells completed in Layer C, or at an equivalent depth, are also referred to as intermediate wells. Groundwater monitoring wells completed in Layer D and/or Layer E are referred to as deep monitoring wells.

A detailed description of the hydrogeologic conditions at Parcel G is presented in Sweet-Edwards/EMCON, Inc. (1988), EMCON (1993), Volume 2 of IT Corporation (2000a), and IT Corporation (2001). A more extensive summary of the Parcel G hydrogeology will be presented in the forthcoming feasibility study report.

1.6 Nature and Extent of Parcel G Contamination

Following is a brief discussion of the nature and extent of contamination at Parcel G. A more extensive summary will be presented in the forthcoming feasibility study report.

1.6.1 Soil

Figure 7 presents total halogenated volatile organic constituents (HVOC) isoconcentration contours in soil in both the upper and lower portions of Layer B that were generated during the 2000 source area investigation (IT Corporation, 2001). The primary HVOCs found at Parcel G are trichloroethene (TCE), cis-1,2-dichloroethene (cis-1,2-DCE), and vinyl chloride. The extent of contamination appears to be centered around the location of the former drum storage area (near the HYCP-3 well pair). Total HVOC concentrations above 10 mg/kg were found between depths of 17 and 34 feet below grade, with maximum HVOC concentrations typically located within or directly above the confining layers (i.e., intermediate silt layer in Layer B and the top of Layer C). These results were consistent with the 1980's Parcel G soil sampling (IT Corporation, 2000b). The maximum total HVOC concentration in the upper part of the intermediate silt was 328.8 mg/kg at a depth of 20 feet in SP-9, and the maximum total HVOC concentration in the lower part of the intermediate silt was 600.4 mg/kg at a depth of 34 feet in SP-11. Although these soil sampling investigations included monitoring for dense nonaqueous phase liquids (DNAPLs), none were observed. However, as discussed in Section 1.6.2, the concentrations of TCE in groundwater are consistent with the likely presence of DNAPL.

1.6.2 Groundwater

Parcel G total HVOC concentrations in groundwater have varied from less than the method reporting limit (MRL) to greater than 100,000 µg/L. Figure 8 presents the 2000 vinyl chloride concentrations in groundwater, including groundwater analytical results generated during the 2000 source area investigation and April/October 2000 monitoring well sampling events. The area of groundwater affected by vinyl chloride is the most extensive of the VOCs detected and encompasses the distributions of the other VOCs. The 2000 investigation found that HVOC

concentrations were typically higher in the groundwater samples collected from the upper portion of Layer B (i.e., above the intermediate silt layer) compared to groundwater samples collected from the lower portion of Layer B. The intermediate silt layer appears to have been effective in mitigating HVOC migration into the lower portion of Layer B. At limited locations, however, HVOC concentrations are higher in the lower portion of Layer B (e.g., the HYCP-3 groundwater monitoring well cluster).

As Figure 8 indicates, Parcel G groundwater impacted with HVOCs appears to originate primarily in proximity to the former drum storage area. Although groundwater analytical results from some borings (e.g., SP-18, SP-21, SP-30) installed upgradient of the former drum storage area and downgradient of the former sludge drying beds indicated elevated levels of cis-1,2-DCE, minimal levels of TCE were detected. Because much higher levels of TCE and cis-1,2-DCE have been detected within and near the former drum storage area (e.g., HYCP-3i, SP-12B) than have been detected at the downgradient edge of the former sludge lagoons (SP-19, SP-20, and SP-22), the investigation results provide a good indication that the primary source on Parcel G is located in the former drum storage area, not in the former sludge drying beds.

Concentrations of TCE detected in groundwater were initially as high as 380,000 µg/L, which is 35 percent of the saturation concentration of TCE in water. Recent concentrations, though much lower, have been as high as 76,000 µg/L, which is 7 percent of the saturation concentration of TCE in water. Although there has been no direct observation of DNAPL in the subsurface at Parcel G, concentrations of this magnitude in groundwater are often a good indication that DNAPL is present.

Borings SP-15 and SP-16, located in the northwest corner of Parcel G, both indicated elevated concentrations of cis-1,2-DCE in groundwater in the upper portion of Layer B, consistent with groundwater monitoring data collected from the HY-1 shallow well (HY-1s). In addition, boring SP-18 detected cis-1,2-DCE in the groundwater at a significant concentration (950 µg/L). These locations are not directly downgradient (under current groundwater flow conditions) of any suspected Parcel G source area, and HVOCs in groundwater at these locations likely indicate an off-site source.

1.7 Previous and Ongoing Cleanup Actions

RCRA closure of all regulated units occurred in 1987 and 1988. In November 1988, USEPA and Ecology jointly issued a Post-closure Permit (WAD 07 665 5182) covering Parcels A through G. The permit identified the permitted facility as Parcels G and E, with recognition that Parcel E was subject to a pending transfer to Heath Tecna (later Hexcel). The permit did not name Heath Tecna and did not define the permitted facility to include Parcels A, B, C, D and F based upon the agencies' acceptance of a private agreement between BSB and Heath Tecna (later Hexcel). Under this private agreement, BSB agreed to be named as the sole permittee and Heath Tecna (later Hexcel) agreed to reimburse BSB for the costs of conducting the remedial action on the Hexcel Parcels. In accordance with the permit, a groundwater recovery program was implemented to meet the post-closure permit groundwater corrective action requirements for solid waste management units on the BSB Parcel G and on the Hexcel Parcel E.

1.7.1 RCRA Closure Activities

The former settling basin and former settling lagoon were closed in 1987 consistent with the EPA-approved closure plan. During closure, basin and lagoon sludges were removed and disposed off-site, 12 inches of underlying native soil were removed and disposed off-site, geotextile was installed to stabilize several areas of the settling basin, the excavations were filled with clean, granular soil, and an asphalt concrete cover system was constructed over each area (Landau, 1988a). Although the water table was encountered only at the base of the excavations, the moisture content of the excavated native soil was higher than that allowed for disposal. Therefore, kiln dust was mixed with soil to adjust the moisture content of the soil prior to transportation and disposal. A total of 614 tons of sludge, soil, and kiln dust were transported off site for disposal.

The former sludge drying beds were closed in 1988. Closure activities consisted of excavation of sludge, excavation of 6 inches of underlying native soil, lining the base of the excavations with woven geotextile for stabilization, installing an impermeable liner over the geotextile, filling the center of the excavations with mixed stabilized sludge and soil, filling the perimeter of the excavations with clean, granular soil, and installation of an asphalt concrete cover system that was sloped to the north (Landau, 1988b). The cover system includes two geotextile layers, a PVC liner, a granular backfill layer, a crushed rock base layer, and asphalt concrete pavement.

As delineated from the soil data collected through 1988 and summarized above, unsaturated, contaminated soil from the former drum storage area was excavated from Parcel G in late 1988/89 from the area outlined on Figure 3.

1.7.2 Postclosure Groundwater Remediation

In 1989, EMCON designed and implemented a pilot groundwater remediation program for the permitted parcels in accordance with the postclosure permit. S.S. Papadopulos and Associates Inc. (SSPA), as Heath Tecna Aerospace Company's consultant, developed the groundwater flow model for Parcels A through G. The model defines target pumping rates for each recovery well and evaluates the performance of the remediation program with respect to the capture of groundwater contaminants. In August 1991, USEPA provided final approval for implementation of EMCON's recovery and treatment program.

In August 1992, EMCON activated the groundwater extraction and treatment program required by the postclosure permit. The groundwater extraction program, which continues in place to date, consists of six groundwater recovery wells designed to recover VOCs from the shallow aquifer zone consistent with the postclosure permit conditions. Recovery wells HYR-1 and HYR-2 are located on the BSB parcel and recovery wells CG-1, CG-2, CG-3, and CG-4 are located on the Hexcel parcels. An automated control system controls pumping rates, signals system alarms, records pumping volumes and rates, and collects water level data.

The groundwater program initially included a groundwater treatment system. However, following approval to discharge effluent water directly to the sewer system in 1995, the Parcel G treatment system has been idle. Currently, groundwater enters a bypass line that transfers the

water from the treatment area directly to the King County (formerly Metro) sewer treatment system.

BSB submitted a request for a Class 2 permit modification in 1998. The modification sought to streamline the groundwater monitoring program by reducing the number of groundwater sampling wells and the frequency of sampling required. Ecology approved the modification in 1998. A Post-Closure Care Permit Renewal Application (BSB, 1999) was submitted to Ecology in November 1999.

Per the Agreed Order, remediation responsibilities will be divided by parcel with BSB responsible for remediation of Parcel G and Hexcel responsible for remediation of Parcels A through F. In accordance with the schedule set forth in BSB's Agreed Order and Hexcel's Enforcement Order, the groundwater treatment system will be separated with each party having an independent discharge to the sewer treatment system. BSB will retain responsibility for recovery wells HYR-1 and HYR-2, and Hexcel will assume responsibility for recovery wells CG-1, CG-2, CG-3, and CG-4. BSB and Hexcel will each operate and maintain its respective system as an interim remedy until final remedies are approved and implemented. This CAPMIP sets forth the procedures for operating, maintaining, and monitoring BSB's interim remedy consistent with the original design and objective of the existing groundwater extraction system.

1.8 Project Parties and Responsibilities

Agency oversight of the project will be provided by Hideo Fujita of the Washington Department of Ecology's Northwest Regional office. He can be reached at (425) 649-7068 or hfuj461@ecy.wa.gov. BSB will be responsible for implementation, operation, and maintenance of the remedial actions at Parcel G. BSB's project manager for the remedial actions will be Ronald A. Burt of Patterson Planning & Services, Inc. He can be reached at (615) 986-2679 or raburt_pps@yahoo.com. PES Environmental (PES) is providing engineering, technical, and operational support for the project. PES' project manager is William Haldeman. He can be reached at (425) 637-1905 or whaldeman@pesenv.com.

1.9 Organization of the Plan

Section 1 – Introduction and Background: Describes the purpose of the plan, the project location and surroundings, the history, previous investigations, hydrogeology, the nature and extent of Parcel G contamination, remedial activities conducted to date at Parcel G, project parties and their responsibilities, and the organization of the plan.

Section 2 – Interim Remedial Actions: Describes the interim remedial objectives and activities.

Section 3 – System Operations: Describes the operational strategy of the interim groundwater remediation system, O&M procedures used to ensure proper functioning of the remedial actions, including inspections, operations procedures, maintenance activities, groundwater monitoring, and health and safety requirements.

Section 4 – Data Evaluation: Describes the evaluation techniques that will be used during the interim remedial action.

Section 5 – Documentation and Notification: Describes the methods for documenting remedial activities at Parcel G, the reports to be submitted, and the notifications to be made during remedial activities.

Section 6 – References: Lists the references made in the plan.

2.0 INTERIM REMEDIAL ACTIONS

2.1 Remedial Objectives

The objectives of the interim remedial actions described in this CAPMIP include:

1. Preventing direct contact with, and minimizing infiltration of precipitation through, Parcel G-related hazardous constituents in soil and/or waste materials.

2. Preventing migration of HVOC-containing groundwater above cleanup levels from Parcel G.

Objective No. 1 will continue to be achieved through maintenance of the existing asphalt cap, security and signage, and institutional controls components of the remedial action described below in Sections 2.2.1, 2.2.4, and 2.2.5, respectively. Objective No. 2 will be achieved through operation and maintenance (O&M) of the interim groundwater recovery system and groundwater monitoring described below in Sections 2.2.2 and 2.2.3.

A final remedial action will be evaluated during a Focused Feasibility Study and will replace or enhance the interim remedy following selection and Ecology approval.

2.2 Remedial Action Description

2.2.1 Asphalt Cap

As discussed above, the former settling basin, the former equalization lagoon, and the former sludge drying beds were capped during closure. The capped areas, shown on Figure 3, encompass an approximate total area of 75,000 square feet. Each cap consists of two geotextile layers, a PVC liner, a granular backfill layer, a crushed rock base layer, and asphalt concrete pavement. As described in Section 3.2, BSB will maintain the integrity and effectiveness of each cap by making repairs as necessary to correct the effects of settling, subsidence, erosion, or other damage. BSB will prevent run-on and run-off from damaging each cap. BSB will routinely inspect each cap as described in Section 3.2.

2.2.2 Groundwater Recovery System

2.2.2.1 Existing Facility Extraction System

Since August 1992, two extraction wells, HYR-1 and HYR-2 (Figure 4), have been operated on the north side of BSB's Parcel G, and extraction wells CG-1 through CG-4 (Figure 5) have been operated on the eastern sides of Hexcel's Parcels C, D, and E. Each extraction well is 6-inches in diameter, 30- to 35-feet-deep, and screened between 10 and 30 feet below grade (Table 1). The top of each well is completed below grade in a vault. Groundwater is extracted from each well with a submersible pump and is pumped through an individual, underground conveyance line to an aboveground manifold located in the northeast corner of Parcel G. The individual

conveyance lines (two from Parcel G and the others from the Hexcel parcels) are joined together at the manifold into a common header that leads to the sanitary sewer. Extracted groundwater is discharged to the sanitary sewer under King County Waste Discharge Permit No. 7575. Access ports in the system allow sampling of individual wells or the combined discharge.

Each extraction well consists of a submersible well pump, down-well submersible pressure transducer, independent conveyance piping, and an electrically actuated ball valve with proportional valve position control and paddle wheel flow transmitter on each piping run. The extraction system operation is controlled by a programmable logic controller (PLC) located adjacent to the Parcel G manifold. The PLC is set-up to allow operator interface using a site-specific graphical application on a personal computer (PC). The operator can use the PC application to communicate with the PLC directly - either remotely via dial-up modem or on-site. Using the PC application, the operator can access real time operational data (i.e., flow rates, pump status, pump cycles, water levels), control PLC logic set points (i.e., pump flow rates and water levels), and download up to one month of daily operating data.

In general, the PLC logic is programmed to operate each individual extraction well at an operator-controlled flow rate and protect each pump from low water flow rate and level conditions. To control each flow rate, the PLC reads the flow transmitter output and then proportionally adjusts the ball valve position until the flow rate set point is reached. In the event that flow falls below the low flow rate set point, the PLC shuts off the well pump and activates an alarm sequence that notifies the operator of the low flow condition. To protect the pump from low water level in the well, the PLC reads the pressure transducer output and then temporarily shuts off the well pump if the water level drops to the low water level set point. After well water recharges above the high water level set point, the well pump cycles on and begins pumping again.

2.2.2.2 Establishment of Separate Interim Extraction Systems

As discussed in Section 1.7.2, future remediation responsibilities will be divided by parcel with BSB responsible for remediation of Parcel G and Hexcel responsible for remediation of Parcels A through F. The existing remediation system will be divided with BSB retaining extraction wells HYR-1 and HYR-2, all Parcel G piping, and the existing PLC, and Hexcel taking responsibility for extraction wells CG-1 through CG-4 and all piping located on Parcels C, D, and E. In coordination with Hexcel's assumption of responsibility for its portion of the system, BSB will cut and/or plug the existing underground conveyance and electrical lines from the CG wells to Parcel G and establish new power and water supply connections for Parcel G. Future operation of the CG wells will require that Hexcel establish a new system for extraction control and conveyance on the Hexcel property.

Within fifteen (15) days of the effective date of the BSB Agreed Order, BSB will submit to Ecology for its approval the Work Plan for the separation of the BSB portion of the BSB/Hexcel groundwater remediation well system (Separation Work Plan). The Work Plan shall address all the engineering requirements including: (1) the physical piping system separation; (2) the adjustment to the piping for proper discharge of the extracted groundwater; and (3) the electrical wiring for operation of the system including remediation wells, alarms, and control systems. Ecology will approve, approve with comments or disapprove the Separation Work Plan within

forty-five (45) days of the effective date of the Order. If necessary, BSB will submit a revised Separation Work Plan satisfying Ecology's requirements within sixty (60) days of the effective date of the Order. Ecology will approve any such revised Separation Work Plan within ninety (90) days of the effective date of the Order. Within one hundred twenty (120) days of the effective date of the Order, BSB will complete system modifications for independent operation and discharge up to the point of system separation. BSB will initiate final system separation and initiate independent groundwater operations within the later of one hundred thirty-four (134) days of the effective date of the Order or 14 days after King County's issuance of a discharge permit to Hexcel. At that time, BSB's operation of the Hexcel portion of the groundwater extraction system will cease.

2.2.3 Monitoring Wells and Piezometers

This section describes the existing and interim Parcel G groundwater monitoring networks. Survey coordinates and well completion details for existing wells to be used in the interim groundwater monitoring network are summarized in Table 1.

2.2.3.1 Current Groundwater Monitoring Network

Twenty-five monitoring wells are currently located on Parcel G and immediately adjacent to the north, east, and southwest sides of Parcel G (see Figures 4 and 5). Eleven of these wells are shallow, six are intermediate, and eight are deep. Consistent with the Postclosure Permit Evaluation Monitoring Plan Amendment (EMPA; EMCON, 1998), groundwater levels are measured in all 25 monitoring wells monthly. The groundwater levels have historically been used to calibrate a groundwater flow model used in verifying groundwater capture by the extraction system. Additionally per the EMPA, seven shallow wells (Ls, HY-1s, HY-11s, HYCP-2, HYCP-3s, HYCP-5, and HYCP-6), five intermediate wells (Hi, HY-1i, HY-11i, HYCP-1i, and HYCP-3i), and four deep wells (Hd, HY-1d, HY-11d, and HYCP-1d) are sampled on a semiannual basis and analyzed for VOCs, dissolved arsenic, and cyanide. Groundwater samples from two wells (HYCP-2 and HYCP-5) are also analyzed annually for a more expansive VOC parameter list, semivolatile organic compounds (SVOCs), selected metals, and polychlorinated biphenyls (PCBs). Access to monitoring wells Hs, Hi, and Hd has not been available since August 2003. The wells are located on Parcel F, which was sold by Hexcel to Carr Prop II, LLC (Carr). Before these wells can be monitored in the future, access will have to be provided by Hexcel and Carr.

2.2.3.2 Interim Parcel G Groundwater Level Monitoring Network

Table 2 and Figure 9 present the extraction wells, monitoring wells, and piezometers to be used to monitor groundwater conditions on and near Parcel G during interim actions. All wells in the network will be used to measure groundwater levels. The network will include 11 existing shallow EMPA wells, 6 existing intermediate EMPA wells, 8 existing deep EMPA wells, and 2 existing extraction wells (assuming that access can be gained to Hs, Hi, and Hd; see Section 2.2.3.1). Groundwater levels will be measured on a monthly basis.

2.2.3.3 Interim Parcel G Groundwater Sampling Network

BSB will continue to collect groundwater samples semiannually from 16 EMPA wells (Table 2) and submit the samples for laboratory analysis of HVOCs, dissolved arsenic, and cyanide. The sampling and analysis will be conducted per the EMPA.

2.2.4 Security and Signage

BSB has maintained the security system put in place by Hytek to prevent unknowing entry and to minimize the possibility of unauthorized entry in accordance with the requirements of WAC 173-303-310. The system includes a 7-foot-high chain-link fence with a barb wire top that completely surrounds the former treatment and storage areas. Currently, the access gates to Parcel G are locked at all times unless authorized personnel are performing monitoring, maintenance, or inspection activities within the secured areas. The keys for the areas are of limited issue and kept by PES. The perimeter of the former treatment and storage areas are placarded with highly visible signs that bear the legend "DANGER – UNAUTHORIZED PERSONNEL KEEP OUT." The signs are spaced to provide sufficient warning, posted at eye level (for a 5 foot, 6 inch tall individual), and legible from a distance of 25 feet.

BSB will maintain the existing security and signage system by routinely inspecting the fence, gates, and signs for deterioration or damage and repairing all defects that could cause a breach in security (see Section 3.2).

2.2.5 Institutional Controls

Institutional controls (WAC 173-340-440), which include property use restrictions, maintenance requirements for engineered controls (e.g., inspections), educational programs (e.g., signs), and financial assurances, have been in place since RCRA closure of the facility to limit or prohibit activities that may interfere with the integrity of the cleanup action. These controls will be maintained during implementation and operations of the interim groundwater extraction system at Parcel G. Fencing and signage, as discussed above, will be maintained. BSB will perform the inspection and maintenance requirements of the engineered controls as discussed in Section 3.

3.0 SYSTEM OPERATIONS

The purpose of this section is to provide a general description of system operations for the interim groundwater remediation system:

- The operational strategy that will guide system operations;
- Operations and maintenance activities;
- Groundwater monitoring activities; and
- Health and safety requirements.

3.1 Interim Groundwater Extraction System Operational Strategy

The operational goals of the enhanced groundwater extraction system are:

1. Achieve the target pumping rates
2. Maximize extraction well up-time
3. Minimize extraction well cycling

Following is a summary of the system operational strategy for achieving these goals.

3.1.1 Target Pumping Rates

Each recovery well in the existing groundwater extraction system has a target pumping rate, which is the rate at which the pump is set. These pumping rates were established based on the evaluation of the pilot pumping test (S.S. Papadopulos & Associates, 1990) and were modified based on an evaluation of the first year of system performance (S.S. Papadopulos & Associates, 1993). Each well also has a projected pumping rate, which is calculated assuming that each well is operational 90 percent of the time. The target pumping rates of 13 and 9 gallons per minute (gpm) will be maintained for wells HYR-1 and HYR-2, respectively, for a total target pumping rate of 22 gpm. During periods of low recharge, water levels may decline and hydraulic gradients may decrease affecting the design pumping rates in the wells. If the total target pumping rate of 22 gpm cannot be attained on a daily average basis for any period longer than 10 days, then BSB shall provide Ecology notice of the pumping deficiency within 15 days. If Ecology requests, BSB shall submit to Ecology a schedule, not to exceed 60 days in duration, for implementing sufficient additional pumping capabilities to obtain the total target pumping rate, or submit a technical analysis and a confirmation monitoring plan to demonstrate that a lower total pumpage rate, during a period of low recharge and dropping groundwater levels, will maintain hydraulic containment of the chlorinated organics plume.

3.1.2 Extraction Well Up-Time

Extraction well down-time has typically been caused by biogrowth, iron-related deposits, or component failure. Biogrowth and iron-related deposits accumulate with time on the well screen, pump intake, water piping, and instruments, reducing well efficiencies and pumping rates and increasing wear and tear on extraction system components. The inspection, operation, and maintenance activities described in Section 3.2 will be conducted to identify and prevent the build up of biogrowth and iron-related deposits and to identify and replace worn components. Spare parts will be purchased and stored ready for use or will be locally available on short notice to maximize extraction well up-time.

3.1.3 Extraction Well Cycling

Extraction well cycling has typically been caused by well screen plugging (by biogrowth or iron-related deposits), component failure, or reduced recharge and subsequent over pumping. Excessive well cycling can cause or exacerbate biofouling and iron deposits. The inspection, operation, and maintenance activities described below will be conducted to identify and prevent the build up of biogrowth and iron-related deposits, and to identify and replace worn components. Spare parts will be purchased and stored ready for use or will be locally available on short notice to minimize downtime. Extraction well water levels will be monitored on a regular basis and pumping rates adjusted if water levels indicate that the well is getting close to cycling.

3.2 Inspections, Operations, and Maintenance Procedures

3.2.1 Inspections

Inspections will be performed on a routine basis and in conjunction with scheduled extraction well and equipment maintenance activities. Inspections will be conducted to gauge the performance of the remedial actions: asphalt cap, groundwater recovery system, monitoring wells, piezometers, Parcel G security, and signage. Inspections will include remote groundwater extraction system operation checks and field inspections. Field inspections will involve observation and monitoring of the remedial action components. Inspections will be documented with prescribed field forms. The inspection frequencies are outlined in Table 3.

3.2.2 Operations

The overall strategy for operating the groundwater remediation system is described above in Section 3.1. Consistent with this strategy, the primary operational goal of reliably achieving target pumping rates and maintaining capture will be achieved through maximizing the extraction system up-time and efficiency. Up-time will be maximized by operating the system in a manner that to the extent practical eliminates extraction pump "cycling," thereby maintaining well efficiency, reducing fouling of extraction pumps and piping, and minimizing wear and tear on extraction system components.

The extraction system will operate automatically as described in Section 2.2.2.1. The extraction system operator will oversee the automatic operations through on-site and remote inspections (Section 3.2.1) and through operational testing. In order to optimize groundwater recovery system operations, operational testing will be performed in conjunction with field inspections. Operational testing will be documented with prescribed field forms. Table 4 lists the testing parameters and frequencies that will be followed.

3.2.3 Maintenance

The routine maintenance parameters and initial maintenance frequencies are outlined in Table 5. Maintenance shall be performed on a routine basis, in conjunction with inspection activities. Maintenance activities will be documented with prescribed field forms. The maintenance frequency for each well and or component will be adjusted based on field conditions. An extraction well that is significantly bio-fouled or significantly encrusted with iron-related deposits will be redeveloped. Well redevelopment will include chemical or mechanical treatment, surging, bailing, and/or pumping the well until the specific capacity of the well returns to acceptable levels. If a fouled well does not respond adequately to redevelopment, it will be abandoned and replaced.

3.3 Groundwater Monitoring

3.3.1 Water Level Monitoring

BSB will measure groundwater levels in all network wells (Table 2; assuming that access can be gained to Hs, Hi, and Hd; see Section 2.2.3.1) on a monthly basis. Water levels (depth to water below top of PVC or metal well casing) will be measured with an electric well probe. Water level measurement events will be coordinated with Hexcel personnel so that water levels can be measured on the same day on both the BSB and Hexcel parcels.

3.3.2 Water Quality Monitoring

3.3.2.1 Monitoring Locations and Frequency

BSB will collect groundwater samples from 7 shallow monitoring wells, 5 intermediate monitoring wells, and 4 deep monitoring wells at the frequency detailed in Table 6 (assuming that access can be gained to Hs, Hi, and Hd; see Section 2.2.3.1). The 16 EMPA monitoring wells (Hi, Hd, HY-1s, HY-1i, HY-1d, HY-11s, HY-11i, HY-11d, HYCP-1i, HYCP-1d, HYCP-2, HYCP-3s, HYCP-3i, HYCP-5, HYCP-6, and Ls) will be sampled semiannually, consistent with past practice, for the duration of the interim remedy. Samples from these wells will be analyzed for HVOCs (USEPA Method 8021B), dissolved arsenic (USEPA Method 7060), and total cyanide (USEPA Method 335.2). Annually, samples collected from HYCP-2 and HYCP-5 will be analyzed for VOCs (USEPA Method 8260B), SVOCs (USEPA Method 8270), PCBs (USEPA Method 8082), and additional dissolved metals (barium, cadmium, chromium, copper, nickel, and zinc by USEPA Method 6010).

3.3.2.2 Sampling Procedures

All sampling and analysis will be done per the EMPA (EMCON, 1998). The monitoring well will be purged with a peristaltic pump fitted with new polyethylene and silicon (at the pump head only) tubing. A minimum of three well casing volumes will be removed before collection of any sample for laboratory analysis. Conductivity, temperature, and pH will be taken after the removal of each well casing volume. Samples will not be collected until these parameters have stabilized to ±10 percent or after a maximum of two hours of purging. Field instruments will be calibrated using known, standard solutions a minimum of twice daily. VOC samples will be collected with a disposable polyethylene bailer, and metals and cyanide samples will be collected from the discharge end of the peristaltic pump.

A hydraulic assessment of each sampled monitoring well will be made during well purging. The assessment will be made by monitoring drawdown during well purging. If excessive drawdown is noted and a subsequent review of the well log and purging history indicate that the well should be performing significantly better, the well will be redeveloped. Well redevelopment will include surging, bailing, and pumping the well until the color and turbidity of the discharge water do not change. If the well does not respond adequately to redevelopment, it will be abandoned and replaced.

3.3.2.3 Quality Control Samples

Quality control samples will be collected at an approximate frequency of 10 percent of the total number of groundwater samples, with one duplicate groundwater sample and one field (rinsate) blank collected every sampling event. Duplicate and field blank samples will be collected using the same procedures described above (where applicable), and submitted blind to the laboratory. The locations for duplicate sample collection will be determined in the field and will be varied over time.

3.4 Health and Safety Requirements

The existing project health and safety plan (HASP) will be reviewed and, if necessary, updated to be consistent with the health and safety requirements of BSB, Ecology (per WAC 173-340-810), and the Washington Industrial Safety and Health Act (WAC 296-24, 296-62, and 296-155). All applicable workers on Parcel G will be required to read and sign the HASP. Health and safety meetings will be conducted with contractors, subcontractors, construction testing personnel, and applicable BSB employees before starting work at Parcel G.

4.0 DATA EVALUATION

4.1 Operational Performance Evaluation

The fundamental performance objective of the enhanced groundwater extraction system is to prevent migration of contaminated groundwater above cleanup standards from Parcel G by creating a capture zone that encompasses the Parcel G boundaries. By definition, a capture zone is characterized by hydraulic gradients that ultimately draw all groundwater within the zone to the extraction wells. Performance evaluations will focus on evaluating whether the operational goals of maintaining target pumping rates and maximizing the extraction system up-time and efficiency were achieved. Operational data will be collected during the routine inspections (Table 3) and operational testing (Table 4) described in Section 3.2 above. Specific aspects of system operations that will be evaluated include:

- Extraction well pump rates;
- System up-time;
- Extraction well cycling frequency;
- Extraction well specific capacity;
- Extraction well water quality (VOCs, general chemistry, and microbial); and
- Mass of contaminants removed.

In addition, the equipment inspection, testing, and calibration data collected will be reviewed to assess whether the current O&M approach is adequate.

4.2 Contingencies

Well shutdown and operational problems will be diagnosed and repaired as quickly as possible to meet operational goals. The existing autodialer will continue to be used to notify technical personnel when wells have shut down or are pumping below specified levels. Additionally, critical spare parts will be stored ready for use to maximize extraction well up-time. If a well is shut down for longer than 5 days, Ecology will be notified.

5.0 DOCUMENTATION AND NOTIFICATION

5.1 Documentation

All inspection, maintenance, and repair events will be documented and reported as described below.

5.1.1 Inspections

Inspections will be documented on forms developed specifically for the project, standard field memo forms, or in a project-specific field book, depending on the complexity of the inspection and detail of information to be recorded. Information documented will include date, personnel completing the inspection, weather, Parcel G conditions, observations of the specific items reviewed, and recommendations, if necessary, of items requiring maintenance or repair. Field forms, copies of the field book entries, and any photographs taken will be stored in the project file.

5.1.2 Maintenance and Repairs

Maintenance and repair activities will be documented on project-specific forms, standard field memo forms, or in a project-specific field book. Information documented will include date, personnel performing the maintenance or repair, location of the activity, component being maintained or repaired, maintenance or repair methods and equipment/materials used (if applicable), and recommendations, if necessary, for additional work to be performed in the future. Field forms, copies of the field book entries, and any photographs taken will be stored in the project file.

5.1.3 Groundwater Monitoring and Sampling

Groundwater level measurements will be recorded in a project-specific field book or on project-specific forms. Information documented will include date, personnel, applicable Parcel G conditions, well numbers, time of measurement, depth to water, and any observations of well or surface monument condition. Groundwater sampling events will be documented on project-specific groundwater sampling forms. Information recorded will include date, personnel, applicable Parcel G conditions, well numbers, time of sampling, depth to water, field parameters, laboratory bottles filled, and analyses to be performed. Groundwater sampling forms, copies of any field book entries, and any photographs taken will be stored in the project file.

5.2 Reporting

5.2.1 POTW Discharge Monitoring Reports

Monthly self-monitoring reports will be submitted to KCIW by the 15th day each month. Per Waste Discharge Permit No. 7575, the self-monitoring reports will include a King County self-

monitoring report form, any analytical laboratory reports (for required or non-required self-monitoring), and a record of monthly discharge. A copy of each report will be provided to Ecology and Hexcel.

5.2.2 Groundwater Data Submittals

Groundwater quality data will be transmitted, after a data quality review, to Ecology and Hexcel. The data transmittal will note any significant problems encountered during sampling and any data qualifiers assigned based on the quality review. The data will be submitted to Ecology and Hexcel within 30 days of receipt of the final data report from the analytical laboratory.

5.2.3 Operational Summary Reports

Operational summary reports will be prepared quarterly. Each report will summarize the interim extraction system operational performance during the period of record, including

- Extraction well pump rates;
- System up-time;
- Extraction well cycling frequency;
- Extraction well specific capacity;
- Extraction well water quality (VOCs, general chemistry, and microbial); and
- Mass of contaminants removed.

Performance evaluation reports will be submitted to Ecology and Hexcel within 30 days of the end of the quarter.

5.2.4 Annual Report

Per the EMPA, a report will be issued after the end of a calendar year summarizing the interim groundwater extraction system performance and monitoring data for the previous year. The report will provide:

- A compilation and summary of the groundwater extraction system performance data provided in the quarterly reports;
- Groundwater level and rainfall data for the previous year;
- Groundwater contour maps for high and low water level conditions;
- Groundwater field data sheets;
- All laboratory analytical reports; and

- Groundwater time trend plots for TCE, cis-1,2-DCE, and vinyl chloride for each network sampling well; and

- Updated Parcel G isoconcentration contour maps for TCE, cis-1,2-DCE, and vinyl chloride.

The annual report covering the period January through December will be submitted to Ecology and Hexcel by the following March.

5.3 Notification

Hexcel will be notified in advance of groundwater level monitoring events and in advance of groundwater sampling events to allow coordination of water level measurements and sampling at both the BSB and Hexcel facilities. The notification requirements of King County Waste Discharge Permit No. 7575 will be followed, including notifying King County in the event of a spill or slug discharge to the sanitary sewer or changes in discharge characteristics.

6.0 REFERENCES

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TABLES

Table 1

Parcel G and South 200th Street Well Completion Data
BSB Property, Kent, Washington

Well	Northing	Easting	Monitoring Point Elevation	Surface Casing Rim Elevation	Well Type	Monument	Log	Boring Depth	Screen Depth	Filter Pack Depth	Seal Depth
Shallow Aquifer Zone Monitoring Wells											
Bs	157,073.45	1,295,109.08	20.81	21.51	2" SS, 0.010"-slot size	Above	C	17	4 - 14	3 - 17	0 - 3
Gs	157,364.02	1,294,758.01	20.95	21.37	2" SS, 0.010"-slot size	Above	C	17.5	5.5 - 15.5	3.5 - 15.5	0 - 3.5
Hs	157,192.46	1,294,730.88	19.99	20.50	2" SS, 0.010"-slot size	Flush	C	18	5 - 15	3 - 18	0 - 3
Ls	157,158.27	1,294,518.78	24.02	25.18	2" SS, 0.010"-slot size	Above	C	18	5 - 15	4 - 19	0 - 4
HY-1s	157,370.32	1,294,202.23	24.19	24.33	2" PVC	Above	B	20.5	14 - 19	10 - 20.5*	0 - 10
HY-2	157,434.49	1,294,622.82	20.27	21.62	2" PVC	Above	B	20	9 - 14	5 - 20*	0 - 5
HY-4	157,431.77	1,294,827.16	20.15	20.21	2" PVC	Above	B	20	9.5 - 14.5	5 - 20*	0 - 5
HY-5	158,290.73	1,294,495.10	19.03	19.55	2" PVC	Flush	B	23.5	13.5 - 23.5	12.5 - 23.5	0 - 12.5
HY-11s	156,795.40	1,294,193.57	25.17	25.55	2" PVC	Flush	B	20	8 - 18	7.5 - 20*	0 - 7.5
HYCP-2	157,370.41	1,294,617.54	20.47	21.57	2" Sch 80 PVC, 0.010" slots	Above	B	28	8 - 28	6 - 28	0 - 6
HYCP-3s	157,190.45	1,294,417.09	24.03	24.47	2" Sch 80 PVC, 0.010" slots	Above	C	13	8 - 13	7 - 13	0 - 7
HYCP-4	157,188.39	1,294,297.21	23.90	24.36	2" Sch 80 PVC, 0.010" slots	Flush	B	33	11 - 33	7 - 33	0 - 7
HYCP-5	157,331.49	1,294,674.50	22.31	23.01	2" SS, 0.010"-slot size	Above	B	31.5	10 - 30	7 - 31.5	0 - 7
HYCP-6	157,247.92	1,294,672.18	23.52	23.69	2" SS, 0.010"-slot size	Above	B	31.5	10 - 30	7 - 31.5	0 - 7
HYO-2	157,368.19	1,294,678.22	20.27	20.62	2" Sch 80 PVC, 0.010" slots	Flush	C	18.5	8.5 - 18.5	7 - 18.5	0 - 7
HEX-1	157,430.95	1,294,779.91	21.87#	NA	2" Sch 40 PVC, 0.010" slots	Flush	B	31	8.5 - 28.5	7.5 - 29	0 - 7.5
HEX-2	157,434.86	1,294,580.72	22.61#	NA	2" Sch 40 PVC, 0.010" slots	Flush	B	40	10 - 30	8 - 30	0 - 8, 30 - 40
HEX-3	157,439.19	1,294,493.19	22.81#	NA	2" Sch 40 PVC, 0.010" slots	Flush	B	40	10 - 30	8 - 32	0 - 8, 32 - 40
Intermediate Aquifer Zone Monitoring Wells											
Gi	157,365.03	1,294,748.17	21.33	21.41	2" SS, 0.010"-slot size	Above	C	41	28 - 38	25 - 41	0 - 25
Hi	157,197.41	1,294,730.68	20.09	20.30	2" SS, 0.010"-slot size	Flush	C	40	28 - 38	25 - 40	0 - 25
HY-1i	157,364.56	1,294,202.34	24.89	25.15	2" PVC	Above	NA	40	30 - 40	28 - 40	0 - 28
HY-11i	156,793.32	1,294,190.79	25.08	25.48	2" PVC	Flush	NA	35	25 - 35	23 - 35	0 - 23
HYCP-1i	157,367.28	1,294,673.31	21.33	21.35	2" Sch 80 PVC, 0.010" slots	Above	C	36.5	16.5 - 36.5	14 - 36.5	0 - 14
HYCP-3i	157,190.43	1,294,408.33	23.45	24.25	2" Sch 80 PVC, 0.010" slots	Above	C	33	22 - 32	20 - 33	0 - 20
Deep Aquifer Zone Monitoring Wells											
Gd	157,364.39	1,294,763.27	20.79	21.13	2" SS, 0.010"-slot size	Above	B	73.5	56 - 66	53 - 70	0 - 53
Hd	157,204.76	1,294,731.54	20.15	20.38	2" SS, 0.010"-slot size	Flush	B	71	57 - 67	53 - 71	0 - 53
I	157,361.79	1,294,379.27	24.14	24.36	2" Sch 80 PVC, 0.010" slot size	Above	B	86	74 - 84	66 - 84	0 - 66
Ld	157,154.91	1,294,506.20	24.19	24.45	2" SS, 0.010"-slot size	Above	B	82.5	69 - 79	67 - 82.5	0 - 67
HY-1d	157,352.31	1,294,202.00	25.60	21.35	2" PVC	Above	NA	94	84 - 94	82 - 94	0 - 82
HY-11d	156,788.21	1,294,192.19	25.03	25.53	2" PVC	Flush	NA	92	82 - 92	80 - 92	0 - 80

Table 1

Parcel G and South 200th Street Well Completion Data
BSB Property, Kent, Washington

Well	Northing	Easting	Monitoring Point Elevation	Surface Casing Rim Elevation	Well Type	Monument	Log	Boring Depth	Screen Depth	Filter Pack Depth	Seal Depth
HYCP-1d	157,367.28	1,294,673.31	21.27	21.35	2" Sch 80 PVC, 0.010" slot size	Above	C	73.5	53.5 - 73.5	14 - 45, 47 - 49.5, 52.5 - 73.5	0 - 14, 45 - 47, 49.5 - 52.5
HYO-1	157,366.84	1,294,678.28	21.13	21.20	3" Sch 80 PVC, 0.020" slot size	Above	B	84.5	53.5 - 83.5	15 - 84.5*	0 - 15
Extraction Wells											
HYR-1	157,345.31	1,294,623.18	18.69	20.89	6" SS, 0.010" slot size	Above	B	35	10 - 30	8 - 35	0 - 8
HYR-2	157,355.66	1,294,386.77	19.49	22.74	6" SS, 0.010"/0.015" slot size	Flush	B	35	8.9 - 28.9	8 - 35	0 - 8

Notes:
Northing/Easting in feet relative to the WA State Plane System North Zone (NAD 83).
Monitoring point (top of well casing) in feet relative to the National Geodetic Vertical Datum (NGVD 29).
All depths shown in feet below ground surface.
SS = stainless steel.
Above = above-grade completion.
Below = below grade completion.
B = boring log with well completion shown.
C = well completion figure.
NA = boring or completion log not available; completion estimated from other wells or cross sections.
* = lower portion of filter pack includes native material.
# = monitoring point elevation relative to mean sea level.

Table 2

Parcel G and South 200th Street Enhanced Well Network
BSB Property, Kent, Washington

Well	Unit Monitored	Well Purpose			Rationale
		Groundwater Extraction	Water Level Monitoring	Groundwater Sampling	
Existing Shallow Aquifer Zone Monitoring Wells					
Bs	Upper sand/silty sand		X		Provide data for areal gradient evaluation
Gs	Upper sand/silty sand		X		Provide data for capture zone evaluation
Hs	Upper sand		X		Provide data for capture zone evaluation
Ls	Upper sand		X	X	Continued implementation of the EMPA
HY-1s	Upper sand		X	X	Continued implementation of the EMPA
HY-2	Upper sand		X		Provide data for capture zone evaluation
HY-4	Upper sand		X		Provide data for capture zone evaluation
HY-5	Upper sand/silty sand		X		Provide data for areal gradient evaluation
HY-11s	Upper sand		X	X	Continued implementation of the EMPA
HYCP-2	Upper and lower sand		X	X	Continued implementation of the EMPA
HYCP-3s	Upper sand		X	X	Continued implementation of the EMPA
HYCP-4	Upper and lower sand		X		Provide data for capture zone evaluation
HYCP-5	Upper and lower sand		X	X	Continued implementation of the EMPA
HYCP-6	Upper and lower sand		X	X	Continued implementation of the EMPA
HYO-2	Upper sand		X		Provide data for capture zone evaluation
HEX-1	Upper and lower sand		X	X	Monitoring area north of South 200th Street
HEX-2	Upper and lower sand		X	X	Monitoring area north of South 200th Street
HEX-3	Upper and lower sand		X	X	Monitoring area north of South 200th Street
New Shallow Aquifer Zone Monitoring Wells					
G4	Upper sand		X	X	Screen Unit B sand not screened in Gs or Gi
New Shallow Aquifer Zone Piezometers					
P-1	Upper sand		X		Provide data for capture zone evaluation west of HYR-1
P-2	Lower sand		X		Provide data for capture zone evaluation west of HYR-1
P-3	Upper sand		X		Provide data for capture zone evaluation near HYR-6
P-4	Lower sand		X		Provide data for capture zone evaluation near HYR-7
P-5	Upper sand		X		Provide data for capture zone evaluation east of HYR-2
P-6	Lower sand		X		Provide data for capture zone evaluation east of HYR-2
P-7	Upper sand		X		Provide data for capture zone evaluation near HYR-2
P-8	Lower sand		X		Provide data for capture zone evaluation near HYR-2
P-9	Upper sand		X		Provide data for capture zone evaluation west of HYR-2
P-10	Lower sand		X		Provide data for capture zone evaluation west of HYR-2
P-11	Upper sand		X		Provide data for capture zone evaluation near HYR-3
P-12	Lower sand		X		Provide data for capture zone evaluation near HYR-3
P-13	Lower sand		X		Provide data for areal gradient evaluation
Existing Intermediate Aquifer Zone Monitoring Wells					
Gi	Lower Sand/Silty Sand		X		Provide data for capture zone evaluation
Hi	Lower Sand		X	X	Continued implementation of the EMPA
HY-1i	Lower Sand		X	X	Continued implementation of the EMPA
HY-11i	Lower Sand		X	X	Continued implementation of the EMPA
HYCP-1i	Lower Sand		X	X	Continued implementation of the EMPA
HYCP-3i	Lower Sand		X	X	Continued implementation of the EMPA
Existing Deep Aquifer Zone Monitoring Wells					
Gd	Deep		X		Provide data for capture zone evaluation
Hd	Deep		X	X	Continued implementation of the EMPA
I	Deep		X		Provide data for capture zone evaluation

Table 2

Parcel G and South 200th Street Enhanced Well Network
BSB Property, Kent, Washington

Well	Unit Monitored	Well Purpose			Rationale
		Groundwater Extraction	Water Level Monitoring	Groundwater Sampling	
Ld	Deep		X		Provide data for capture zone evaluation
HY-1d	Deep		X	X	Continued implementation of the EMPA
HY-11d	Deep		X	X	Continued implementation of the EMPA
HYCP-1d	Deep		X	X	Continued implementation of the EMPA
HYO-1	Deep		X		Provide data for capture zone evaluation
Existing Extraction Wells					
HYR-1	Upper and lower sand	X	X		Continued use of existing well
HYR-2	Upper and lower sand	X	X		Continued use of existing well
New Extraction Wells					
HYR-3	Upper and lower sand	X	X		Coverage at west end of Parcel G
HYR-4	Upper sand	X	X		Coverage in upper sand at east end of Parcel G
HYR-5	Lower sand	X	X		Coverage in lower sand at east end of Parcel G
HYR-6	Upper sand	X	X		Coverage in upper sand between HYR-1 and HYR-2
HYR-7	Lower sand	X	X		Coverage in lower sand between HYR-1 and HYR-2

Notes: EMPA = Evaulation Monitoring Plan Amendment (EMCON, 1998)

Table 3

Inspection Frequency
BSB Property, Kent, Washington

Frequency	Description
Twice weekly	Remote PLC inspection. Monitor extraction system performance using the PLC interface. Adjust operations as necessary.
Twice monthly	1. Extraction system monitoring. Field inspect flow rates, extraction well water levels, extraction equipment condition, leaks, and proper operation of the extraction equipment. Compare field readings to PLC operational data. 2. Security and signage inspection. Check condition of fence, gates, locks, and signage.
Monthly	1. Power inspection. Field check voltage, current, and resistance of pump motors. 2. Water level monitoring. Measure water levels in prescribed monitoring wells and piezometers (Section 3.3). 3. Monitoring well and surface monument inspection. Field check condition of lids, bolts, gaskets, concrete, and locks.
Semiannually	Vegetation inspection. Monitor level of vegetative growth. Photo document excessive vegetative growth.
Annually	Asphalt cap inspection. Monitor condition of Parcel G asphalt cap. Photo document asphalt cap problems and repairs.

Table 4

Operations Testing Frequency
BSB Property, Kent, Washington

Item	Frequency	Description
Extraction well specific capacity	Weekly	Calculate extraction well specific capacity based on drawdown and pumping rate. Utilize data to help determine frequency of extraction well rehabilitation and pump cleaning. After one year, adjust individual well specific capacity evaluation as warranted by observed rate of well fouling.
Discharge sampling	Monthly	Collect and analyze sample of extraction system discharge water to meet the requirements of KCIW Discharge Permit No. 7575.
Flow Meters	Quarterly	Perform field flow test for each flow meter. Remove and inspect flow meter if out of calibration. Recalibrate or replace flow meters as needed.
Extraction wells and pump	Quarterly	Pull extraction pumps quarterly and inspect pump intake screens for clogging. Video inspect extraction well screens as necessary. Adjust individual well inspection frequency in the field as warranted by rate of fouling.
Pressure Transducers	Semiannually	Compare water level at each pressure transducer location with pressure transducer output. Remove and inspect pressure transducer if out of calibration. Recalibrate or replace pressure transducers as needed.
Discharge sampling	Semiannually	Assist King County personnel in collecting samples of groundwater extraction system discharge water for King County analysis to meet the requirements of KCIW Discharge Permit No. 7575.
Extraction well VOCs	Variable	Collect water samples from each extraction well and analyze for VOCs. Collect samples quarterly for the first year and then reduce to semiannually thereafter.
Inorganic, physical, and microbial water quality	Variable	Collect water samples from each extraction well and analyze for inorganic, physical, and microbial water quality parameters. Collect samples quarterly for the first year and then adjust individual well sampling frequency as warranted by rates of individual well/pump fouling.

Table 5

Routine Maintenance Frequency
BSB Property, Kent, Washington

Item	Frequency	Description
Extraction pumps	Quarterly	Remove and clean pumps. After one year, adjust individual pump cleaning frequency as warranted by field conditions.
Groundwater conveyance piping	Annually	Jet and clean groundwater conveyance piping. Adjust individual well conveyance line cleaning as warranted by field conditions.
Water discharge piping	Semiannually	Jet and clean water discharge piping to the sanitary sewer line discharge point.
Monitoring Well Locks	Annually	Lubricate. Perform maintenance more frequently if field conditions require.
Gates and locks	Annually	Lubricate locks and hinges. Perform maintenance more frequently if field conditions require.
Signage	As necessary	Repair or replace signage as necessary.
Extraction wells	As necessary	Redevelop or clean extraction wells as necessary to maintain adequate well efficiencies and performance. Utilize specific capacity calculations, water quality data, and pump fouling information to develop individual well maintenance frequencies. Based on current operations of the existing system, individual well maintenance frequency will likely be once or twice per year.
Flow Meters	As necessary	Clean and/or replace flow meters as necessary.
Pressure Transducers	As necessary	Clean, and/or replace pressure transducers as necessary.
Asphalt cap	As necessary	Sealcoat asphalt surface and seal cracks as necessary.
Vegetation	Periodically during growing season	Spray blackberry starts, cut and seal saplings and bushes as necessary. Minimum expected frequency will likely be twice per growing season.

Table 6

Parcel G and South 200th Street Enhanced Well Network Sampling Schedule
BSB Property, Kent, Washington

Well	Unit Monitored	Sampling Frequency		Analytical Parameters			Annual Analytical Parameters			
		First Year of Enhanced Operations	Subsequent Years of Enhanced Operations	HVOCs (Method 8021B)	Dissolved Arsenic (Method 7060)	Total Cyanide (Method 335.2)	VOCs (Method 8260B)	SVOCs (Method 8270)	PCBs (Method 8082)	Dissolved Metals (Method 6010)
Shallow Aquifer Zone Monitoring Wells										
Ls	Upper sand	Semiannual	Semiannual	X	X	X				
HY-1s	Upper sand	Semiannual	Semiannual	X	X	X				
HY-11s	Upper sand	Semiannual	Semiannual	X	X	X				
HYCP-2	Upper/lower sand	Semiannual	Semiannual	X	X	X	X	X	X	X
HYCP-3s	Upper sand	Semiannual	Semiannual	X	X	X				
HYCP-5	Upper/lower sand	Semiannual	Semiannual	X	X	X	X	X	X	X
HYCP-6	Upper/lower sand	Semiannual	Semiannual	X	X	X				
HEX-1	Upper/lower sand	Quarterly	Semiannual	X						
HEX-2	Upper/lower sand	Quarterly	Semiannual	X						
HEX-3	Upper/lower sand	Quarterly	Semiannual	X						
G4	Upper sand	Quarterly	Semiannual	X						
Intermediate Aquifer Zone Monitoring Wells										
Hi	Lower Sand	Semiannual	Semiannual	X	X	X				
HY-1i	Lower Sand	Semiannual	Semiannual	X	X	X				
HY-11i	Lower Sand	Semiannual	Semiannual	X	X	X				
HYCP-1i	Lower Sand	Semiannual	Semiannual	X	X	X				
HYCP-3i	Lower Sand	Semiannual	Semiannual	X	X	X				
Deep Aquifer Zone Monitoring Wells										
Hd	Deep	Semiannual	Semiannual	X	X	X				
HY-1d	Deep	Semiannual	Semiannual	X	X	X				
HY-11d	Deep	Semiannual	Semiannual	X	X	X				
HYCP-1d	Deep	Semiannual	Semiannual	X	X	X				

Notes:
1. HVOCs = halogenated volatile organic compounds.
2. VOCs = halogenated and non-halogenated volatile organic compounds.
3. The annual analysis of VOCs in HYCP-2 and HYCP-5 replaces the HVOC analysis for that event.
4. SVOCs = semivolatile organic compounds.
5. PCBs = polychlorinated biphenyls.
6. The annual dissolved metals list includes barium, cadmium, chromium, copper, nickel, and zinc.
7. Quarterly sampling events conducted in January, April, July, and October; semiannual sampling events conducted in April and October.
8. Additional annual parameter analysis conducted on samples collected in April.

FIGURES

DISTRIBUTION

CORRECTIVE ACTION AND POSTCLOSURE MONITORING AND IMPLEMENTATION PLAN

BSB PROPERTY
KENT, WASHINGTON

JUNE 20, 2005

COPY NO._____

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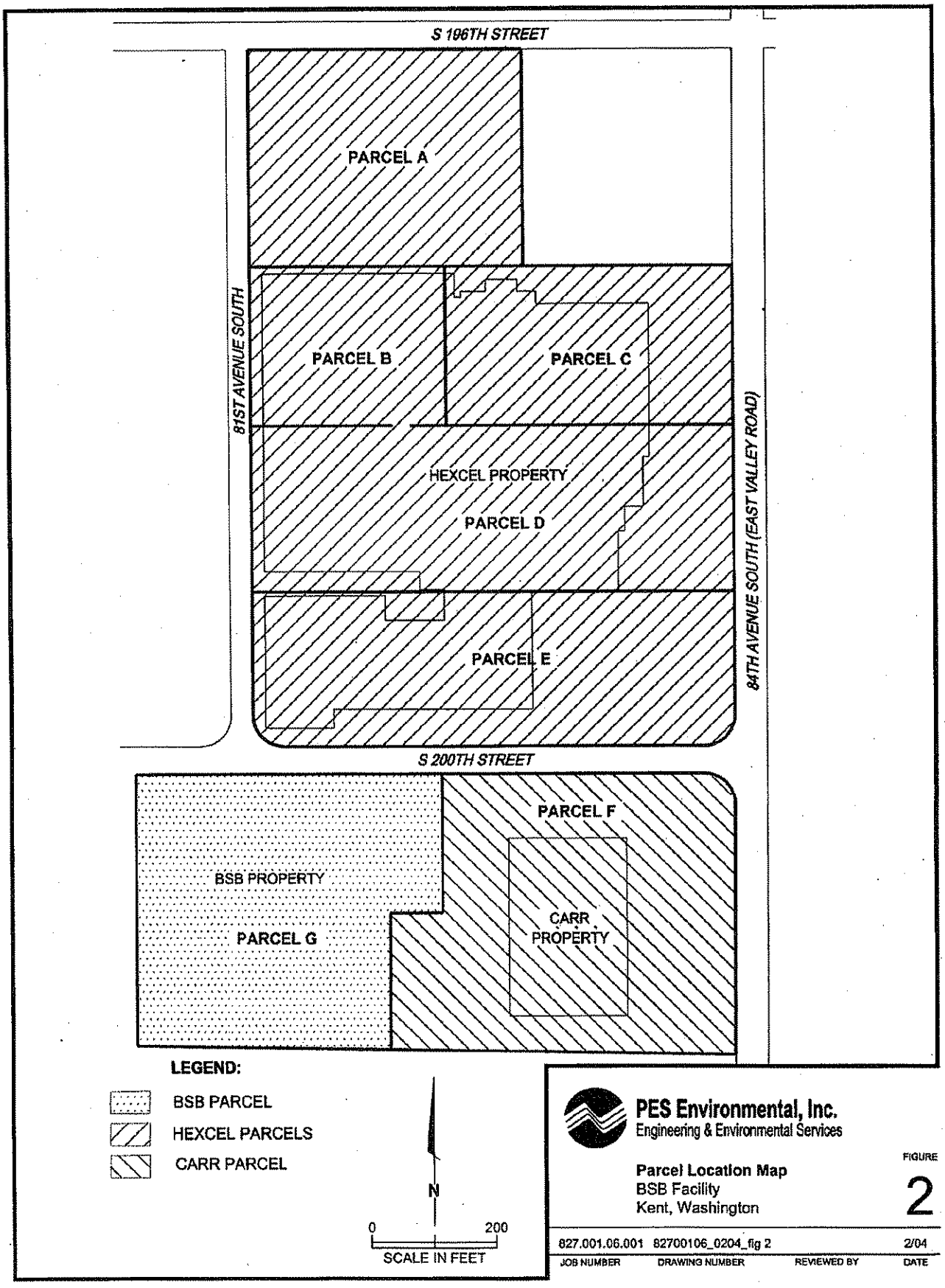
EXHIBIT C

DOWNGRADIENT INVESTIGATION SCHEDULE

Process Milestones DOWNGRADIENT INVESTIGATION SCHEDULE		
Activity	**Day**	**Comments**
Joint Agreed Order Effective Date	0	
Downgradient Investigation Activities		
Install, develop, and conduct initial sampling of new downgradient wells HY-12s thru HY-15s, HY-9 & Ks	45 -to-105 (minimum -to-maximum calendar days)	45 days after receipt of access from downgradient property owner(s) [May occur prior to order signing]. Access should be obtained within 60 days of effective date of order. If BSB and/or Hexcel are unable to obtain such access within 60 days, then the parties shall request an extension from Ecology. Ecology approval of such a request will not be unreasonably withheld.
Qt. 1: Transmit data to Ecology from initial sampling of HY-12s thru HY-15s, HY-9 & Ks	30 days after receipt of laboratory analytical report	
Qt. 2: Transmit data to Ecology from initial sampling of HY-12s thru HY-15s, HY-9 & Ks	30 days after receipt of laboratory analytical report	
Qt. 3: Transmit data to Ecology from initial sampling of HY-12s thru HY-15s, HY-9 & Ks	30 days after receipt of laboratory analytical report	
Qt. 4: Transmit data to Ecology from initial sampling of HY-12s thru HY-15s, HY-9 & Ks	30 days after receipt of laboratory analytical report	
Downgradient Investigation Completion Report	45 days after receipt of fourth quarter analytical report	



PES Environmental, Inc.
Engineering & Environmental Services

Parcel Location Map
BSB Facility
Kent, Washington

FIGURE
2

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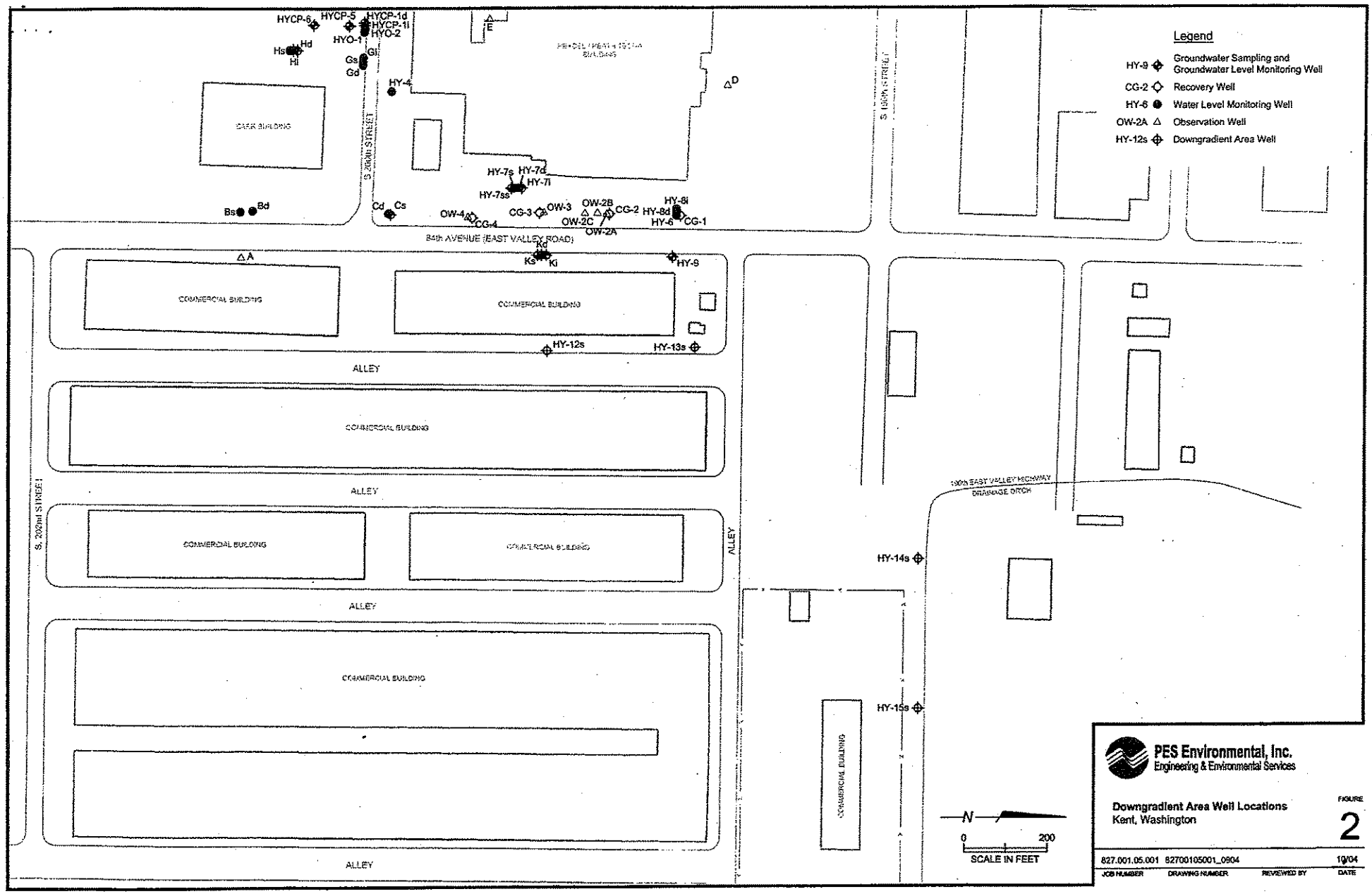
JOB NUMBER	DRAWING NUMBER	REVIEWED BY	DATE

Exhibit A
Parcel & Property Diagram



PES Environmental, Inc.
Engineering & Environmental Services

Downgradient Area Well Locations
Kent, Washington

FIGURE 2

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JOB NUMBER	DRAWING NUMBER	REVIEWED BY	DATE

PES Environmental, Inc.
Engineering & Environmental Services

GROUNDWATER INVESTIGATION
SCOPE OF WORK

KENT, WASHINGTON

JANUARY 24, 2003

By:

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1.0 INTRODUCTION

This *Groundwater Investigation Scope of Work* (SOW) has been prepared to support field investigation activities to be conducted at the Northwest Corporate Park (hereafter referred to as the Downgradient Area) located adjacent to the Former Hytek Finishes Facility (hereafter referred to as the Kent Facility or site) located in Kent, Washington. This report defines applicable procedures and protocols to be followed during field investigations and describes the quality assurance (QA) and quality control (QC) procedures to be followed for field collection and laboratory analysis of samples collected during the investigation.

1.1 Site Description

The Downgradient Area is located at 20021 85th Avenue South in Kent, Washington (Figure 1). The Kent Facility is an approximately 25-acre site located at 8202 South 200th Street and 19819 84th Avenue South in Kent, Washington (Figure 1). The surrounding area is topographically flat.

1.2 Purpose

The Washington Department of Ecology (Ecology) requested, in a letter dated February 10, 2000, that additional monitoring data be collected east of 84th Avenue South to confirm groundwater capture in the area of monitoring well HY-9 and the Ks, Ki, and Kd monitoring well nest. Specifically, Ecology stated that "a series of wells and piezometers should be installed east of wells Ki and HY-9 to demonstrate the limits of the capture zones of the CG recovery wells." To address this area, field investigation activities defined by this SOW will be conducted to better define the area downgradient (to the northeast) of the intersection of South 200th Street and 84th Avenue South. The work plan was originally submitted to Ecology in June 2001. The work plan has been revised to address questions raised by Ecology regarding analytical detection limits.

1.3 Scope of Work Organization

The SOW is organized into five sections. A brief description of each section is presented below.

- **Section 1 - Introduction.** Section 1 contains an overview of the SOW.
- **Section 2 – Background.** Section 2 provides a summary of previous site investigations and remedial actions.
- **Section 3 - Field Sampling Plan.** Section 3 identifies well locations and presents the procedures to be used during field sampling and laboratory analysis. Included are procedures for: well installation, groundwater sampling, sample labeling, sample shipping and custody, decontamination, and residuals management.

- **Section 4 - QA/QC.** Section 4 includes QA/QC procedures for field activities and laboratory analyses, nonconformances, and records control.

- **Section 5 - Field Forms.** Section 5 provides an example set of forms to be used during field activities.

2.0 BACKGROUND

This section briefly summarizes previous site investigations and remedial actions at the site. This information provides a basis for the scope of work defined in this SOW.

2.1 Previous Investigations

In 1981, the United States Environmental Protection Agency (USEPA) initiated site investigations at the former Hytek Finishes Facility. Groundwater monitoring wells were installed at the site between 1981 and 1989, extending from the southeast side of the former Hytek Finishes waste treatment area to the east side of 84th Avenue South (Figure 2). Groundwater samples have been collected from these wells since 1981.

Five wells are located east of 84th Avenue South and north of South 200th Street (Figure 2). Three (Ks, HY-9, and HY-10) monitor the shallow aquifer zone, one (Ki) monitors the intermediate aquifer zone, and one (Kd) monitors the deep aquifer zone. The shallow wells are screened in sand, silty sand, and silt between about 5 and 24 feet below ground surface (bgs). The intermediate well is screened in sand from 23 to 33 feet bgs (the lower portion of the CG wells screened interval). The deep well is screened in sand and silty sand from 65 to 75 feet bgs. The recovery wells located upgradient of these wells (CG-1 through CG-4) are screened between 15 and 30 feet bgs.

2.2 Site Remediation

The majority of soil and groundwater remedial actions at the Kent Facility were implemented as part of RCRA closure activities in the late 1980s and early 1990s. Since August 1992, a groundwater extraction system has removed groundwater contaminated with HVOCs beneath the Former Hytek Finishes site. The extraction system consists of six recovery wells screened in the shallow aquifer. Two recovery wells (HYR-1 and HYR-2) are located south of South 200th Street and west of 84th Avenue South, and four recovery wells (CG-1 through CG-4) are located west of 84th Avenue South (Figure 2). Recovered groundwater is piped to the King County sewer treatment system.

2.2.1 Groundwater Capture

During recovery well operations, historical groundwater elevations in Ks, Ki, Kd, HY-9, and HY-10 have been higher than in the recovery wells and adjacent monitoring wells screened at similar depths. Groundwater modeling by S.S. Papadopulos and Associates of monthly

groundwater elevations has consistently shown the edge of the capture zone to the east of these wells; i.e., the wells are within the modeled zone of capture.

Although existing water quality, water level, and modeling results strongly suggest that groundwater HVOCs are being contained, Ecology has requested that additional monitoring data be collected east of 84th Avenue South to confirm groundwater capture in the area.

3.0 FIELD SAMPLING PLAN

3.1 Sampling Needs and Objectives

The sampling activities will be performed to provide data of sufficient quality and quantity to satisfy the overall objectives identified in Section 1.2.

The specific sampling objective for the Downgradient Area is as follows:

- Determine the downgradient extent of the CG wells capture zone.

The field investigation approach for the Downgradient Area is outlined below.

3.2 Downgradient Area Investigation Approach

Two monitoring wells will be installed to allow measurement of static groundwater levels and to collect groundwater samples. The wells will be installed at the approximate locations shown on Figure 2. These drilling sites are the closest locations downgradient of the Ki and HY-9 wells and will allow measurement of groundwater levels and collection of groundwater samples at the edge of or outside the capture zone. Both wells will be screened between 20 and 30 feet bgs, similar to lower portions of HY-9, HY-10, and the CG wells and the upper part of the Ki screened interval. The monitoring wells will be installed in accordance with Washington Administrative Code (WAC) 173-160 using hollow stem auger drilling techniques. Each monitoring well will be surveyed to document the exact sampling location and to allow the calculation of groundwater elevations.

3.2.1 Sample Types and Frequency

Soil samples will be collected for lithologic analysis at a 2½-foot interval. For a period of one year, the following monitoring activities will occur:

- Groundwater levels will be monitored in the new wells monthly.
- Four quarterly rounds of groundwater samples will be collected from the new wells. Two of the rounds will coincide with the biannual sampling (April and October) at the site, with the other two rounds occurring in January and July.

With Ecology's approval, both wells will be decommissioned at the end of the quarterly monitoring period.

3.2.2 Sample Analysis

The groundwater samples will be analyzed for HVOCs by USEPA Method 8260B, with a 25 mL purge volume. The analyses will be performed by Columbia Analytical Services (CAS) of Kelso, Washington.

3.3 Sample Designation

Soil samples will be identified by the boring designation and depth of sample collection. For example "SB01-15" indicates the soil sample was collected from boring SB01 at 15 feet bgs. Water samples will be identified similar to the soil samples, with the addition of the letter "W" after the depth, e.g. "SB01-15W".

QA samples will be submitted blind (i.e., not identified as QA samples) to the laboratory. The QA samples will be given a fictitious sample name (e.g., for a non-existent boring number).

3.4 Monitoring Well Installation Procedures

3.4.1 Drilling

Two monitoring wells will be installed (Figure 2) with a hollow-stem auger drilling rig equipped with 6-inch inside diameter (i.d.) auger flights. Subsurface soil samples will be collected during drilling for lithologic evaluation at 2.5-foot intervals using a 2-inch outside diameter (o.d.), split-spoon sampler or 3-inch o.d., split barrel sampler. After collection, the sampler will be opened, and a portion of the sample will be placed in a plastic bag or a glass jar, which will be sealed for subsequent headspace analysis with a photoionization detector. The sample will be reviewed for lithology and evidence of contamination (e.g., odor, product). A Boring Log Form (Figure 3) will be filled out, and a portion of the sample will be archived in a sealed plastic bag for later review, if necessary. Potable water will be used to control heaving sand, if required. The approximate volume of water added to the boring will be recorded on the Boring Log Form.

3.4.2 Well Installation

Each monitoring well will be constructed with nominal 2-inch-diameter, flush-threaded Schedule 40 PVC, a 10-foot length of machine-slotted screen (10-inch slot width), a 20 x 40 or equivalent silica sand filter pack, and an annular seal of bentonite chips. All materials will be placed concurrent with casing withdrawal. Bentonite chips placed above the water table will be hydrated with an equal volume of water. As-built construction details, including the volumes of materials used to construct each well, will be recorded on the Boring Log Form.

The top of each well will be completed with a steel monument that is flush with grade. The security casing will be seated on silica sand, the interior of the casing vault will be filled with

silica sand, and the outside of the casing will be cemented in place. To minimize the potential for surface water to enter the well annulus, the top of the surface casing will be installed slightly (less than 1 inch) above the surface grade.

Each well will be developed before measuring water levels or sampling groundwater. Development will involve pumping, surging, or bailing until the color of the discharge water does not change with additional development. Turbidity will be measured during well development. Water levels, amount of water removed, observations of the discharged water, and turbidity will be recorded on a Field Sampling Data Sheet (Figure 4). All development water will be handled as described in Section 3.11.

3.5 Groundwater Sampling Procedures

Water samples will be collected from the two new monitoring wells using the methods detailed in the Evaluation Monitoring Plan Amendment (EMCON, 1998). A summary of water sampling procedures is listed below:

1. Depth to water will be measured before sampling.

2. The monitoring well will be purged with a peristaltic pump fitted polyethylene and silicon (at the pump head only) tubing. A minimum of three well casing volumes will be removed before collection of any sample for laboratory analysis.

3. Conductivity, temperature, and pH will be taken after the removal of each well casing volume. Measurements will be recorded to the following standards: pH to $\pm$0.01 units, conductivity to $\pm$1 micromho, and temperature to $\pm$0.5°C. Samples will not be collected until these parameters have stabilized to $\pm$10 percent or after a maximum of two hours of purging. Well purging data will be recorded on a Field Sampling Data Sheet. Field instruments will be calibrated using known, standard solutions a minimum of twice daily.

4. Samples will be collected with a disposable polyethylene bailer. A bottom drain sampling device will be used to collect samples from the bailer. The sample will be poured down the inside of the organic sample bottle and not splashed into its base. All sample containers will be prepared and provided by the selected analytical laboratory.

5. QC samples will be collected as described in Section 4.5. Samples submitted for duplicate or QA chemical analyses will be collected using the same procedures described above. Samples will be blind labeled when submitted to the lab.

6. Following sample collection, the samples will be labeled, stored, shipped, and documented as described in Section 3.9.

7. Residual water generated during sampling will be handled as described in Section 3.11.

8. The sampling event will be documented on a Field Sampling Data Sheet.

3.6 Surveying

The locations of all existing and new monitoring wells will be surveyed by a registered surveyor. Each location will be surveyed for ground surface elevation to the nearest 0.1 foot), horizontal position (to the nearest 1.0 foot), and well casing rim (to the nearest 0.01 foot). Unless otherwise specified, the north rim of the well casing will be surveyed. The horizontal datum will be the Washington State Plane Coordinate System (NAD, 1983), and the vertical datum will be the same datum used by the city of Kent, the National Geodetic Vertical Datum of 1929.

3.7 Well Decommissioning

The monitoring wells will be decommissioned in accordance with WAC 173-160-460. Each well will be decommissioned either by removing the PVC well casing and filling the borehole with bentonite slurry during casing withdrawal or filling the PVC casing with bentonite. In either case, the surface of each decommissioned well will be completed with asphalt or concrete to match the surrounding land surface.

3.8 Sampling Procedure Alterations

Any deviations from the general sampling procedures presented here will be brought to the attention of the PES Environmental, Inc. (PES) project manager, and a Sample Alteration Checklist (Figure 5) will be filled out.

3.9 Sample Labeling, Shipping, and Chain-of-Custody

3.9.1 Sample Labeling

Sample container labels will be completed immediately before or immediately following sample collection. Container labels will include the following information:

- Project name
- Sample number
- Initials of collector
- Date and time of collection
- Analysis requested

3.9.2 Sample Transportation

Soil samples will be transported to the designated laboratory using the following procedures:

- Sample containers will be transported with ice in a cooler or other suitable shipping container.
- Ice or "blue ice" will be placed into each shipping container with the samples.
- All sample shipments will be accompanied by a Chain-of-Custody Form (Figure 6). The completed form will be sealed in a plastic bag.
- The name and address of the analytical laboratory will be placed on each shipping container prior to transportation.

3.9.3 Chain-Of-Custody

Once a sample is collected, it will remain in the custody of the sampler or other environmental contractor personnel until shipment to the laboratory. Upon transfer of sample possession to subsequent custodians, a Chain-of-Custody Form will be signed by the persons transferring custody of the sample container. If custody is transferred to a third party, a signed and dated chain-of-custody seal will be placed on each shipping container prior to shipping. Upon receipt of samples at the laboratory, the condition of the samples will be recorded by the receiver. Chain-of-custody records will be included in the analytical report prepared by the laboratory.

3.9.4 Sample Log-in

Upon receipt of samples (which will be accompanied by a completed chain-of-custody record detailing requested analyses), the Laboratory Coordinator(s) or his/her delegate will:

- Verify all paperwork, chain-of-custody records, and similar documentation
- Log-in samples, assign unique laboratory sample numbers, and attach the numbers to the sample container(s)
- Open project file and enter data into the file
- Store samples in a refrigerated sample bank
- Fax a copy of the signed chain-of-custody form to the PES Project Manager noting any problems with the samples

3.10 Decontamination

Decontamination of boring and sampling equipment will occur at the exclusion zone of the intrusive activities or at a central decontamination station (if required).

Boring equipment will be inspected when it arrives on site for evidence of gross contamination (excessive mud or grease). If gross contamination is present, the equipment will be sent off-site for cleaning. Following the initial inspection, the boring and sampling equipment will be decontaminated at the location of the first activity. Final decontamination will be conducted at the location of the last activity. The rig and associated equipment will be decontaminated at the edge of the exclusion zone at the completion of each boring to prevent cross contamination. All reusable equipment that may come in contact with samples for chemical analysis will be decontaminated between collection of samples.

Cleaning will consist of scraping and scrubbing to remove encrusted materials, if necessary, followed by soap (nonphosphate detergent) and water wash and then potable water rinse. Alternatively, the equipment may be cleaned with a high-pressure hot water/steam cleaning unit. Next, sampling equipment will be rinsed with two deionized/distilled water rinses. Following decontamination, clean equipment will be allowed to air dry prior to obtaining the next sample.

Decontamination of personnel engaged in the intrusive activities will be performed at personnel decontamination stations established at the edge of the exclusion zones. Personnel decontamination will be conducted prior to leaving the area. Personnel decontamination will consist primarily of soap and water washings and water rinse of exterior protective gear to remove contaminants, followed by removal of gear. Coveralls should be removed by turning the clothing inside out. The steps for decontamination of personnel are as follows:

1. Wash work gloves, boots and outer protective coverall (if water resistant).
2. Remove tape at wrists, ankles.
3. Rinse work gloves, boots and coveralls (if water resistant)
4. Remove goggles, respirator or breathing mask.
5. Wash and rinse goggles or mask.
6. Remove outer suit.
7. Remove PVC or rubber boots (if worn).
8. Remove surgical gloves.

Non-reusable equipment will be collected in plastic trash bags. Disposal of all investigation-derived waste associated with decontamination will be conducted in accordance with Section 3.11. Respirators will be rinsed with potable water in the field after each use and will be cleaned at the end of each day using a cleaning solution as recommended by the manufacturer followed by a potable water rinse. Respirators will be inspected daily for damage, missing parts, and proper function.

3.11 Residuals Management

Residual soil, purge water, used decontamination solutions, and personal protective clothing will be handled appropriately. Personal protective clothing will be worn during waste transfers because of potential skin contact and splash hazards. The following procedures will be used for the sampling residuals:

- Fifty-five-gallon drums will be located within the fenced BSB property for disposal of excess soil generated during sampling and characterization activities. The drums will be labeled with the date filled and description of contents. The drums will be sealed and secured daily following field activities. At the completion of the project, the drum contents will be disposed at an appropriate facility.

- Decontamination and purge water will be transported to the groundwater treatment system area on site and discharged to the groundwater treatment system for discharge to the sewer.

- Disposable clothing and equipment will be placed in plastic bags and disposed of as solid waste in an appropriate solid waste facility.

4.0 QA/QC

4.1 QA Objectives

The overall QA objective for measurement data is to ensure providing data of known and acceptable quality. All measurements will be made to yield accurate and precise results representative of the media and conditions measured. Chemical analyses will be performed in accordance with requirements of the analytical methods. All sample results will be calculated and reported in units presented in Table 2 to allow comparison of the sample data with regulatory criteria and federal, state, and local databases. QA objectives for precision, accuracy, and completeness have been established for each measurement variable, where possible, and are presented in Table 2.

4.2 Chemical Analysis

4.2.1 Analytical Procedures

Methods and references are summarized in Table 2. Data reporting requirements for all analyses are presented in Section 4.3.

Routine analysis of environmental samples will be performed using procedures based on the following methods:

- USEPA Method 8260B: HVOCs only by gas chromatography/mass spectrometry (GC/MS) (USEPA, 1996).

Any special analytical methods employed will be determined with laboratory concurrence prior to beginning sample analysis.

4.3 Data Reduction, Validation, and Reporting

The laboratory performing sample analyses will be required to submit summary data and QA information to permit independent and conclusive determination of data quality. The determination of data quality will be performed using the following as guidelines for data review: *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review* (USEPA, 1999).

4.3.1 Laboratory Data

The laboratory will be required to submit results that are supported by sufficient backup data and QA/QC results to enable the quality of the data to be determined conclusively. Prior to release of data, the laboratory project chemist will: review the data package for QC data results, verify that calculations were properly performed, and write a project narrative. Section 4.4 describes the procedures that will be used to evaluate the precision, accuracy, and completeness of the analytical test data. Upon completion of the review, the QA Officer will be responsible for developing a QA/QC report for the data.

Laboratory deliverable requirements for chemical analyses will include the information outlined below and in Table 3.

- A cover letter for each sample batch that will include a summary of any quality control, sample, shipment, or analytical problems, and will document all internal decisions. Problems will be outlined and final solutions documented. A copy of the signed chain-of-custody form for each batch of samples will be included in the narrative packet.
- Sample concentrations will be reported on standard data sheets in proper units and to the appropriate number of significant figures. For undetected values, the lower limit of detection for each compound will be reported separately for each sample. Dates of sample extraction or preparation and analysis must be included.
- HVOC chromatograms.
- A method blank summary will be included.
- Surrogate percent recovery will be calculated and reported.
- Matrix spike/matrix spike duplicate (MS/MSD) percent recoveries, spike level, and relative percent difference will be included.

- Laboratory reports will be faxed and mailed to the project manager. Copies of the full data set and electronic data deliverables formatted per PES requirements will also be transmitted to the PES project manager.

Sample holding times will be calculated by comparing the date of sample collection (shown on the chain-of-custody) with the date of sample analysis. All laboratory deliverables will be reviewed for data validation of chemical analyses. The main items for review are described in Table 4.

4.3.2 Field Measurement Data

The Project Manager will check the validity of all field data on a periodic basis by reviewing calibration procedures utilized in the field and by comparing the data to previous measurements obtained at the specific site.

4.3.3 Final Reporting and Archiving of Documents

Copies of all analytical data and/or final reports will be retained in the laboratory files. After one year, or whenever the data becomes inactive, the files will be transferred to archives in accordance with standard laboratory procedure. Data may be retrieved from archives upon request.

4.4 Data Assessment Procedures

Accuracy, precision, completeness, representativeness, and comparability are terms used to describe the quality of analytical data. Routine procedures for measuring precision and accuracy include use of replicate analyses, standard reference materials (SRMs), matrix spikes, and procedural blanks. Replicate matrix spikes and method blanks will be analyzed by the selected laboratory. Additional spikes and replicate analyses may be implemented. The minimum frequencies are as follows:

- Matrix Spike
  - HVOCs: one matrix spike and laboratory control sample or one MS/MSD will be analyzed per sample batch.
- Method Blank
  - HVOCs: one preparation blank will be analyzed per 12-hour shift.

Quality of analytical data represented by precision and accuracy are calculated using the mean, standard deviation, and percent recoveries. The mean, C, of a series of replicate measurements of concentration, C_i, for a given analyte will be calculated as:

$$\overline{C} = \frac{1}{n}\sum_{i=1}^{n} C_i$$

where:

n = Number of replicate measurements

The estimate of precision of a series of replicate measurements can be expressed as the relative standard deviation, RSD:

$$RSD = \frac{SD}{\overline{C}} X\ 100\%$$

where:

SD = Standard deviation:

$$SD = \sqrt{\sum_{i=1}^{n} (C_i - \overline{C})^2}$$

(n-1)

Alternatively, for data sets with a small number of points (e.g., duplicate measurements), the estimate of precision will be expressed as a relative percent difference (RPD):

$$RPD = \frac{C_1 - C_2}{\overline{C}} x\ 100$$

where:

C_1 = First concentration value or recovery value measured for a variable

C_2 = Second concentration value or recovery value measured for a variable

Accuracy as measured by matrix spike or laboratory control sample results will be calculated as:

$$\text{Recovery} = \frac{\Delta C}{C_s} x\ 100$$

where:

ΔC = The measured concentration increase due to spiking (relative to the unspiked portion)

C_s = The known concentration increase in the spike

Acceptable spike recoveries and acceptable RPDs are indicated in the appropriate analytical methodology or provided by the laboratory(s) based on control-charted recoveries.

Accuracy can also be measured by analysis of SRM or regional reference material and will be determined by comparing the measured value with the 95 percent confidence interval established for each analyte.

Completeness will be measured for each set of data received by dividing the number of valid measurements actually obtained by the number of valid measurements that were planned.

4.5 Field QA

Field QA will be maintained through compliance with the sampling plan, collection of field QA samples, and documentation of sampling plan alterations.

Duplicate soil and water samples will be collected at a minimum frequency of 5 percent of the total number of samples for each media. Duplicate samples will be labeled similar to the other samples and submitted blind to the laboratory. The locations for duplicate sample collection will be determined in the field.

If problems arise during field sampling, the problem will be discussed by the field technician and Project Manager, and a Sampling Alteration Checklist will be completed.

4.6 Corrective Action

Nonconforming items and activities are those that do not meet the project requirements or approved work procedures. Nonconformances may be detected and identified by project staff or laboratory staff. The person identifying the nonconformance will be responsible for reporting it to the PES project manager and for its documentation.

- Project Staff. During the performance of field activities and testing and verification of laboratory testing results.
- Laboratory Staff. During the preparation for and performance of laboratory testing, calibration of equipment, and QC activities.
- QA Staff. During the performance of audits.

Documentation will be made available to the PES project manager. Appropriate personnel will be notified by the management of any significant nonconformance detected by the project or laboratory staff. Completion of corrective actions for significant nonconformance will be verified by the PES project manager.

4.7 Files and Document Control

4.7.1 Record Control

Following receipt of information from external sources, completion of the field and laboratory phases of the project, and completion of analyses and issuance of reports or other transmittals, associated records will be submitted to the central project files. Field records; laboratory data summaries; test data; numerical calculations; reports and other data transmittals; copies of purchase orders for project services and contracts; correspondence including incoming and outgoing letters, memorandums, and telephone records; photographs; reference material; drawings; and floppy disks containing computer data and information will be transferred to the project central file. Records submitted to the project central file will be placed in folders or otherwise secured for filing.

4.7.2 Laboratory Files

The laboratory will maintain a records management system for documents pertinent to analytical performance. Laboratory records will include documents which are specific to the project, such as chain of custody, raw analytical data, and analytical reports, and documents which demonstrate overall laboratory operation, such as instrument log books and control charts.

4.7.3 Record Retention

Records will be stored for one year in hard copy and five years as magnetic tape (where applicable). For the project central file, the individual file folders will be divided into appropriate categories based on content, and numbered and filed sequentially within each category. For the original drawing and QA files, material will be filed only by project number. Computer files of laboratory data and other project information will be filed by project number and date.

5.0 STANDARD FIELD FORMS AND EQUIPMENT LIST

Standard field forms used to record sampling data and field observations are:

- Boring Log Form (Figure 3)
- Field Sampling Data Sheet (Figure 4)
- Sampling Alteration Checklist (Figure 5)
- Chain-of-Custody Form (Figure 6)

A blank copy of each form is presented in this section. Equipment that may be used during field activities is presented in Table 1.

6.0 REFERENCES

EMCON. 1998. *BSB Diversified Co. Inc. Evaluation Monitoring Plan Amendment.* Prepared for BSB Diversified Co., Inc. June 16.

U.S. Environmental Protection Agency. 1983. *Methods for Chemical Analysis of Water and Wastes.* USEPA Environmental Monitoring and Support Laboratory. March.

U.S. Environmental Protection Agency. 1999. *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review.* USEPA Office of Emergency and Remedial Response. EPA540/R-99/008. October.

U.S. Environmental Protection Agency. 1996. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* SW-846, Third Edition, Final Update 3. December.

7.0 LIMITATIONS

The services described in this report were performed consistent with generally accepted professional consulting principles and practices. No other warranty, express or implied, is made. These services were performed consistent with our agreement with our client. This report is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions and recommendations contained in this report apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, nor the use of segregated portions of this report.

TABLES

Table 1

Field Equipment and Supplies

Forms/Documentation
• Field logbooks • Boring logs • Chain-of-custody/laboratory analysis report form • Custody seal • Project photo log • Drum labels • Health and Safety Plan (HASP)
Tools
• Fiberglass tape with stainless-steel weight • Tape measure calibrated to 0.1 inch • Decon brushes • Flashlight • Watch • Tool kit • Shovel
Soil Sampling
• Stainless steel spoons • Sample jars and labels • Photoionization detector • Water • Liquinox
Health and Safety Equipment
• Fire extinguisher • Half-face respirators • Organic vapor/acid gas cartridges with pre-dust filters, HEPA filter for lead dust • First aid kits • Safety glasses • Eyewash • Ear plugs • Tyvek® • Gloves-vinyl, nitrile, and neoprene • Duct tape

Table 1

Field Equipment and Supplies

Miscellaneous Equipment
• Spray paint, pencils, pens, labels • Waterproof markers • Paint pens for drums • Water jugs and sprayers • Hazardous materials packaging • Bubble wrap and tape for shipping • Cameras and film • Resealable plastic bags • Paper towels • Aluminum foil • Visqueen sheets • Buckets • Squirt bottle (wash) • Brunton compass • Plastic funnel • Cotton gloves • Nalgene wash bottles • Reagent bottles • Coolers (sample shipping) • Scrub brushes • Plastic tubs • Ice, in leak-proof bags • Drinking water • Large-scale site map

Table 2

Objectives for Measurement Data — Chemical Analysis

Variable	Units	Method Detection Limits	Accuracy[a]	Precision[a]	Completeness	Method No.	Bottle/Preservative	Maximum Holding Time[b]
HVOCs – water	µg/L	0.08 – 0.4	±50%	±35%	95%	USEPA 8260B	3-40 mL glass vials; Teflon lined lid/ keep on ice (4°C)	14 days

NOTE: mg/kg = milligrams per kilogram.
µg/L = micrograms per liter.

[a] Accuracy and precision results may deviate from these criteria as identified by the analytical method reference on a substance specific basis.

[b] Where two times are given, the first refers to the maximum time from sample collection to extraction, the second to the maximum time prior to extract analysis.

Table 3

Laboratory Deliverables Requirements

The following items will be delivered to support data validation:

- A transmittal letter and case narrative which includes information about receipt of the samples, the analytical results, and any significant problems in any aspect of sample analysis (e.g., deviation from methodologies or quality control parameters)
- Sample analytical results:
  - Soil results in µg/kg or mg/kg dry-weight
  - Method detection limit for undetected values reported for each analyte on a sample-by-sample basis
  - Date of sample preparation/extraction
  - Date of sample analysis
- HVOC chromatograms
- Method blank results, including the samples associated with each blank
- Surrogate recovery results for organic analyses, reported as percent recoveries, including actual spike levels
- Matrix spike/matrix spike duplicate (MS/MSD) results and matrix spike results HVOCs analyses, reported as percent recoveries, including actual spike levels
- Copies of signed chain-of-custodies

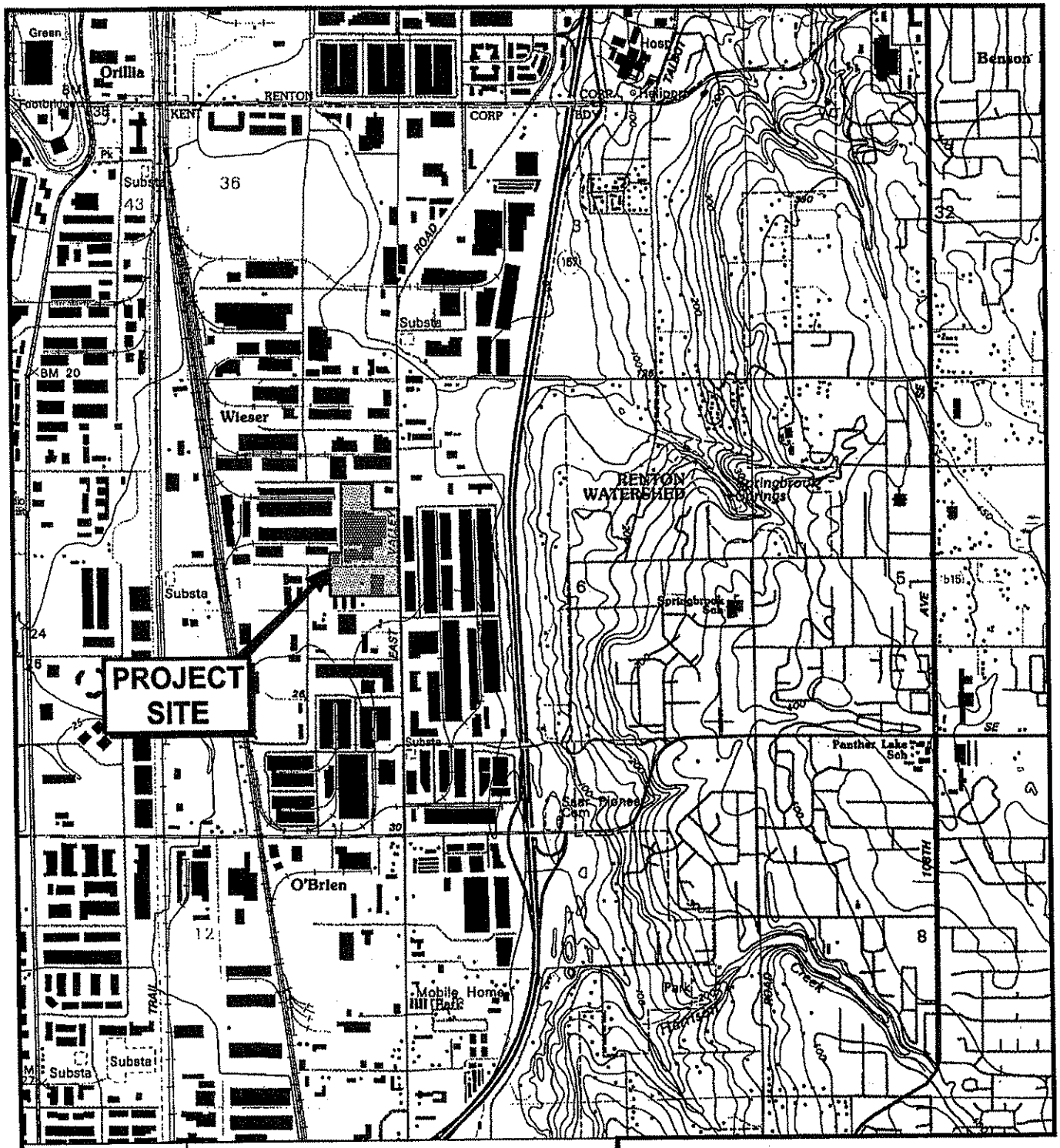
Table 4

Data Validation of Chemical Analyses

The following items will be reviewed for data validation:

- Holding times
- Method blank results
- Surrogate recovery results for organic analyses
- Field duplicate results
- Matrix spike/matrix spike duplicate (MS/MSD) results for HVOC analyses
- Matrix spike results for HVOC analyses
- Completeness
- Reported detection limits for analyses
- Laboratory control sample results
- Copies of signed chain-of-custodies

FIGURES



U.S.G.S. Topo Map - Renton, WA, 7.5-minute quadrangle.1949 revised 1994.

PES Environmental, Inc.
Engineering & Environmental Services

Site Location Map
Kent, Washington

FIGURE
1

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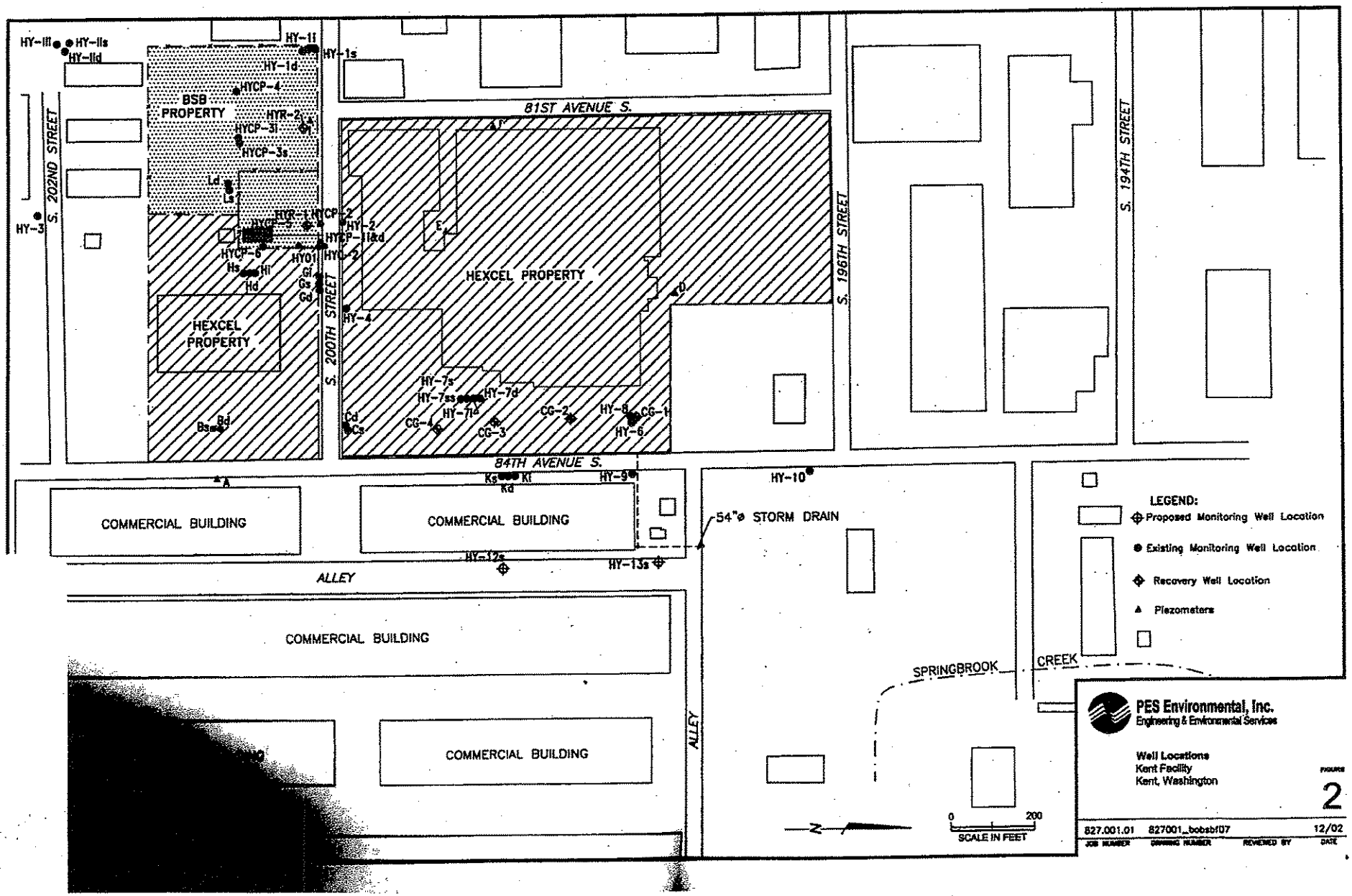
HY-1l
HY-1s
HY-1d
HYCP-4
BSB PROPERTY
HYR-2
HYCP-3l
HYCP-3s
HY-1s
81ST AVENUE S.
S. 202ND STREET
HY-3
HY-2
HYCP-11&d
HYCP-2
HYCP-6
HY01
HYCP-1
HYR-1
HEXCEL PROPERTY
S. 200TH STREET
HY-4
S. 196TH STREET
S. 194TH STREET
HY-7s
HY-7ss
HY-7d
HY-7l
CG-4
CG-3
CG-2
HY-8
CG-1
HY-6
84TH AVENUE S.
HY-10
54"ø STORM DRAIN
COMMERCIAL BUILDING
COMMERCIAL BUILDING
HY-12s
HY-13s
ALLEY
COMMERCIAL BUILDING
COMMERCIAL BUILDING
ALLEY
SPRINGBROOK
CREEK
LEGEND:
Proposed Monitoring Well Location
Existing Monitoring Well Location
Recovery Well Location
Piezometers
0
200
SCALE IN FEET
PES Environmental, Inc.
Engineering & Environmental Services
Well Locations
Kent Facility
Kent, Washington
FIGURE
2
827.001.01
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JOB NUMBER
DRAWING NUMBER
REVIEWED BY
DATE

PES Environmental, Inc.
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FIELD LITHOLOGIC LOG

Number:_____
Type:_____

DATE:	PAGE OF
JOB NUMBER:	
PROJECT:	
PROJECT MANAGER:	
LOGGED BY:	
CONTRACTOR:	
C-57 LICENSE NO:	
DRILLING EQUIPMENT:	
BOREHOLE DIAMETER:	
TOTAL DEPTH OF BORING:	
SAMPLING METHOD:	
SAMPLER DIAMETER:	
DRIVE WEIGHT:	DROP:
START/STOP TIME:	
BACKFILL METHOD:	
SURFACE ELEVATION:	
SURFACE CONDITIONS:	
WEATHER:	
COMMENTS:	

LOCATION SKETCH SCALE 1"= NORTH ARROW

SAMPLE ID	TIME	PID (PPM)	BLOWS/6 INCHES	INCHES ADVANCED	INCHES RECOVERED	SAMPLE RECOVERED	GW DEPTH	DEPTH (FEET)	GRAPHIC LOG	LITHOLOGIC DESCRIPTION COLOR, SOIL TYPE (SYMBOL) Munsell Number, Moisture, Consistency, Grain Size, Estimated Percentages (%gravel, %sand, %fines), Other (Angularity, Shape, Odor, Structure, Strength, Dilatancy, Toughness, Plasticity, etc.)
								1		
								2		
								3		
								4		
								5		
								6		
								7		
								8		
								9		
								10		

LOGGED BY: _____ EDITED BY: _____
REV. 2/14/96 SIGNATURE INITIALS SIGNATURE

1682 Novato Boulevard • Suite 100 • Novato, California 94947 • TEL (415) 899-1600 • FAX (415) 899-1601

PES Environmental, Inc.
Engineering & Environmental Services

Log of Exploratory Boring
Kent Facility
Kent, Washington

PLATE
3

827.001.01 (JOB NUMBER) 827001_fielddocs.dwg (DRAWING NUMBER) REVIEWED BY 12/02 (DATE)

PES Environmental, Inc.
Engineering & Environmental Services

GROUND-WATER SAMPLING FORM

PAGE:	OF
DATE/TIME:	
PROJECT:	
JOB NO.:	
REC/SAMP BY:	

WELL NO.:	WELL TYPE:	☐ Monitor	☐ Extraction	☐ Other	
	WELL MATERIAL:	☐ PVC	☐ Stainless Steel	☐ Other	

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches)

☐ 2-inch ☐ 4-inch ☐ 6-inch ☐ Other _____

Total Depth of Casing (TD in feet BTOC): _____

Water Level Depth (WL in feet BTOC): _____

Number of Well Volumes to be purged (# Vols):

☐ 3 ☐ 4 ☐ 5 ☐ 10 ☐ Other _____

SAMPLING METHOD

☐ Bailer - Type: _____

☐ Submersible ☐ Centrifugal ☐ Bladder; Pump No.: _____

☐ Other - Type: _____

PUMP INTAKE SETTING

☐ Near Bottom ☐ Near Top ☐ Other _____

Depth in feet (BTOC): _____

Screen Interval in feet (BTOC) from _____ to _____

PURGE VOLUME CALCULATION:

$$\left(\frac{\text{\_\_\_\_\_}}{\text{TD (feet)}} - \frac{\text{\_\_\_\_\_}}{\text{WL (feet)}}\right) \times \frac{\text{\_\_\_\_\_}^2}{\text{D (inches)}} \times \frac{\text{\_\_\_\_\_}}{\text{\# Vols}} \times 0.0408 = \frac{\text{\_\_\_\_\_}}{\text{Calculated Purge Volume}} \text{ gallons}$$

PURGE TIME

_____Start _____Stop _____Elapsed

PURGE RATE

Initial _____gpm Final _____gpm

ACTUAL PURGE VOLUME

_____ gallons

FIELD PARAMETER MEASUREMENT

Minutes Since Pumping Began	pH	Cond. (µmhos/cm)	T ☐°C ☐°F	Other _____	Minutes Since Pumping Began	pH	Cond. (µmhos/cm)	T ☐°C ☐°F	Other _____
					Meter Nos.:				

Observations During Purging (Well Condition, Turbidity, Color, Odor): _____

Discharge Water Disposal: ☐ Sanitary Sewer ☐ Storm Sewer ☐ Other _____

WELL SAMPLING

SAMPLING METHOD

☐ Same As Above

☐ Bailer - Type: _____

☐ Grab - Type: _____

☐ Submersible ☐ Centrifugal ☐ Bladder; Pump No.: _____

☐ Other - Type: _____

QUALITY CONTROL SAMPLES Sample Series: _____

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Laboratory	Comments

QUALITY CONTROL SAMPLES

Duplicate Samples		Blank Samples		Other Samples	
Original Sample No.	Duplicate Sample No.	Type	Sample No.	Type	Sample No.

Office Copy - White Field Copy - Yellow

PES Environmental, Inc.
Engineering & Environmental Services

Field Sampling Data Sheet
Kent Facility
Kent, Washington

PLATE 4

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JOB NUMBER	DRAWING NUMBER	REVIEWED BY	DATE

SAMPLING ALTERATION CHECKLIST

Sample program identification: _____

Material to be sampled: _____

Measurement variable: _____

Standard procedure for analysis: _____

_____

Reference: _____

_____

_____

Variation from standard procedure: _____

_____

_____

_____

_____

Reason for variation: _____

_____

_____

_____

Resultant change in field sampling procedure: _____

_____

_____

_____

Special equipment, material, or personnel required: _____

_____

_____

Author's name: _____ Date: _____

Approval: _____ Date: _____

Title: _____

PES Environmental, Inc.
Engineering & Environmental Services

Sampling Alteration Checklist
Kent Facility
Kent, Washington

PLATE
5

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JOB NUMBER	DRAWING NUMBER	REVIEWED BY	DATE

PES Environmental, Inc.
Engineering & Environmental Services

CHAIN OF CUSTODY RECORD

1682 NOVATO BOULEVARD, SUITE 100
NOVATO, CALIFORNIA 94947
(415) 899-1600 FAX (415) 899-1601

LABORATORY: ____________ SAMPLERS: ____________

JOB NUMBER: ____________

NAME / LOCATION: ____________

PROJECT MANAGER: ____________ RECORDER: ____________

DATE				SAMPLE NUMBER / DESIGNATION	MATRIX				# of Containers & Preservatives					DEPTH IN FEET	ANALYSIS REQUESTED							
YR	MO	DY	TIME		Vapor	Water	Soil	Sedim't	Unpres.	EnCore	H_2SO_4	HNO_3	HCl		EPA 5035/8010	EPA 5035/8021	EPA 5035/8260B	TPHg by 5035/8015M	TPHd by 8015M	TPHmo by 8015M	EPA 8270C	MNA Parameters (see notes)

NOTES
Turn Around Time:

CHAIN OF CUSTODY RECORD			
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE	TIME
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE	TIME
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE	TIME
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE	TIME
DISPATCHED BY: (Signature) DATE TIME	RECEIVED FOR LAB BY: (Signature)	DATE	TIME
METHOD OF SHIPMENT:			

WHITE-Laboratory COPY YELLOW-Project Office Copy PINK-Field or Office Copy

PES Environmental, Inc.
Engineering & Environmental Services

Chain of Custody Form
Kent Facility
Kent, Washington

PLATE
6

827.001.01 — JOB NUMBER
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REVIEWED BY
12/02 — DATE

PES Environmental, Inc.
Engineering & Environmental Services

EXHIBIT B

June 20, 2005

827.001.05

Department of Ecology
Northwest Regional Office
3190 160th Avenue SE
Bellevue, Washington 98008-5452

Attention: Mr. Hideo Fujita

DOWNGRADIENT AREA GROUNDWATER INVESTIGATION
REVISED SCOPE OF WORK ADDENDUM
KENT FACILITY
KENT, WASHINGTON

Dear Mr. Fujita:

On behalf of BSB Diversified Company, Inc. (BSB) and Hexcel Corporation (Hexcel), PES Environmental, Inc. (PES), is submitting this revised addendum to the current downgradient area scope of work (SOW).[1] This addendum is intended to comply with the Washington State Department of Ecology's (Ecology's) request that additional monitoring wells be installed to help delineate the downgradient edge of a low-level volatile organic compound (VOC) plume to the northeast of the facility (Figure 1).

BACKGROUND

Per the current downgradient area SOW, two monitoring wells (HY-12s and HY-13s) were installed in the downgradient area (Figure 2). They were installed at Ecology's request to confirm groundwater capture in the area of monitoring well HY-9 and the Ks, Ki, and Kd monitoring well nest. The existing wells were installed in September 2003 and have been monitored quarterly since then. Monitoring of these wells has demonstrated the existence of (1) a substantial gradient toward the extraction wells in the off-site area at and beyond 84th Avenue South, and (2) low-level concentrations (less than 3 µg/L) of vinyl chloride in HY-13s. Based on the HY-13s vinyl chloride results, Ecology requested additional monitoring of groundwater to the northeast of HY-12s and HY-13s.

[1] PES Environmental. 2003. *Groundwater Investigation Scope of Work, Kent, Washington.* January 24.

SCOPE OF WORK

Well Installation and Development

Two monitoring wells will be installed directly south of the 196th East Valley Highway Drainage/Spring Brook Creek near the Watkins Trucking property at 19604 84th Avenue South (Figure 2). The wells (HY-14s and HY-15s) will be installed and developed using the same construction guidelines outlined in the previous SOW. Prior to drilling, access from Watkins Trucking will be coordinated, and a subcontracted utility locator will be used to clear the location around each well. The wells will be installed using a hollow-stem auger drilling rig operated by Cascade Drilling of Woodinville, Washington. Each well will be constructed of nominal 2-inch PVC, screened between 20 and 30 feet below grade. Both wells will be developed by pumping, surging, or bailing. Residual soil generated during drilling will be sampled for disposal characterization, profiled, and transported for landfill disposal or thermal treatment. A licensed surveyor will be subcontracted to survey the horizontal and vertical locations of both new wells.

Groundwater Monitoring

Groundwater levels will be measured in monitoring wells HY-12s through HY-15s, HY-9, and Ks on a monthly basis for one year, coincident with monitoring of the Evaluation Monitoring Plan (EMP) well network. Four quarterly groundwater samples will be collected from all six wells and submitted for laboratory analysis of volatile organic compounds (VOCs). The procedures and laboratory methods outlined in the previous SOW will be used.

Data Evaluation and Reporting

On a quarterly basis, groundwater chemistry data will be validated and tabulated and a memo will be prepared summarizing the data validation. The groundwater elevation data will be tabulated, and a groundwater contour map for the wells near 84th Avenue South will be prepared. The data tables, groundwater contour map, and the data validation memo will be transmitted to Ecology with a brief cover letter describing the sampling event. The quarterly data reports will be transmitted to Ecology within 30 days of receipt of the laboratory analytical report.

At the conclusion of the fourth quarterly sampling event of the complete downgradient monitoring well network, a report will be prepared discussing both investigations and providing conclusions and recommendations about groundwater capture at 84th Avenue South. The evaluation will include an evaluation of the analytical and hydrogeologic data, the CG-1 through CG-4 capture zone, groundwater flow near the drainage ditch/Spring Brook Creek, and a conceptual site model for the downgradient area. Updated groundwater chemistry contour maps will also be provided. The fourth quarter report will be submitted to Ecology within 45 days of the receipt of the fourth quarter analytical laboratory report.

Ecology will determine if additional investigation is needed to adequately characterize the downgradient area. If Ecology determines that additional investigation is needed, then a scope of work and schedule will be submitted to Ecology within 45 days of Ecology's determination that such investigation work is needed.

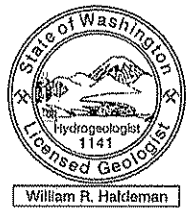
SCHEDULE

Implementation of this SOW addendum, including driller contracting and coordinating with the property owner, have begun. Depending on the driller's schedule, field activities will begin as soon as site access is arranged.

If you have any questions regarding this SOW addendum, please feel free to contact Ron Burt at (615) 986-2679 or me at (425) 637-1905.

Sincerely,

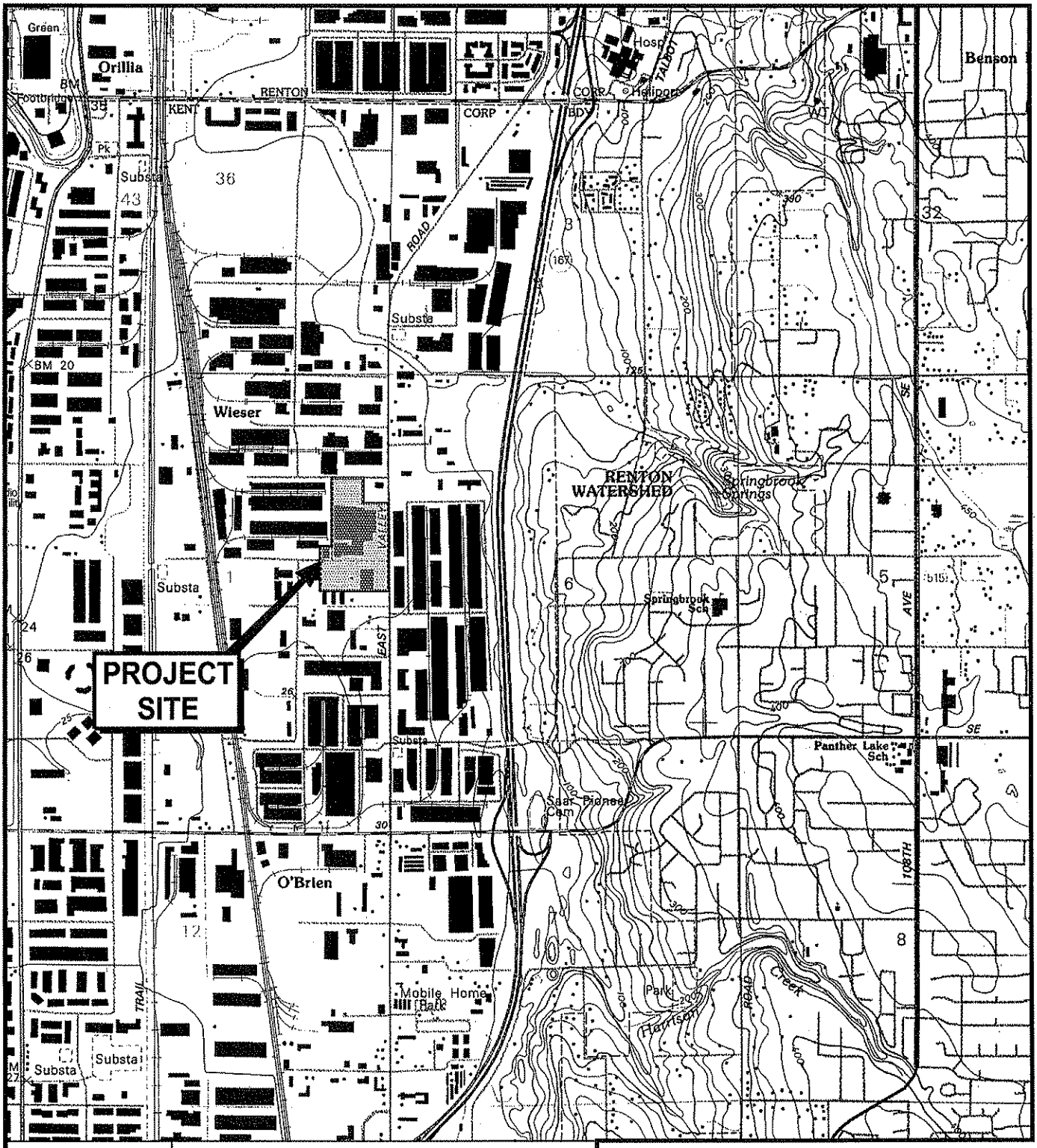
PES ENVIRONMENTAL, INC.



William R. Haldeman, LHG
Senior Hydrogeologist

Attachments: Figure 1 – Site Location Map
Figure 2 – Downgradient Area Well Locations

cc: Jerome Cruz, Washington Department of Ecology
Ronald Burt, Patterson Planning and Services, Inc.
Paul Beveridge, Heller Ehrman White & McAuliffe
William Nosil, Hexcel Corporation
James R. Norris, Hydro Geo Chem



PES Environmental, Inc.
Engineering & Environmental Services

Site Location Map
Kent, Washington

FIGURE
1

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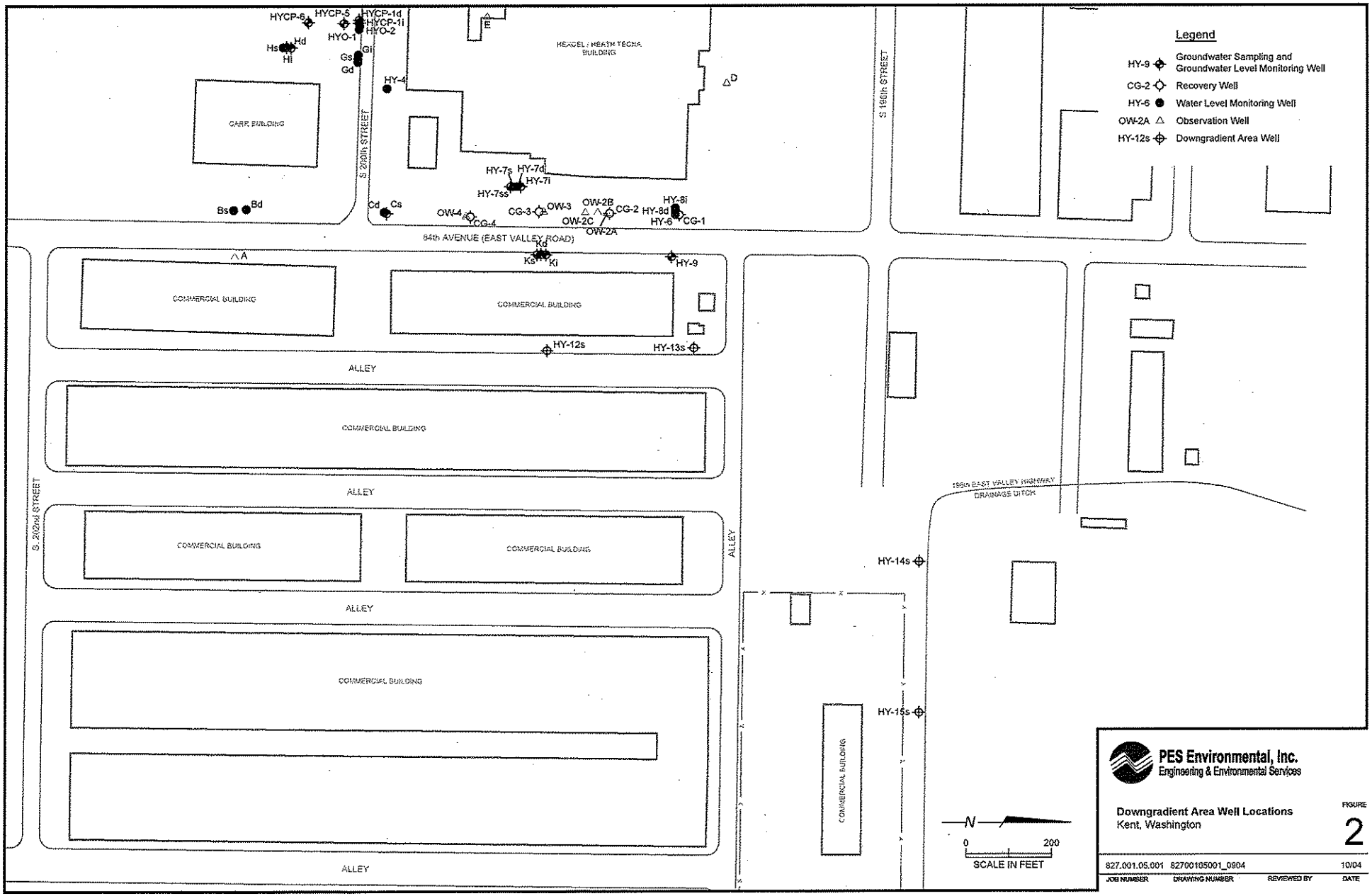

PES Environmental, Inc.
Engineering & Environmental Services

Downgradient Area Well Locations
Kent, Washington

FIGURE
2

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JOB NUMBER	DRAWING NUMBER	REVIEWED BY	DATE

DE2551

PES Environmental, Inc.
Engineering & Environmental Services

EXHIBIT D

A Report Prepared for:

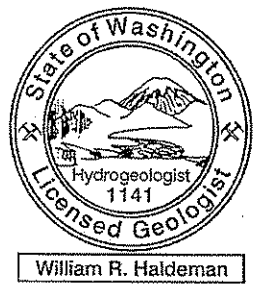
B.S.B. Diversified Company, Inc.
565 Fifth Avenue, Fourth Floor
New York, New York 10017-2413

INTERIM CORRECTIVE ACTION AND POSTCLOSURE MONITORING AND IMPLEMENTATION PLAN BSB PROPERTY KENT, WASHINGTON

JUNE 20, 2005

By:

Brian O'Neal, P.E.
Associate Engineer



William Haldeman, LHG
Senior Hydrogeologist

827.001.06

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(Continued)

LIST OF TABLES

LIST OF ILLUSTRATIONS

1.0 INTRODUCTION AND BACKGROUND

1.1 Purpose

B.S.B Diversified Company Inc. (BSB) has prepared this Interim Corrective Action and Postclosure Monitoring and Implementation Plan (CAPMIP) to support interim remedial actions on BSB's property in Kent, Washington, pursuant to an Agreed Order with the Washington State Department of Ecology (Ecology) issued contemporaneously with this CAPMIP. The objective of the interim remedial actions is hydraulic containment of a chlorinated organics plume using groundwater extraction. The CAPMIP describes the operations and maintenance, evaluation, and reporting activities associated with the remedial actions.

1.2 Property Location and Description

The BSB property (also referred to as Parcel G) is located at 8202 South 200th Street in Kent, Washington (Figure 1). Parcel G is located in Township 22 North, Range 4 East, Section 1H at a latitude of 47 degrees 25' 22" North and a longitude of 122 degrees 13' 51" West. The 4.2-acre parcel is currently a fenced, vacant lot that slopes gently to the north. The area surrounding Parcel G is topographically flat and is zoned "Limited Industrial". Parcel G is bounded on the north by South 200th Street immediately to the north and the Hexcel Corporation (Hexcel) industrial facility. Commercial and industrial park properties are located to the west and south of Parcel G, and the Carr industrial facility is immediately to the east of Parcel G.

1.3 History and Development

1.3.1 History

The Hytek Finishes Company (Hytek), a division of Criton Technologies, operated a metal finishing and electroplating plant at 8202 South 200th Street (now part of the Hexcel Facility). Criton Technologies also had an adjacent composite products manufacturing division named Heath Tecna Aerospace Company at 19819 84th Avenue South. The Hytek division ceased treatment, storage, and disposal (TSD) operations regulated under RCRA in 1985. In 1987, BSB obtained both the Hytek and Heath Tecna Aerospace divisions, including real property described as Parcels A through G (Figure 2). In 1988, BSB sold the Heath Tecna Aerospace division and Parcels A through F to the Phoenix Washington Corporation, a wholly owned subsidiary of Ciba-Geigy. The Phoenix Washington Corporation subsequently changed its name to Heath Tecna Aerospace Company. BSB relocated Hytek's operations off-site and sold the division in 1989, retaining ownership of Parcel G. By mid 1996, Hexcel had acquired Heath Tecna Aerospace Company, including Parcels A through F, and had assumed all obligations of Heath Tecna regarding Parcels A through F. Parcel F, located adjacent to Parcel G to the east, was sold by Hexcel in August 2003 to Carr Prop II, LLC.

1.3.2 Prior Operations

A variety of industrial and hazardous wastes that were generated on Parcels A through E were formerly treated and stored in a waste treatment area located on Parcel G (Figure 3). The wastewater treated contained metals, cyanide, and certain volatile and semi-volatile organics. The waste treatment area was located in the northeast and southern portions of Parcel G; a parking lot was located in the northwest portion of the parcel. The waste treatment area contained an equalizing lagoon (also called a settling basin, holding basin, or holding lagoon), a sludge settling lagoon, sludge drying beds, treatment tanks, and a drum storage area. The waste treatment area was equipped to treat large volumes of dilute wastewater as well as highly concentrated plating baths. The processes that were available included reduction/oxidation of chromium, cyanide and nickel; neutralization of acids; precipitation of heavy metals; and dewatering of metal hydroxide sludges. Waste handling reportedly occurred on Parcel G between the mid 1950s, when electroplating operations were begun on the property north of South 200th Street, and 1985, when Hytek TSD activities ceased.

1.4 Previous Investigations

In 1980, the United States Environmental Protection Agency (USEPA) initiated site investigations at the former Hytek facility. Soil, soil gas, groundwater, sludge, and effluent samples were collected to investigate the former waste treatment area on Parcel G between 1981 and 1989. Figure 4 provides a site map showing the previous Parcel G exploration locations. Groundwater monitoring wells were installed on Parcel G and the Hexcel property between 1981 and 1989, extending from the southeast side of the former waste treatment area to the east side of 84th Avenue South (Figure 5). Groundwater samples have been collected from these wells since 1981. In 1999 and 2000, BSB collected additional soil and groundwater samples (designated by the prefixes "GP" and "SP" on Figure 4) to investigate the Parcel G source area.

1.5 Hydrogeology

Figure 4 presents the location of cross section A-A' (Figure 6) across Parcel G oriented roughly parallel to the direction of groundwater flow. The geologic cross section is based on boring logs from existing groundwater wells and the GP and SP borings drilled in 1999 and 2000.

The geologic materials beneath Parcel G consist of interbedded sand and silt layers. Six hydrogeologic units (designated Layers A through F) have been identified at Parcel G. Layers A, C, E, and F are fine-grained and exhibit low permeability. Layers B and D are composed of relatively high permeability sand. Supplemental data collected during a Parcel G investigation conducted in November and December 2000 revealed that Layer B in the area of Parcel G is largely divided into two subunits separated by a low-permeability silt layer. Layer C separates Layers B and D. Layer F is the deepest unit explored at Parcel G and forms a continuous aquitard approximately 100 feet (ft) thick (based on well logs for deep wells in the vicinity of Parcel G).

For the purpose of assessing contaminant distributions and water quality trends, the Parcel G hydrogeology is divided into "shallow," "intermediate," and "deep" zones. The shallow and intermediate aquifer zones are found in the upper and lower parts of Layer B, and the deep

aquifer zone is found in Layer D. Layer C acts as an aquitard between the intermediate and deep aquifer zones. Groundwater is encountered at a shallow depth (i.e., 5 to 10 feet) beneath Parcel G, with groundwater flow generally to the northeast. Groundwater monitoring wells completed in Layer B are generally referred to as shallow wells (Table 1). At locations where two wells are "nested" within Layer B, or where a Layer A well and a Layer B well are present, the lower (Layer B) well is referred to as an intermediate well. Groundwater monitoring wells completed in Layer C, or at an equivalent depth, are also referred to as intermediate wells. Groundwater monitoring wells completed in Layer D and/or Layer E are referred to as deep monitoring wells.

A detailed description of the hydrogeologic conditions at Parcel G is presented in Sweet-Edwards/EMCON, Inc. (1988), EMCON (1993), Volume 2 of IT Corporation (2000a), and IT Corporation (2001). A more extensive summary of the Parcel G hydrogeology will be presented in the forthcoming feasibility study report.

1.6 Nature and Extent of Parcel G Contamination

Following is a brief discussion of the nature and extent of contamination at Parcel G. A more extensive summary will be presented in the forthcoming feasibility study report.

1.6.1 Soil

Figure 7 presents total halogenated volatile organic constituents (HVOC) isoconcentration contours in soil in both the upper and lower portions of Layer B that were generated during the 2000 source area investigation (IT Corporation, 2001). The primary HVOCs found at Parcel G are trichloroethene (TCE), cis-1,2-dichloroethene (cis-1,2-DCE), and vinyl chloride. The extent of contamination appears to be centered around the location of the former drum storage area (near the HYCP-3 well pair). Total HVOC concentrations above 10 mg/kg were found between depths of 17 and 34 feet below grade, with maximum HVOC concentrations typically located within or directly above the confining layers (i.e., intermediate silt layer in Layer B and the top of Layer C). These results were consistent with the 1980's Parcel G soil sampling (IT Corporation, 2000b). The maximum total HVOC concentration in the upper part of the intermediate silt was 328.8 mg/kg at a depth of 20 feet in SP-9, and the maximum total HVOC concentration in the lower part of the intermediate silt was 600.4 mg/kg at a depth of 34 feet in SP-11. Although these soil sampling investigations included monitoring for dense nonaqueous phase liquids (DNAPLs), none were observed. However, as discussed in Section 1.6.2, the concentrations of TCE in groundwater are consistent with the likely presence of DNAPL.

1.6.2 Groundwater

Parcel G total HVOC concentrations in groundwater have varied from less than the method reporting limit (MRL) to greater than 100,000 µg/L. Figure 8 presents the 2000 vinyl chloride concentrations in groundwater, including groundwater analytical results generated during the 2000 source area investigation and April/October 2000 monitoring well sampling events. The area of groundwater affected by vinyl chloride is the most extensive of the VOCs detected and encompasses the distributions of the other VOCs. The 2000 investigation found that HVOC

concentrations were typically higher in the groundwater samples collected from the upper portion of Layer B (i.e., above the intermediate silt layer) compared to groundwater samples collected from the lower portion of Layer B. The intermediate silt layer appears to have been effective in mitigating HVOC migration into the lower portion of Layer B. At limited locations, however, HVOC concentrations are higher in the lower portion of Layer B (e.g., the HYCP-3 groundwater monitoring well cluster).

As Figure 8 indicates, Parcel G groundwater impacted with HVOCs appears to originate primarily in proximity to the former drum storage area. Although groundwater analytical results from some borings (e.g., SP-18, SP-21, SP-30) installed upgradient of the former drum storage area and downgradient of the former sludge drying beds indicated elevated levels of cis-1,2-DCE, minimal levels of TCE were detected. Because much higher levels of TCE and cis-1,2-DCE have been detected within and near the former drum storage area (e.g., HYCP-3i, SP-12B) than have been detected at the downgradient edge of the former sludge lagoons (SP-19, SP-20, and SP-22), the investigation results provide a good indication that the primary source on Parcel G is located in the former drum storage area, not in the former sludge drying beds.

Concentrations of TCE detected in groundwater were initially as high as 380,000 µg/L, which is 35 percent of the saturation concentration of TCE in water. Recent concentrations, though much lower, have been as high as 76,000 µg/L, which is 7 percent of the saturation concentration of TCE in water. Although there has been no direct observation of DNAPL in the subsurface at Parcel G, concentrations of this magnitude in groundwater are often a good indication that DNAPL is present.

Borings SP-15 and SP-16, located in the northwest corner of Parcel G, both indicated elevated concentrations of cis-1,2-DCE in groundwater in the upper portion of Layer B, consistent with groundwater monitoring data collected from the HY-1 shallow well (HY-1s). In addition, boring SP-18 detected cis-1,2-DCE in the groundwater at a significant concentration (950 µg/L). These locations are not directly downgradient (under current groundwater flow conditions) of any suspected Parcel G source area, and HVOCs in groundwater at these locations likely indicate an off-site source.

1.7 Previous and Ongoing Cleanup Actions

RCRA closure of all regulated units occurred in 1987 and 1988. In November 1988, USEPA and Ecology jointly issued a Post-closure Permit (WAD 07 665 5182) covering Parcels A through G. The permit identified the permitted facility as Parcels G and E, with recognition that Parcel E was subject to a pending transfer to Heath Tecna (later Hexcel). The permit did not name Heath Tecna and did not define the permitted facility to include Parcels A, B, C, D and F based upon the agencies' acceptance of a private agreement between BSB and Heath Tecna (later Hexcel). Under this private agreement, BSB agreed to be named as the sole permittee and Heath Tecna (later Hexcel) agreed to reimburse BSB for the costs of conducting the remedial action on the Hexcel Parcels. In accordance with the permit, a groundwater recovery program was implemented to meet the post-closure permit groundwater corrective action requirements for solid waste management units on the BSB Parcel G and on the Hexcel Parcel E.

1.7.1 RCRA Closure Activities

The former settling basin and former settling lagoon were closed in 1987 consistent with the EPA-approved closure plan. During closure, basin and lagoon sludges were removed and disposed off-site, 12 inches of underlying native soil were removed and disposed off-site, geotextile was installed to stabilize several areas of the settling basin, the excavations were filled with clean, granular soil, and an asphalt concrete cover system was constructed over each area (Landau, 1988a). Although the water table was encountered only at the base of the excavations, the moisture content of the excavated native soil was higher than that allowed for disposal. Therefore, kiln dust was mixed with soil to adjust the moisture content of the soil prior to transportation and disposal. A total of 614 tons of sludge, soil, and kiln dust were transported off site for disposal.

The former sludge drying beds were closed in 1988. Closure activities consisted of excavation of sludge, excavation of 6 inches of underlying native soil, lining the base of the excavations with woven geotextile for stabilization, installing an impermeable liner over the geotextile, filling the center of the excavations with mixed stabilized sludge and soil, filling the perimeter of the excavations with clean, granular soil, and installation of an asphalt concrete cover system that was sloped to the north (Landau, 1988b). The cover system includes two geotextile layers, a PVC liner, a granular backfill layer, a crushed rock base layer, and asphalt concrete pavement.

As delineated from the soil data collected through 1988 and summarized above, unsaturated, contaminated soil from the former drum storage area was excavated from Parcel G in late 1988/89 from the area outlined on Figure 3.

1.7.2 Postclosure Groundwater Remediation

In 1989, EMCON designed and implemented a pilot groundwater remediation program for the permitted parcels in accordance with the postclosure permit. S.S. Papadopulos and Associates Inc. (SSPA), as Heath Tecna Aerospace Company's consultant, developed the groundwater flow model for Parcels A through G. The model defines target pumping rates for each recovery well and evaluates the performance of the remediation program with respect to the capture of groundwater contaminants. In August 1991, USEPA provided final approval for implementation of EMCON's recovery and treatment program.

In August 1992, EMCON activated the groundwater extraction and treatment program required by the postclosure permit. The groundwater extraction program, which continues in place to date, consists of six groundwater recovery wells designed to recover VOCs from the shallow aquifer zone consistent with the postclosure permit conditions. Recovery wells HYR-1 and HYR-2 are located on the BSB parcel and recovery wells CG-1, CG-2, CG-3, and CG-4 are located on the Hexcel parcels. An automated control system controls pumping rates, signals system alarms, records pumping volumes and rates, and collects water level data.

The groundwater program initially included a groundwater treatment system. However, following approval to discharge effluent water directly to the sewer system in 1995, the Parcel G treatment system has been idle. Currently, groundwater enters a bypass line that transfers the

water from the treatment area directly to the King County (formerly Metro) sewer treatment system.

BSB submitted a request for a Class 2 permit modification in 1998. The modification sought to streamline the groundwater monitoring program by reducing the number of groundwater sampling wells and the frequency of sampling required. Ecology approved the modification in 1998. A Post-Closure Care Permit Renewal Application (BSB, 1999) was submitted to Ecology in November 1999.

Per the Agreed Order, remediation responsibilities will be divided by parcel with BSB responsible for remediation of Parcel G and Hexcel responsible for remediation of Parcels A through F. In accordance with the schedule set forth in BSB's Agreed Order and Hexcel's Enforcement Order, the groundwater treatment system will be separated with each party having an independent discharge to the sewer treatment system. BSB will retain responsibility for recovery wells HYR-1 and HYR-2, and Hexcel will assume responsibility for recovery wells CG-1, CG-2, CG-3, and CG-4. BSB and Hexcel will each operate and maintain its respective system as an interim remedy until final remedies are approved and implemented. This CAPMIP sets forth the procedures for operating, maintaining, and monitoring BSB's interim remedy consistent with the original design and objective of the existing groundwater extraction system.

1.8 Project Parties and Responsibilities

Agency oversight of the project will be provided by Hideo Fujita of the Washington Department of Ecology's Northwest Regional office. He can be reached at (425) 649-7068 or hfuj461@ecy.wa.gov. BSB will be responsible for implementation, operation, and maintenance of the remedial actions at Parcel G. BSB's project manager for the remedial actions will be Ronald A. Burt of Patterson Planning & Services, Inc. He can be reached at (615) 986-2679 or raburt_pps@yahoo.com. PES Environmental (PES) is providing engineering, technical, and operational support for the project. PES' project manager is William Haldeman. He can be reached at (425) 637-1905 or whaldeman@pesenv.com.

1.9 Organization of the Plan

Section 1 – Introduction and Background: Describes the purpose of the plan, the project location and surroundings, the history, previous investigations, hydrogeology, the nature and extent of Parcel G contamination, remedial activities conducted to date at Parcel G, project parties and their responsibilities, and the organization of the plan.

Section 2 – Interim Remedial Actions: Describes the interim remedial objectives and activities.

Section 3 – System Operations: Describes the operational strategy of the interim groundwater remediation system, O&M procedures used to ensure proper functioning of the remedial actions, including inspections, operations procedures, maintenance activities, groundwater monitoring, and health and safety requirements.

Section 4 – Data Evaluation: Describes the evaluation techniques that will be used during the interim remedial action.

Section 5 – Documentation and Notification: Describes the methods for documenting remedial activities at Parcel G, the reports to be submitted, and the notifications to be made during remedial activities.

Section 6 – References: Lists the references made in the plan.

2.0 INTERIM REMEDIAL ACTIONS

2.1 Remedial Objectives

The objectives of the interim remedial actions described in this CAPMIP include:

1. Preventing direct contact with, and minimizing infiltration of precipitation through, Parcel G-related hazardous constituents in soil and/or waste materials.

2. Preventing migration of HVOC-containing groundwater above cleanup levels from Parcel G.

Objective No. 1 will continue to be achieved through maintenance of the existing asphalt cap, security and signage, and institutional controls components of the remedial action described below in Sections 2.2.1, 2.2.4, and 2.2.5, respectively. Objective No. 2 will be achieved through operation and maintenance (O&M) of the interim groundwater recovery system and groundwater monitoring described below in Sections 2.2.2 and 2.2.3.

A final remedial action will be evaluated during a Focused Feasibility Study and will replace or enhance the interim remedy following selection and Ecology approval.

2.2 Remedial Action Description

2.2.1 Asphalt Cap

As discussed above, the former settling basin, the former equalization lagoon, and the former sludge drying beds were capped during closure. The capped areas, shown on Figure 3, encompass an approximate total area of 75,000 square feet. Each cap consists of two geotextile layers, a PVC liner, a granular backfill layer, a crushed rock base layer, and asphalt concrete pavement. As described in Section 3.2, BSB will maintain the integrity and effectiveness of each cap by making repairs as necessary to correct the effects of settling, subsidence, erosion, or other damage. BSB will prevent run-on and run-off from damaging each cap. BSB will routinely inspect each cap as described in Section 3.2.

2.2.2 Groundwater Recovery System

2.2.2.1 Existing Facility Extraction System

Since August 1992, two extraction wells, HYR-1 and HYR-2 (Figure 4), have been operated on the north side of BSB's Parcel G, and extraction wells CG-1 through CG-4 (Figure 5) have been operated on the eastern sides of Hexcel's Parcels C, D, and E. Each extraction well is 6-inches in diameter, 30- to 35-feet-deep, and screened between 10 and 30 feet below grade (Table 1). The top of each well is completed below grade in a vault. Groundwater is extracted from each well with a submersible pump and is pumped through an individual, underground conveyance line to an aboveground manifold located in the northeast corner of Parcel G. The individual

conveyance lines (two from Parcel G and the others from the Hexcel parcels) are joined together at the manifold into a common header that leads to the sanitary sewer. Extracted groundwater is discharged to the sanitary sewer under King County Waste Discharge Permit No. 7575. Access ports in the system allow sampling of individual wells or the combined discharge.

Each extraction well consists of a submersible well pump, down-well submersible pressure transducer, independent conveyance piping, and an electrically actuated ball valve with proportional valve position control and paddle wheel flow transmitter on each piping run. The extraction system operation is controlled by a programmable logic controller (PLC) located adjacent to the Parcel G manifold. The PLC is set-up to allow operator interface using a site-specific graphical application on a personal computer (PC). The operator can use the PC application to communicate with the PLC directly - either remotely via dial-up modem or on-site. Using the PC application, the operator can access real time operational data (i.e., flow rates, pump status, pump cycles, water levels), control PLC logic set points (i.e., pump flow rates and water levels), and download up to one month of daily operating data.

In general, the PLC logic is programmed to operate each individual extraction well at an operator-controlled flow rate and protect each pump from low water flow rate and level conditions. To control each flow rate, the PLC reads the flow transmitter output and then proportionally adjusts the ball valve position until the flow rate set point is reached. In the event that flow falls below the low flow rate set point, the PLC shuts off the well pump and activates an alarm sequence that notifies the operator of the low flow condition. To protect the pump from low water level in the well, the PLC reads the pressure transducer output and then temporarily shuts off the well pump if the water level drops to the low water level set point. After well water recharges above the high water level set point, the well pump cycles on and begins pumping again.

2.2.2.2 Establishment of Separate Interim Extraction Systems

As discussed in Section 1.7.2, future remediation responsibilities will be divided by parcel with BSB responsible for remediation of Parcel G and Hexcel responsible for remediation of Parcels A through F. The existing remediation system will be divided with BSB retaining extraction wells HYR-1 and HYR-2, all Parcel G piping, and the existing PLC, and Hexcel taking responsibility for extraction wells CG-1 through CG-4 and all piping located on Parcels C, D, and E. In coordination with Hexcel's assumption of responsibility for its portion of the system, BSB will cut and/or plug the existing underground conveyance and electrical lines from the CG wells to Parcel G and establish new power and water supply connections for Parcel G. Future operation of the CG wells will require that Hexcel establish a new system for extraction control and conveyance on the Hexcel property.

Within fifteen (15) days of the effective date of the BSB Agreed Order, BSB will submit to Ecology for its approval the Work Plan for the separation of the BSB portion of the BSB/Hexcel groundwater remediation well system (Separation Work Plan). The Work Plan shall address all the engineering requirements including: (1) the physical piping system separation; (2) the adjustment to the piping for proper discharge of the extracted groundwater; and (3) the electrical wiring for operation of the system including remediation wells, alarms, and control systems. Ecology will approve, approve with comments or disapprove the Separation Work Plan within

forty-five (45) days of the effective date of the Order. If necessary, BSB will submit a revised Separation Work Plan satisfying Ecology's requirements within sixty (60) days of the effective date of the Order. Ecology will approve any such revised Separation Work Plan within ninety (90) days of the effective date of the Order. Within one hundred twenty (120) days of the effective date of the Order, BSB will complete system modifications for independent operation and discharge up to the point of system separation. BSB will initiate final system separation and initiate independent groundwater operations within the later of one hundred thirty-four (134) days of the effective date of the Order or 14 days after King County's issuance of a discharge permit to Hexcel. At that time, BSB's operation of the Hexcel portion of the groundwater extraction system will cease.

2.2.3 Monitoring Wells and Piezometers

This section describes the existing and interim Parcel G groundwater monitoring networks. Survey coordinates and well completion details for existing wells to be used in the interim groundwater monitoring network are summarized in Table 1.

2.2.3.1 Current Groundwater Monitoring Network

Twenty-five monitoring wells are currently located on Parcel G and immediately adjacent to the north, east, and southwest sides of Parcel G (see Figures 4 and 5). Eleven of these wells are shallow, six are intermediate, and eight are deep. Consistent with the Postclosure Permit Evaluation Monitoring Plan Amendment (EMPA; EMCON, 1998), groundwater levels are measured in all 25 monitoring wells monthly. The groundwater levels have historically been used to calibrate a groundwater flow model used in verifying groundwater capture by the extraction system. Additionally per the EMPA, seven shallow wells (Ls, HY-1s, HY-11s, HYCP-2, HYCP-3s, HYCP-5, and HYCP-6), five intermediate wells (Hi, HY-1i, HY-11i, HYCP-1i, and HYCP-3i), and four deep wells (Hd, HY-1d, HY-11d, and HYCP-1d) are sampled on a semiannual basis and analyzed for VOCs, dissolved arsenic, and cyanide. Groundwater samples from two wells (HYCP-2 and HYCP-5) are also analyzed annually for a more expansive VOC parameter list, semivolatile organic compounds (SVOCs), selected metals, and polychlorinated biphenyls (PCBs). Access to monitoring wells Hs, Hi, and Hd has not been available since August 2003. The wells are located on Parcel F, which was sold by Hexcel to Carr Prop II, LLC (Carr). Before these wells can be monitored in the future, access will have to be provided by Hexcel and Carr.

2.2.3.2 Interim Parcel G Groundwater Level Monitoring Network

Table 2 and Figure 9 present the extraction wells, monitoring wells, and piezometers to be used to monitor groundwater conditions on and near Parcel G during interim actions. All wells in the network will be used to measure groundwater levels. The network will include 11 existing shallow EMPA wells, 6 existing intermediate EMPA wells, 8 existing deep EMPA wells, and 2 existing extraction wells (assuming that access can be gained to Hs, Hi, and Hd; see Section 2.2.3.1). Groundwater levels will be measured on a monthly basis.

2.2.3.3 Interim Parcel G Groundwater Sampling Network

BSB will continue to collect groundwater samples semiannually from 16 EMPA wells (Table 2) and submit the samples for laboratory analysis of HVOCs, dissolved arsenic, and cyanide. The sampling and analysis will be conducted per the EMPA.

2.2.4 Security and Signage

BSB has maintained the security system put in place by Hytek to prevent unknowing entry and to minimize the possibility of unauthorized entry in accordance with the requirements of WAC 173-303-310. The system includes a 7-foot-high chain-link fence with a barb wire top that completely surrounds the former treatment and storage areas. Currently, the access gates to Parcel G are locked at all times unless authorized personnel are performing monitoring, maintenance, or inspection activities within the secured areas. The keys for the areas are of limited issue and kept by PES. The perimeter of the former treatment and storage areas are placarded with highly visible signs that bear the legend "DANGER – UNAUTHORIZED PERSONNEL KEEP OUT." The signs are spaced to provide sufficient warning, posted at eye level (for a 5 foot, 6 inch tall individual), and legible from a distance of 25 feet.

BSB will maintain the existing security and signage system by routinely inspecting the fence, gates, and signs for deterioration or damage and repairing all defects that could cause a breach in security (see Section 3.2).

2.2.5 Institutional Controls

Institutional controls (WAC 173-340-440), which include property use restrictions, maintenance requirements for engineered controls (e.g., inspections), educational programs (e.g., signs), and financial assurances, have been in place since RCRA closure of the facility to limit or prohibit activities that may interfere with the integrity of the cleanup action. These controls will be maintained during implementation and operations of the interim groundwater extraction system at Parcel G. Fencing and signage, as discussed above, will be maintained. BSB will perform the inspection and maintenance requirements of the engineered controls as discussed in Section 3.

3.0 SYSTEM OPERATIONS

The purpose of this section is to provide a general description of system operations for the interim groundwater remediation system:

- The operational strategy that will guide system operations;
- Operations and maintenance activities;
- Groundwater monitoring activities; and
- Health and safety requirements.

3.1 Interim Groundwater Extraction System Operational Strategy

The operational goals of the enhanced groundwater extraction system are:

1. Achieve the target pumping rates
2. Maximize extraction well up-time
3. Minimize extraction well cycling

Following is a summary of the system operational strategy for achieving these goals.

3.1.1 Target Pumping Rates

Each recovery well in the existing groundwater extraction system has a target pumping rate, which is the rate at which the pump is set. These pumping rates were established based on the evaluation of the pilot pumping test (S.S. Papadopulos & Associates, 1990) and were modified based on an evaluation of the first year of system performance (S.S. Papadopulos & Associates, 1993). Each well also has a projected pumping rate, which is calculated assuming that each well is operational 90 percent of the time. The target pumping rates of 13 and 9 gallons per minute (gpm) will be maintained for wells HYR-1 and HYR-2, respectively, for a total target pumping rate of 22 gpm. During periods of low recharge, water levels may decline and hydraulic gradients may decrease affecting the design pumping rates in the wells. If the total target pumping rate of 22 gpm cannot be attained on a daily average basis for any period longer than 10 days, then BSB shall provide Ecology notice of the pumping deficiency within 15 days. If Ecology requests, BSB shall submit to Ecology a schedule, not to exceed 60 days in duration, for implementing sufficient additional pumping capabilities to obtain the total target pumping rate, or submit a technical analysis and a confirmation monitoring plan to demonstrate that a lower total pumpage rate, during a period of low recharge and dropping groundwater levels, will maintain hydraulic containment of the chlorinated organics plume.

3.1.2 Extraction Well Up-Time

Extraction well down-time has typically been caused by biogrowth, iron-related deposits, or component failure. Biogrowth and iron-related deposits accumulate with time on the well screen, pump intake, water piping, and instruments, reducing well efficiencies and pumping rates and increasing wear and tear on extraction system components. The inspection, operation, and maintenance activities described in Section 3.2 will be conducted to identify and prevent the build up of biogrowth and iron-related deposits and to identify and replace worn components. Spare parts will be purchased and stored ready for use or will be locally available on short notice to maximize extraction well up-time.

3.1.3 Extraction Well Cycling

Extraction well cycling has typically been caused by well screen plugging (by biogrowth or iron-related deposits), component failure, or reduced recharge and subsequent over pumping. Excessive well cycling can cause or exacerbate biofouling and iron deposits. The inspection, operation, and maintenance activities described below will be conducted to identify and prevent the build up of biogrowth and iron-related deposits, and to identify and replace worn components. Spare parts will be purchased and stored ready for use or will be locally available on short notice to minimize downtime. Extraction well water levels will be monitored on a regular basis and pumping rates adjusted if water levels indicate that the well is getting close to cycling.

3.2 Inspections, Operations, and Maintenance Procedures

3.2.1 Inspections

Inspections will be performed on a routine basis and in conjunction with scheduled extraction well and equipment maintenance activities. Inspections will be conducted to gauge the performance of the remedial actions: asphalt cap, groundwater recovery system, monitoring wells, piezometers, Parcel G security, and signage. Inspections will include remote groundwater extraction system operation checks and field inspections. Field inspections will involve observation and monitoring of the remedial action components. Inspections will be documented with prescribed field forms. The inspection frequencies are outlined in Table 3.

3.2.2 Operations

The overall strategy for operating the groundwater remediation system is described above in Section 3.1. Consistent with this strategy, the primary operational goal of reliably achieving target pumping rates and maintaining capture will be achieved through maximizing the extraction system up-time and efficiency. Up-time will be maximized by operating the system in a manner that to the extent practical eliminates extraction pump "cycling," thereby maintaining well efficiency, reducing fouling of extraction pumps and piping, and minimizing wear and tear on extraction system components.

The extraction system will operate automatically as described in Section 2.2.2.1. The extraction system operator will oversee the automatic operations through on-site and remote inspections (Section 3.2.1) and through operational testing. In order to optimize groundwater recovery system operations, operational testing will be performed in conjunction with field inspections. Operational testing will be documented with prescribed field forms. Table 4 lists the testing parameters and frequencies that will be followed.

3.2.3 Maintenance

The routine maintenance parameters and initial maintenance frequencies are outlined in Table 5. Maintenance shall be performed on a routine basis, in conjunction with inspection activities. Maintenance activities will be documented with prescribed field forms. The maintenance frequency for each well and or component will be adjusted based on field conditions. An extraction well that is significantly bio-fouled or significantly encrusted with iron-related deposits will be redeveloped. Well redevelopment will include chemical or mechanical treatment, surging, bailing, and/or pumping the well until the specific capacity of the well returns to acceptable levels. If a fouled well does not respond adequately to redevelopment, it will be abandoned and replaced.

3.3 Groundwater Monitoring

3.3.1 Water Level Monitoring

BSB will measure groundwater levels in all network wells (Table 2; assuming that access can be gained to Hs, Hi, and Hd; see Section 2.2.3.1) on a monthly basis. Water levels (depth to water below top of PVC or metal well casing) will be measured with an electric well probe. Water level measurement events will be coordinated with Hexcel personnel so that water levels can be measured on the same day on both the BSB and Hexcel parcels.

3.3.2 Water Quality Monitoring

3.3.2.1 Monitoring Locations and Frequency

BSB will collect groundwater samples from 7 shallow monitoring wells, 5 intermediate monitoring wells, and 4 deep monitoring wells at the frequency detailed in Table 6 (assuming that access can be gained to Hs, Hi, and Hd; see Section 2.2.3.1). The 16 EMPA monitoring wells (Hi, Hd, HY-1s, HY-1i, HY-1d, HY-11s, HY-11i, HY-11d, HYCP-1i, HYCP-1d, HYCP-2, HYCP-3s, HYCP-3i, HYCP-5, HYCP-6, and Ls) will be sampled semiannually, consistent with past practice, for the duration of the interim remedy. Samples from these wells will be analyzed for HVOCs (USEPA Method 8021B), dissolved arsenic (USEPA Method 7060), and total cyanide (USEPA Method 335.2). Annually, samples collected from HYCP-2 and HYCP-5 will be analyzed for VOCs (USEPA Method 8260B), SVOCs (USEPA Method 8270), PCBs (USEPA Method 8082), and additional dissolved metals (barium, cadmium, chromium, copper, nickel, and zinc by USEPA Method 6010).

3.3.2.2 Sampling Procedures

All sampling and analysis will be done per the EMPA (EMCON, 1998). The monitoring well will be purged with a peristaltic pump fitted with new polyethylene and silicon (at the pump head only) tubing. A minimum of three well casing volumes will be removed before collection of any sample for laboratory analysis. Conductivity, temperature, and pH will be taken after the removal of each well casing volume. Samples will not be collected until these parameters have stabilized to ±10 percent or after a maximum of two hours of purging. Field instruments will be calibrated using known, standard solutions a minimum of twice daily. VOC samples will be collected with a disposable polyethylene bailer, and metals and cyanide samples will be collected from the discharge end of the peristaltic pump.

A hydraulic assessment of each sampled monitoring well will be made during well purging. The assessment will be made by monitoring drawdown during well purging. If excessive drawdown is noted and a subsequent review of the well log and purging history indicate that the well should be performing significantly better, the well will be redeveloped. Well redevelopment will include surging, bailing, and pumping the well until the color and turbidity of the discharge water do not change. If the well does not respond adequately to redevelopment, it will be abandoned and replaced.

3.3.2.3 Quality Control Samples

Quality control samples will be collected at an approximate frequency of 10 percent of the total number of groundwater samples, with one duplicate groundwater sample and one field (rinsate) blank collected every sampling event. Duplicate and field blank samples will be collected using the same procedures described above (where applicable), and submitted blind to the laboratory. The locations for duplicate sample collection will be determined in the field and will be varied over time.

3.4 Health and Safety Requirements

The existing project health and safety plan (HASP) will be reviewed and, if necessary, updated to be consistent with the health and safety requirements of BSB, Ecology (per WAC 173-340-810), and the Washington Industrial Safety and Health Act (WAC 296-24, 296-62, and 296-155). All applicable workers on Parcel G will be required to read and sign the HASP. Health and safety meetings will be conducted with contractors, subcontractors, construction testing personnel, and applicable BSB employees before starting work at Parcel G.

4.0 DATA EVALUATION

4.1 Operational Performance Evaluation

The fundamental performance objective of the enhanced groundwater extraction system is to prevent migration of contaminated groundwater above cleanup standards from Parcel G by creating a capture zone that encompasses the Parcel G boundaries. By definition, a capture zone is characterized by hydraulic gradients that ultimately draw all groundwater within the zone to the extraction wells. Performance evaluations will focus on evaluating whether the operational goals of maintaining target pumping rates and maximizing the extraction system up-time and efficiency were achieved. Operational data will be collected during the routine inspections (Table 3) and operational testing (Table 4) described in Section 3.2 above. Specific aspects of system operations that will be evaluated include:

- Extraction well pump rates;
- System up-time;
- Extraction well cycling frequency;
- Extraction well specific capacity;
- Extraction well water quality (VOCs, general chemistry, and microbial); and
- Mass of contaminants removed.

In addition, the equipment inspection, testing, and calibration data collected will be reviewed to assess whether the current O&M approach is adequate.

4.2 Contingencies

Well shutdown and operational problems will be diagnosed and repaired as quickly as possible to meet operational goals. The existing autodialer will continue to be used to notify technical personnel when wells have shut down or are pumping below specified levels. Additionally, critical spare parts will be stored ready for use to maximize extraction well up-time. If a well is shut down for longer than 5 days, Ecology will be notified.

5.0 DOCUMENTATION AND NOTIFICATION

5.1 Documentation

All inspection, maintenance, and repair events will be documented and reported as described below.

5.1.1 Inspections

Inspections will be documented on forms developed specifically for the project, standard field memo forms, or in a project-specific field book, depending on the complexity of the inspection and detail of information to be recorded. Information documented will include date, personnel completing the inspection, weather, Parcel G conditions, observations of the specific items reviewed, and recommendations, if necessary, of items requiring maintenance or repair. Field forms, copies of the field book entries, and any photographs taken will be stored in the project file.

5.1.2 Maintenance and Repairs

Maintenance and repair activities will be documented on project-specific forms, standard field memo forms, or in a project-specific field book. Information documented will include date, personnel performing the maintenance or repair, location of the activity, component being maintained or repaired, maintenance or repair methods and equipment/materials used (if applicable), and recommendations, if necessary, for additional work to be performed in the future. Field forms, copies of the field book entries, and any photographs taken will be stored in the project file.

5.1.3 Groundwater Monitoring and Sampling

Groundwater level measurements will be recorded in a project-specific field book or on project-specific forms. Information documented will include date, personnel, applicable Parcel G conditions, well numbers, time of measurement, depth to water, and any observations of well or surface monument condition. Groundwater sampling events will be documented on project-specific groundwater sampling forms. Information recorded will include date, personnel, applicable Parcel G conditions, well numbers, time of sampling, depth to water, field parameters, laboratory bottles filled, and analyses to be performed. Groundwater sampling forms, copies of any field book entries, and any photographs taken will be stored in the project file.

5.2 Reporting

5.2.1 POTW Discharge Monitoring Reports

Monthly self-monitoring reports will be submitted to KCIW by the 15th day each month. Per Waste Discharge Permit No. 7575, the self-monitoring reports will include a King County self-

monitoring report form, any analytical laboratory reports (for required or non-required self-monitoring), and a record of monthly discharge. A copy of each report will be provided to Ecology and Hexcel.

5.2.2 Groundwater Data Submittals

Groundwater quality data will be transmitted, after a data quality review, to Ecology and Hexcel. The data transmittal will note any significant problems encountered during sampling and any data qualifiers assigned based on the quality review. The data will be submitted to Ecology and Hexcel within 30 days of receipt of the final data report from the analytical laboratory.

5.2.3 Operational Summary Reports

Operational summary reports will be prepared quarterly. Each report will summarize the interim extraction system operational performance during the period of record, including

- Extraction well pump rates;
- System up-time;
- Extraction well cycling frequency;
- Extraction well specific capacity;
- Extraction well water quality (VOCs, general chemistry, and microbial); and
- Mass of contaminants removed.

Performance evaluation reports will be submitted to Ecology and Hexcel within 30 days of the end of the quarter.

5.2.4 Annual Report

Per the EMPA, a report will be issued after the end of a calendar year summarizing the interim groundwater extraction system performance and monitoring data for the previous year. The report will provide:

- A compilation and summary of the groundwater extraction system performance data provided in the quarterly reports;
- Groundwater level and rainfall data for the previous year;
- Groundwater contour maps for high and low water level conditions;
- Groundwater field data sheets;
- All laboratory analytical reports; and

- Groundwater time trend plots for TCE, cis-1,2-DCE, and vinyl chloride for each network sampling well; and

- Updated Parcel G isoconcentration contour maps for TCE, cis-1,2-DCE, and vinyl chloride.

The annual report covering the period January through December will be submitted to Ecology and Hexcel by the following March.

5.3 Notification

Hexcel will be notified in advance of groundwater level monitoring events and in advance of groundwater sampling events to allow coordination of water level measurements and sampling at both the BSB and Hexcel facilities. The notification requirements of King County Waste Discharge Permit No. 7575 will be followed, including notifying King County in the event of a spill or slug discharge to the sanitary sewer or changes in discharge characteristics.

6.0 REFERENCES

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TABLES

Table 1

Parcel G and South 200th Street Well Completion Data
BSB Property, Kent, Washington

Well	Northing	Easting	Monitoring Point Elevation	Surface Casing Rim Elevation	Well Type	Monument	Log	Boring Depth	Screen Depth	Filter Pack Depth	Seal Depth
Shallow Aquifer Zone Monitoring Wells											
Bs	157,073.45	1,295,109.08	20.81	21.51	2" SS, 0.010"-slot size	Above	C	17	4 - 14	3 - 17	0 - 3
Gs	157,364.02	1,294,758.01	20.95	21.37	2" SS, 0.010"-slot size	Above	C	17.5	5.5 - 15.5	3.5 - 15.5	0 - 3.5
Hs	157,192.46	1,294,730.88	19.99	20.50	2" SS, 0.010"-slot size	Flush	C	18	5 - 15	3 - 18	0 - 3
Ls	157,158.27	1,294,518.78	24.02	25.18	2" SS, 0.010"-slot size	Above	C	18	5 - 15	4 - 19	0 - 4
HY-1s	157,370.32	1,294,202.23	24.19	24.33	2" PVC	Above	B	20.5	14 - 19	10 - 20.5*	0 - 10
HY-2	157,434.49	1,294,622.82	20.27	21.62	2" PVC	Above	B	20	9 - 14	5 - 20*	0 - 5
HY-4	157,431.77	1,294,827.16	20.15	20.21	2" PVC	Above	B	20	9.5 - 14.5	5 - 20*	0 - 5
HY-5	158,290.73	1,294,495.10	19.03	19.55	2" PVC	Flush	B	23.5	13.5 - 23.5	12.5 - 23.5	0 - 12.5
HY-11s	156,795.40	1,294,193.57	25.17	25.55	2" PVC	Flush	B	20	8 - 18	7.5 - 20*	0 - 7.5
HYCP-2	157,370.41	1,294,617.54	20.47	21.57	2" Sch 80 PVC, 0.010" slots	Above	B	28	8 - 28	6 - 28	0 - 6
HYCP-3s	157,190.45	1,294,417.09	24.03	24.47	2" Sch 80 PVC, 0.010" slots	Above	C	13	8 - 13	7 - 13	0 - 7
HYCP-4	157,188.39	1,294,297.21	23.90	24.36	2" Sch 80 PVC, 0.010" slots	Flush	B	33	11 - 33	7 - 33	0 - 7
HYCP-5	157,331.49	1,294,674.50	22.31	23.01	2" SS, 0.010"-slot size	Above	B	31.5	10 - 30	7 - 31.5	0 - 7
HYCP-6	157,247.92	1,294,672.18	23.52	23.69	2" SS, 0.010"-slot size	Above	B	31.5	10 - 30	7 - 31.5	0 - 7
HYO-2	157,368.19	1,294,678.22	20.27	20.62	2" Sch 80 PVC, 0.010" slots	Flush	C	18.5	8.5 - 18.5	7 - 18.5	0 - 7
HEX-1	157,430.95	1,294,779.91	21.87[#]	NA	2" Sch 40 PVC, 0.010" slots	Flush	B	31	8.5 - 28.5	7.5 - 29	0 - 7.5
HEX-2	157,434.86	1,294,580.72	22.61[#]	NA	2" Sch 40 PVC, 0.010" slots	Flush	B	40	10 - 30	8 - 30	0 - 8, 30 - 40
HEX-3	157,439.19	1,294,493.19	22.81[#]	NA	2" Sch 40 PVC, 0.010" slots	Flush	B	40	10 - 30	8 - 32	0 - 8, 32 - 40
Intermediate Aquifer Zone Monitoring Wells											
Gi	157,365.03	1,294,748.17	21.33	21.41	2" SS, 0.010"-slot size	Above	C	41	28 - 38	25 - 41	0 - 25
Hi	157,197.41	1,294,730.68	20.09	20.30	2" SS, 0.010"-slot size	Flush	C	40	28 - 38	25 - 40	0 - 25
HY-1i	157,364.56	1,294,202.34	24.89	25.15	2" PVC	Above	NA	40	30 - 40	28 - 40	0 - 28
HY-11i	156,793.32	1,294,190.79	25.08	25.48	2" PVC	Flush	NA	35	25 - 35	23 - 35	0 - 23
HYCP-1i	157,367.28	1,294,673.31	21.33	21.35	2" Sch 80 PVC, 0.010" slots	Above	C	36.5	16.5 - 36.5	14 - 36.5	0 - 14
HYCP-3i	157,190.43	1,294,408.33	23.45	24.25	2" Sch 80 PVC, 0.010" slots	Above	C	33	22 - 32	20 - 33	0 - 20
Deep Aquifer Zone Monitoring Wells											
Gd	157,364.39	1,294,763.27	20.79	21.13	2" SS, 0.010"-slot size	Above	B	73.5	56 - 66	53 - 70	0 - 53
Hd	157,204.76	1,294,731.54	20.15	20.38	2" SS, 0.010"-slot size	Flush	B	71	57 - 67	53 - 71	0 - 53
I	157,361.79	1,294,379.27	24.14	24.36	2" Sch 80 PVC, 0.010" slot size	Above	B	86	74 - 84	66 - 84	0 - 66
Ld	157,154.91	1,294,506.20	24.19	24.45	2" SS, 0.010"-slot size	Above	B	82.5	69 - 79	67 - 82.5	0 - 67
HY-1d	157,352.31	1,294,202.00	25.60	21.35	2" PVC	Above	NA	94	84 - 94	82 - 94	0 - 82
HY-11d	156,788.21	1,294,192.19	25.03	25.53	2" PVC	Flush	NA	92	82 - 92	80 - 92	0 - 80

Table 1

Parcel G and South 200th Street Well Completion Data
BSB Property, Kent, Washington

Well	Northing	Easting	Monitoring Point Elevation	Surface Casing Rim Elevation	Well Type	Monument	Log	Boring Depth	Screen Depth	Filter Pack Depth	Seal Depth
HYCP-1d	157,367.28	1,294,673.31	21.27	21.35	2" Sch 80 PVC, 0.010" slot size	Above	C	73.5	53.5 - 73.5	14 - 45, 47 - 49.5, 52.5 - 73.5	0 - 14, 45 - 47, 49.5 - 52.5
HYO-1	157,366.84	1,294,678.28	21.13	21.20	3" Sch 80 PVC, 0.020" slot size	Above	B	84.5	53.5 - 83.5	15 - 84.5*	0 - 15
Extraction Wells											
HYR-1	157,345.31	1,294,623.18	18.69	20.89	6" SS, 0.010" slot size	Above	B	35	10 - 30	8 - 35	0 - 8
HYR-2	157,355.66	1,294,386.77	19.49	22.74	6" SS, 0.010"/0.015" slot size	Flush	B	35	8.9 - 28.9	8 - 35	0 - 8

Notes:
Northing/Easting in feet relative to the WA State Plane System North Zone (NAD 83).
Monitoring point (top of well casing) in feet relative to the National Geodetic Vertical Datum (NGVD 29).
All depths shown in feet below ground surface.
SS = stainless steel.
Above = above-grade completion.
Below = below grade completion.
B = boring log with well completion shown.
C = well completion figure.
NA = boring or completion log not available; completion estimated from other wells or cross sections.
* = lower portion of filter pack includes native material.
# = monitoring point elevation relative to mean sea level.

Table 2

Parcel G and South 200th Street Enhanced Well Network
BSB Property, Kent, Washington

Well	Unit Monitored	Well Purpose: Groundwater Extraction	Well Purpose: Water Level Monitoring	Well Purpose: Groundwater Sampling	Rationale
Existing Shallow Aquifer Zone Monitoring Wells					
Bs	Upper sand/silty sand		X		Provide data for areal gradient evaluation
Gs	Upper sand/silty sand		X		Provide data for capture zone evaluation
Hs	Upper sand		X		Provide data for capture zone evaluation
Ls	Upper sand		X	X	Continued implementation of the EMPA
HY-1s	Upper sand		X	X	Continued implementation of the EMPA
HY-2	Upper sand		X		Provide data for capture zone evaluation
HY-4	Upper sand		X		Provide data for capture zone evaluation
HY-5	Upper sand/silty sand		X		Provide data for areal gradient evaluation
HY-11s	Upper sand		X	X	Continued implementation of the EMPA
HYCP-2	Upper and lower sand		X	X	Continued implementation of the EMPA
HYCP-3s	Upper sand		X	X	Continued implementation of the EMPA
HYCP-4	Upper and lower sand		X		Provide data for capture zone evaluation
HYCP-5	Upper and lower sand		X	X	Continued implementation of the EMPA
HYCP-6	Upper and lower sand		X	X	Continued implementation of the EMPA
HYO-2	Upper sand		X		Provide data for capture zone evaluation
HEX-1	Upper and lower sand		X	X	Monitoring area north of South 200th Street
HEX-2	Upper and lower sand		X	X	Monitoring area north of South 200th Street
HEX-3	Upper and lower sand		X	X	Monitoring area north of South 200th Street
New Shallow Aquifer Zone Monitoring Wells					
G4	Upper sand		X	X	Screen Unit B sand not screened in Gs or Gi
New Shallow Aquifer Zone Piezometers					
P-1	Upper sand		X		Provide data for capture zone evaluation west of HYR-1
P-2	Lower sand		X		Provide data for capture zone evaluation west of HYR-1
P-3	Upper sand		X		Provide data for capture zone evaluation near HYR-6
P-4	Lower sand		X		Provide data for capture zone evaluation near HYR-7
P-5	Upper sand		X		Provide data for capture zone evaluation east of HYR-2
P-6	Lower sand		X		Provide data for capture zone evaluation east of HYR-2
P-7	Upper sand		X		Provide data for capture zone evaluation near HYR-2
P-8	Lower sand		X		Provide data for capture zone evaluation near HYR-2
P-9	Upper sand		X		Provide data for capture zone evaluation west of HYR-2
P-10	Lower sand		X		Provide data for capture zone evaluation west of HYR-2
P-11	Upper sand		X		Provide data for capture zone evaluation near HYR-3
P-12	Lower sand		X		Provide data for capture zone evaluation near HYR-3
P-13	Lower sand		X		Provide data for areal gradient evaluation
Existing Intermediate Aquifer Zone Monitoring Wells					
Gi	Lower Sand/Silty Sand		X		Provide data for capture zone evaluation
Hi	Lower Sand		X	X	Continued implementation of the EMPA
HY-1i	Lower Sand		X	X	Continued implementation of the EMPA
HY-11i	Lower Sand		X	X	Continued implementation of the EMPA
HYCP-1i	Lower Sand		X	X	Continued implementation of the EMPA
HYCP-3i	Lower Sand		X	X	Continued implementation of the EMPA
Existing Deep Aquifer Zone Monitoring Wells					
Gd	Deep		X		Provide data for capture zone evaluation
Hd	Deep		X	X	Continued implementation of the EMPA
I	Deep		X		Provide data for capture zone evaluation

Table 2

Parcel G and South 200th Street Enhanced Well Network
BSB Property, Kent, Washington

Well	Unit Monitored	Well Purpose			Rationale
		Groundwater Extraction	Water Level Monitoring	Groundwater Sampling	
Ld	Deep		X		Provide data for capture zone evaluation
HY-1d	Deep		X	X	Continued implementation of the EMPA
HY-11d	Deep		X	X	Continued implementation of the EMPA
HYCP-1d	Deep		X	X	Continued implementation of the EMPA
HYO-1	Deep		X		Provide data for capture zone evaluation
Existing Extraction Wells					
HYR-1	Upper and lower sand	X	X		Continued use of existing well
HYR-2	Upper and lower sand	X	X		Continued use of existing well
New Extraction Wells					
HYR-3	Upper and lower sand	X	X		Coverage at west end of Parcel G
HYR-4	Upper sand	X	X		Coverage in upper sand at east end of Parcel G
HYR-5	Lower sand	X	X		Coverage in lower sand at east end of Parcel G
HYR-6	Upper sand	X	X		Coverage in upper sand between HYR-1 and HYR-2
HYR-7	Lower sand	X	X		Coverage in lower sand between HYR-1 and HYR-2

Notes: EMPA = Evaulation Monitoring Plan Amendment (EMCON, 1998)

Table 3

Inspection Frequency
BSB Property, Kent, Washington

Frequency	Description
Twice weekly	Remote PLC inspection. Monitor extraction system performance using the PLC interface. Adjust operations as necessary.
Twice monthly	1. Extraction system monitoring. Field inspect flow rates, extraction well water levels, extraction equipment condition, leaks, and proper operation of the extraction equipment. Compare field readings to PLC operational data. 2. Security and signage inspection. Check condition of fence, gates, locks, and signage.
Monthly	1. Power inspection. Field check voltage, current, and resistance of pump motors. 2. Water level monitoring. Measure water levels in prescribed monitoring wells and piezometers (Section 3.3). 3. Monitoring well and surface monument inspection. Field check condition of lids, bolts, gaskets, concrete, and locks.
Semiannually	Vegetation inspection. Monitor level of vegetative growth. Photo document excessive vegetative growth.
Annually	Asphalt cap inspection. Monitor condition of Parcel G asphalt cap. Photo document asphalt cap problems and repairs.

Table 4

Operations Testing Frequency
BSB Property, Kent, Washington

Item	Frequency	Description
Extraction well specific capacity	Weekly	Calculate extraction well specific capacity based on drawdown and pumping rate. Utilize data to help determine frequency of extraction well rehabilitation and pump cleaning. After one year, adjust individual well specific capacity evaluation as warranted by observed rate of well fouling.
Discharge sampling	Monthly	Collect and analyze sample of extraction system discharge water to meet the requirements of KCIW Discharge Permit No. 7575.
Flow Meters	Quarterly	Perform field flow test for each flow meter. Remove and inspect flow meter if out of calibration. Recalibrate or replace flow meters as needed.
Extraction wells and pump	Quarterly	Pull extraction pumps quarterly and inspect pump intake screens for clogging. Video inspect extraction well screens as necessary. Adjust individual well inspection frequency in the field as warranted by rate of fouling.
Pressure Transducers	Semiannually	Compare water level at each pressure transducer location with pressure transducer output. Remove and inspect pressure transducer if out of calibration. Recalibrate or replace pressure transducers as needed.
Discharge sampling	Semiannually	Assist King County personnel in collecting samples of groundwater extraction system discharge water for King County analysis to meet the requirements of KCIW Discharge Permit No. 7575.
Extraction well VOCs	Variable	Collect water samples from each extraction well and analyze for VOCs. Collect samples quarterly for the first year and then reduce to semiannually thereafter.
Inorganic, physical, and microbial water quality	Variable	Collect water samples from each extraction well and analyze for inorganic, physical, and microbial water quality parameters. Collect samples quarterly for the first year and then adjust individual well sampling frequency as warranted by rates of individual well/pump fouling.

Table 5

Routine Maintenance Frequency
BSB Property, Kent, Washington

Item	Frequency	Description
Extraction pumps	Quarterly	Remove and clean pumps. After one year, adjust individual pump cleaning frequency as warranted by field conditions.
Groundwater conveyance piping	Annually	Jet and clean groundwater conveyance piping. Adjust individual well conveyance line cleaning as warranted by field conditions.
Water discharge piping	Semiannually	Jet and clean water discharge piping to the sanitary sewer line discharge point.
Monitoring Well Locks	Annually	Lubricate. Perform maintenance more frequently if field conditions require.
Gates and locks	Annually	Lubricate locks and hinges. Perform maintenance more frequently if field conditions require.
Signage	As necessary	Repair or replace signage as necessary.
Extraction wells	As necessary	Redevelop or clean extraction wells as necessary to maintain adequate well efficiencies and performance. Utilize specific capacity calculations, water quality data, and pump fouling information to develop individual well maintenance frequencies. Based on current operations of the existing system, individual well maintenance frequency will likely be once or twice per year.
Flow Meters	As necessary	Clean and/or replace flow meters as necessary.
Pressure Transducers	As necessary	Clean, and/or replace pressure transducers as necessary.
Asphalt cap	As necessary	Sealcoat asphalt surface and seal cracks as necessary.
Vegetation	Periodically during growing season	Spray blackberry starts, cut and seal saplings and bushes as necessary. Minimum expected frequency will likely be twice per growing season.

Table 6

Parcel G and South 200th Street Enhanced Well Network Sampling Schedule
BSB Property, Kent, Washington

Well	Unit Monitored	Sampling Frequency		Analytical Parameters			Annual Analytical Parameters			
		First Year of Enhanced Operations	Subsequent Years of Enhanced Operations	HVOCs (Method 8021B)	Dissolved Arsenic (Method 7060)	Total Cyanide (Method 335.2)	VOCs (Method 8260B)	SVOCs (Method 8270)	PCBs (Method 8082)	Dissolved Metals (Method 6010)
Shallow Aquifer Zone Monitoring Wells										
Ls	Upper sand	Semiannual	Semiannual	X	X	X				
HY-1s	Upper sand	Semiannual	Semiannual	X	X	X				
HY-11s	Upper sand	Semiannual	Semiannual	X	X	X				
HYCP-2	Upper/lower sand	Semiannual	Semiannual	X	X	X	X	X	X	X
HYCP-3s	Upper sand	Semiannual	Semiannual	X	X	X				
HYCP-5	Upper/lower sand	Semiannual	Semiannual	X	X	X	X	X	X	X
HYCP-6	Upper/lower sand	Semiannual	Semiannual	X	X	X				
HEX-1	Upper/lower sand	Quarterly	Semiannual	X						
HEX-2	Upper/lower sand	Quarterly	Semiannual	X						
HEX-3	Upper/lower sand	Quarterly	Semiannual	X						
G4	Upper sand	Quarterly	Semiannual	X						
Intermediate Aquifer Zone Monitoring Wells										
Hi	Lower Sand	Semiannual	Semiannual	X	X	X				
HY-1i	Lower Sand	Semiannual	Semiannual	X	X	X				
HY-11i	Lower Sand	Semiannual	Semiannual	X	X	X				
HYCP-1i	Lower Sand	Semiannual	Semiannual	X	X	X				
HYCP-3i	Lower Sand	Semiannual	Semiannual	X	X	X				
Deep Aquifer Zone Monitoring Wells										
Hd	Deep	Semiannual	Semiannual	X	X	X				
HY-1d	Deep	Semiannual	Semiannual	X	X	X				
HY-11d	Deep	Semiannual	Semiannual	X	X	X				
HYCP-1d	Deep	Semiannual	Semiannual	X	X	X				

Notes:
1. HVOCs = halogenated volatile organic compounds.
2. VOCs = halogenated and non-halogenated volatile organic compounds.
3. The annual analysis of VOCs in HYCP-2 and HYCP-5 replaces the HVOC analysis for that event.
4. SVOCs = semivolatile organic compounds.
5. PCBs = polychlorinated biphenyls.
6. The annual dissolved metals list includes barium, cadmium, chromium, copper, nickel, and zinc.
7. Quarterly sampling events conducted in January, April, July, and October; semiannual sampling events conducted in April and October.
8. Additional annual parameter analysis conducted on samples collected in April.

FIGURES

DISTRIBUTION

CORRECTIVE ACTION AND POSTCLOSURE MONITORING AND IMPLEMENTATION PLAN

BSB PROPERTY
KENT, WASHINGTON

JUNE 20, 2005

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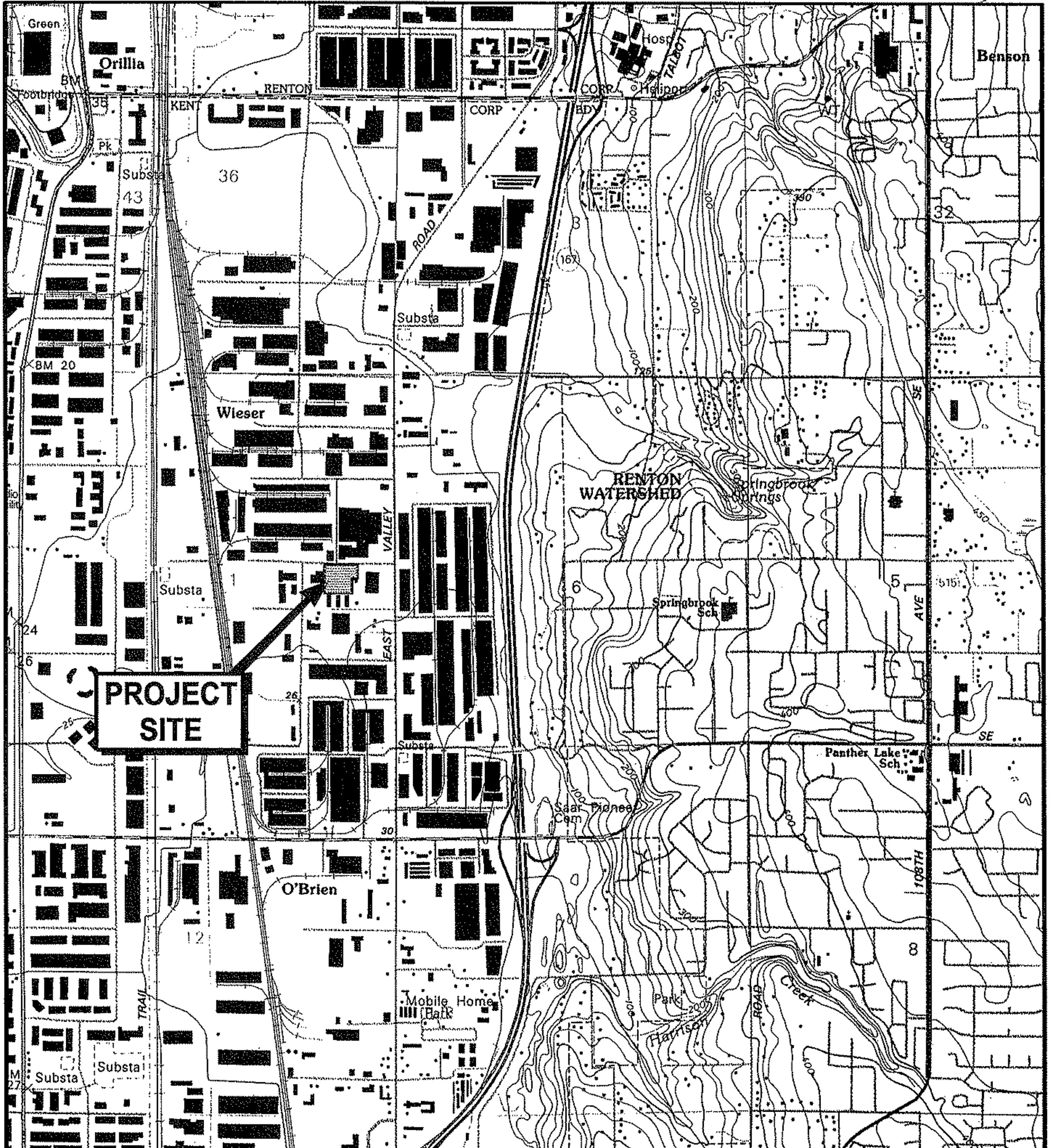
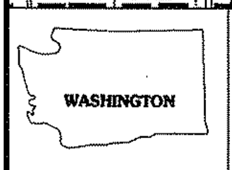
EXHIBIT D (FIGURES) DE2551





N

0 2000 4000

Scale in Feet

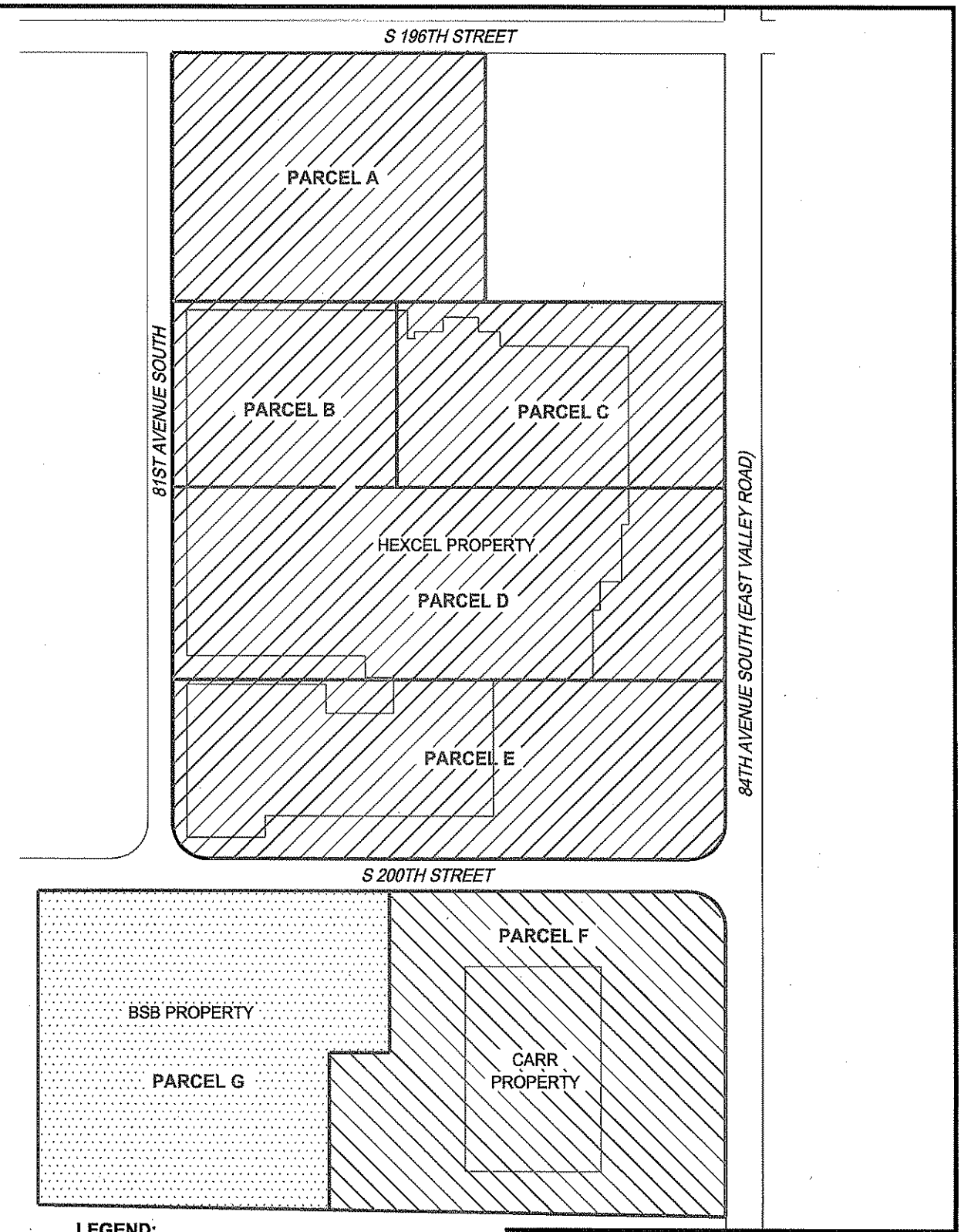
U.S.G.S. Topo Map - Renton, WA, 7.5-minute quadrangle.1949 revised 1994.

PES Environmental, Inc.
Engineering & Environmental Services

Site Location Map
BSB Facility
Kent, Washington

FIGURE
1

JOB NUMBER	DRAWING NUMBER	REVIEWED BY	DATE
827.001.06.001	82700106_0204_fig 1		2/04



LEGEND:

- BSB PARCEL
- HEXCEL PARCELS
- CARR PARCEL

N

0 200

SCALE IN FEET

PES Environmental, Inc.
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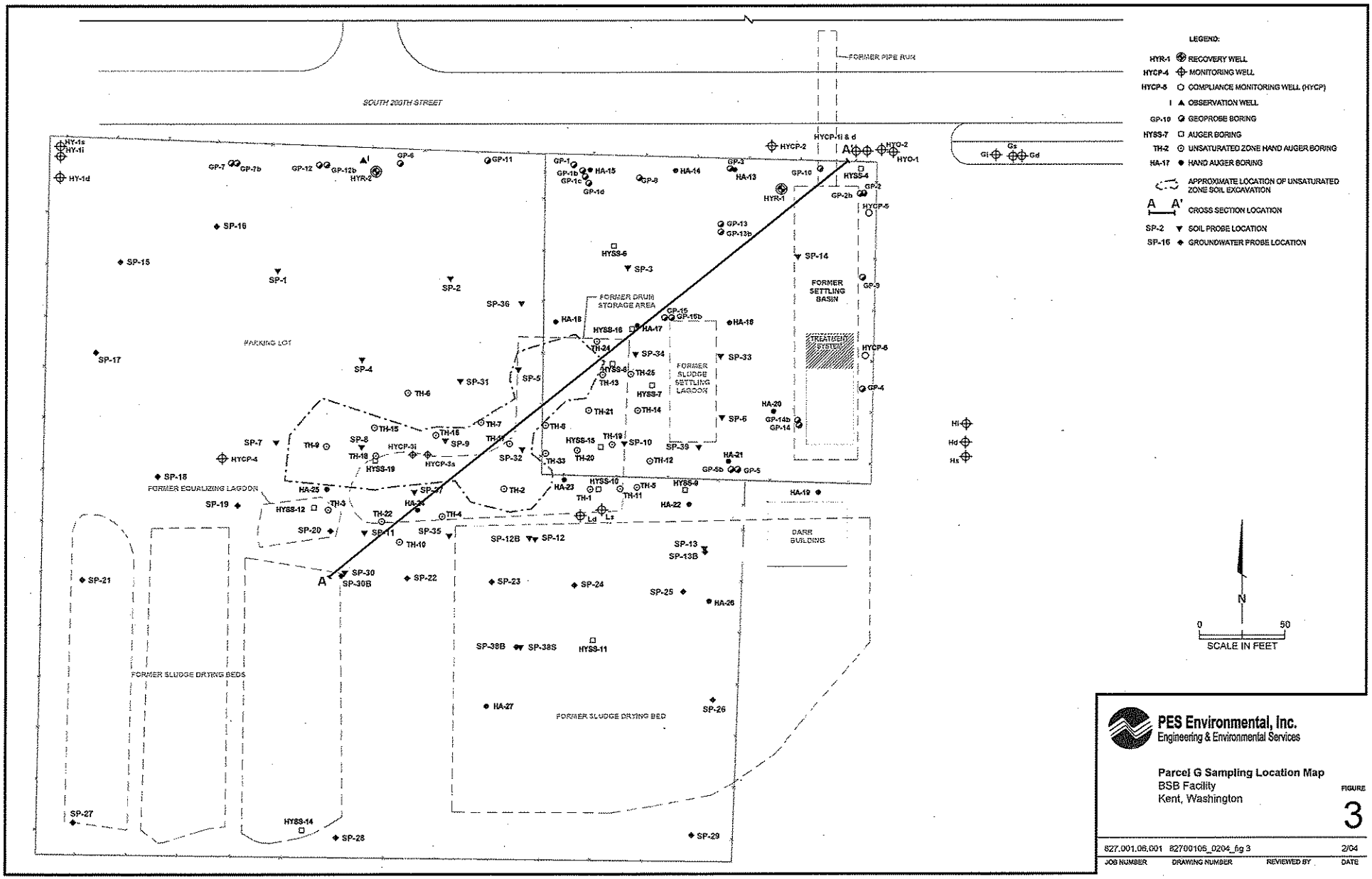
Parcel Location Map
BSB Facility
Kent, Washington

FIGURE
2

827.001.06.001	82700106_0204_fig 2		2/04
JOB NUMBER	DRAWING NUMBER	REVIEWED BY	DATE

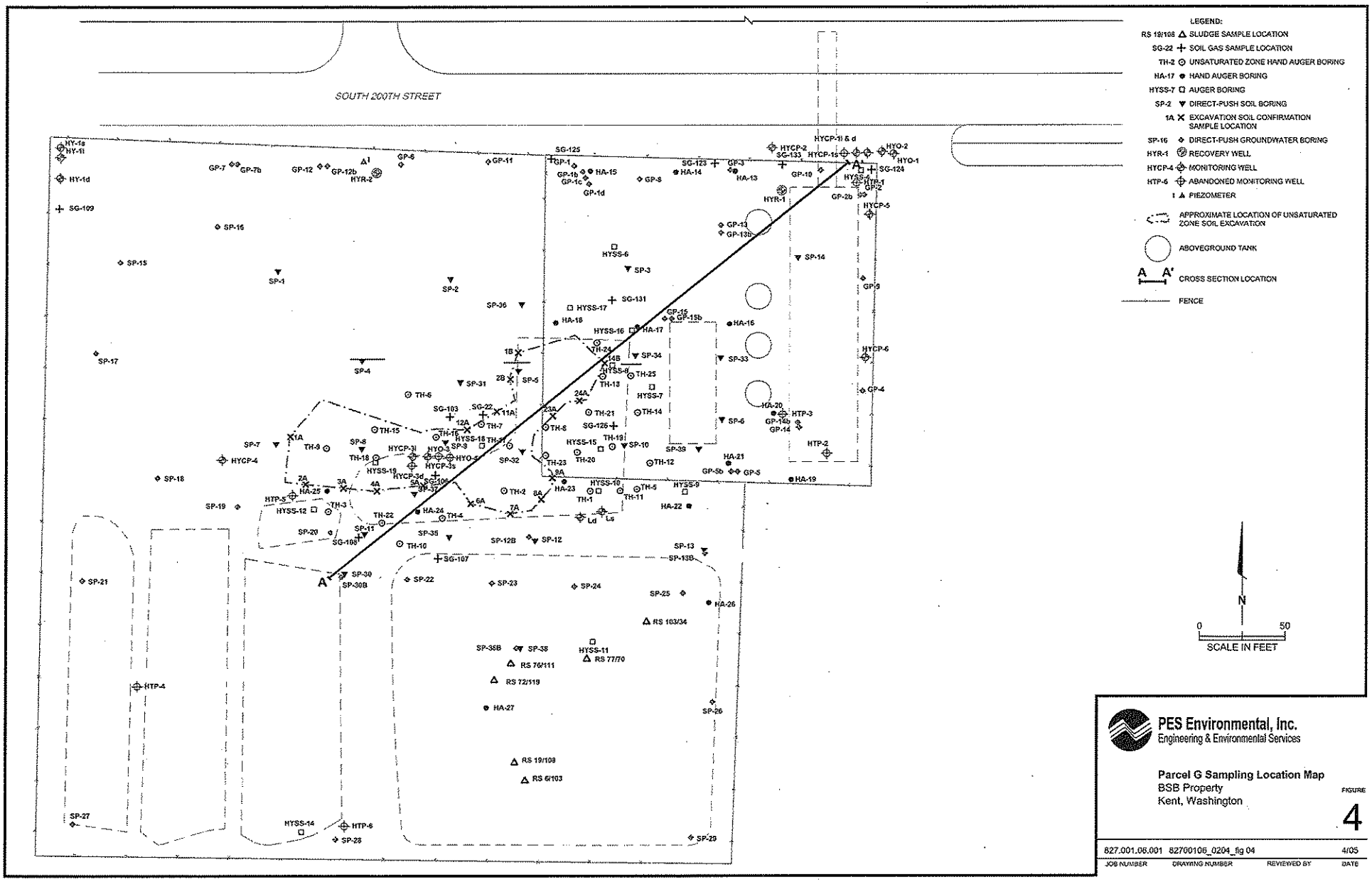


PES Environmental, Inc.
Engineering & Environmental Services

Parcel G Sampling Location Map
BSB Facility
Kent, Washington

FIGURE
3

627.001.06.001	8270010S_0204_fg 3		2/04
JOB NUMBER	DRAWING NUMBER	REVIEWED BY	DATE



PES Environmental, Inc.
Engineering & Environmental Services

Parcel G Sampling Location Map
BSB Property
Kent, Washington

FIGURE
4

827.001.06.001	82700105_0204_fig 04		4/05
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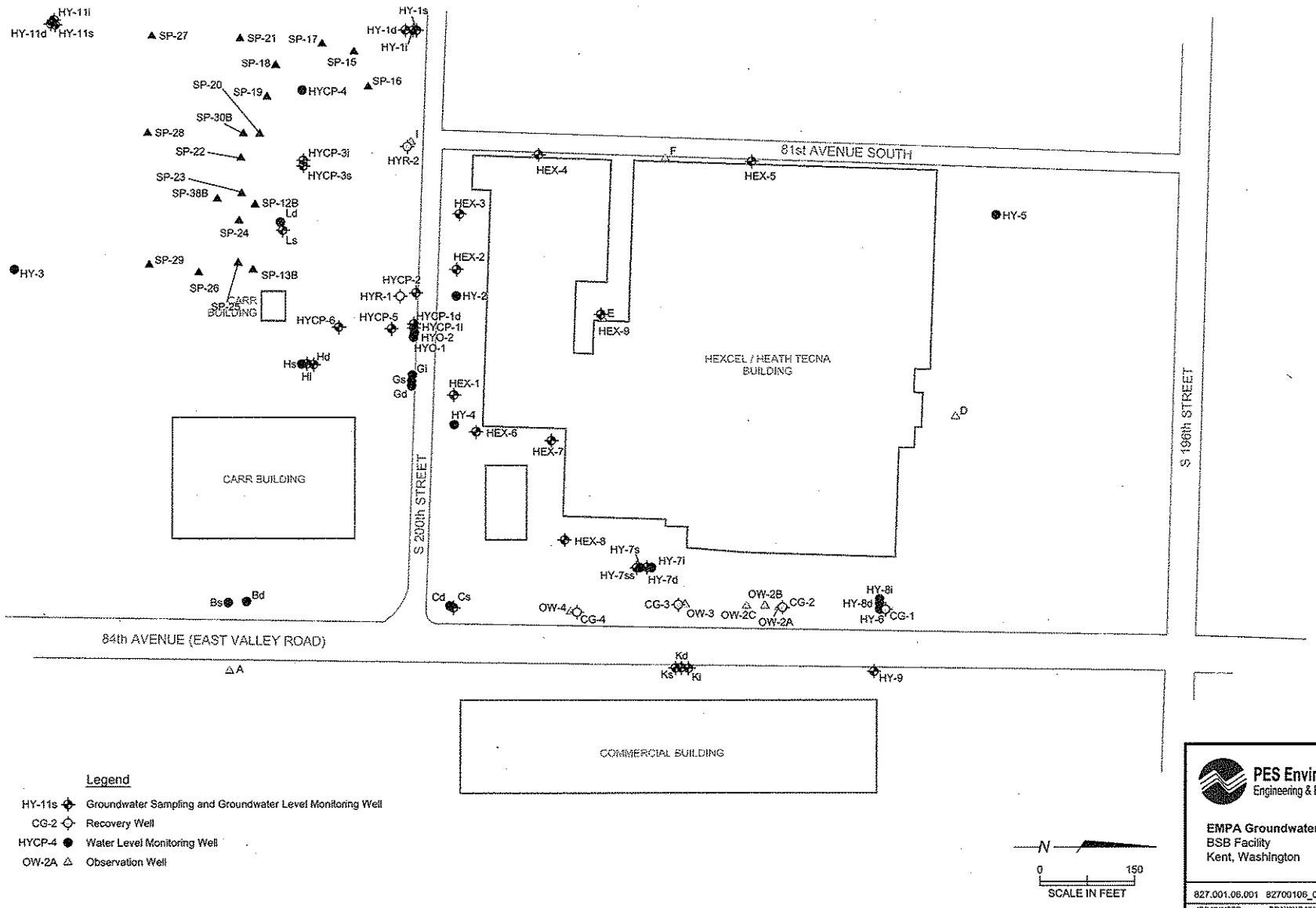
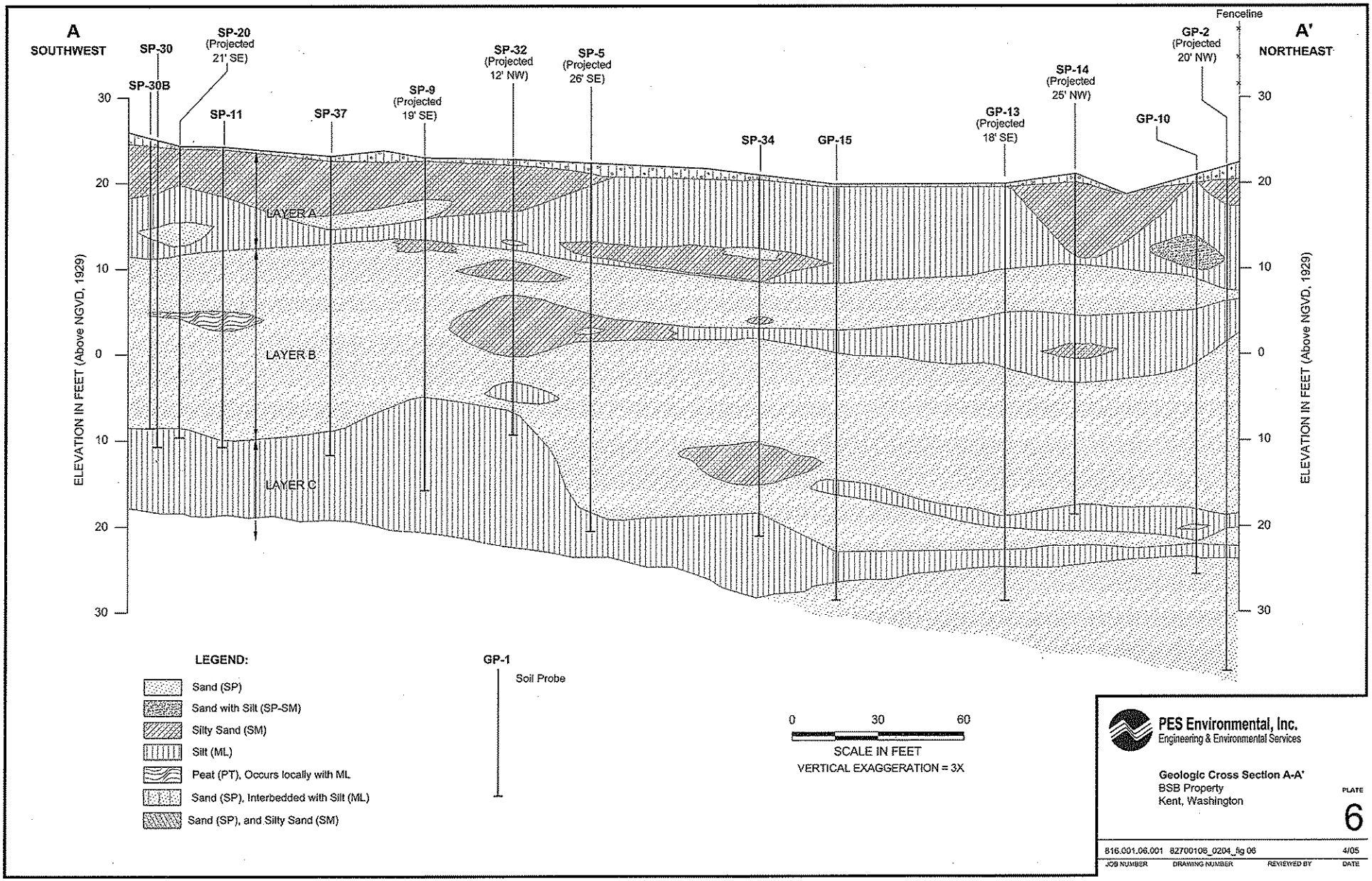


PES Environmental, Inc.
Engineering & Environmental Services

EMPA Groundwater Monitoring Network
BSB Facility
Kent, Washington

FIGURE
5

827.001.06.001 | 82700106_0204_fig 05 | 4/05
JOB NUMBER | DRAWING NUMBER | REVIEWED BY | DATE



PES Environmental, Inc.
Engineering & Environmental Services

Geologic Cross Section A-A'
BSB Property
Kent, Washington

PLATE
6

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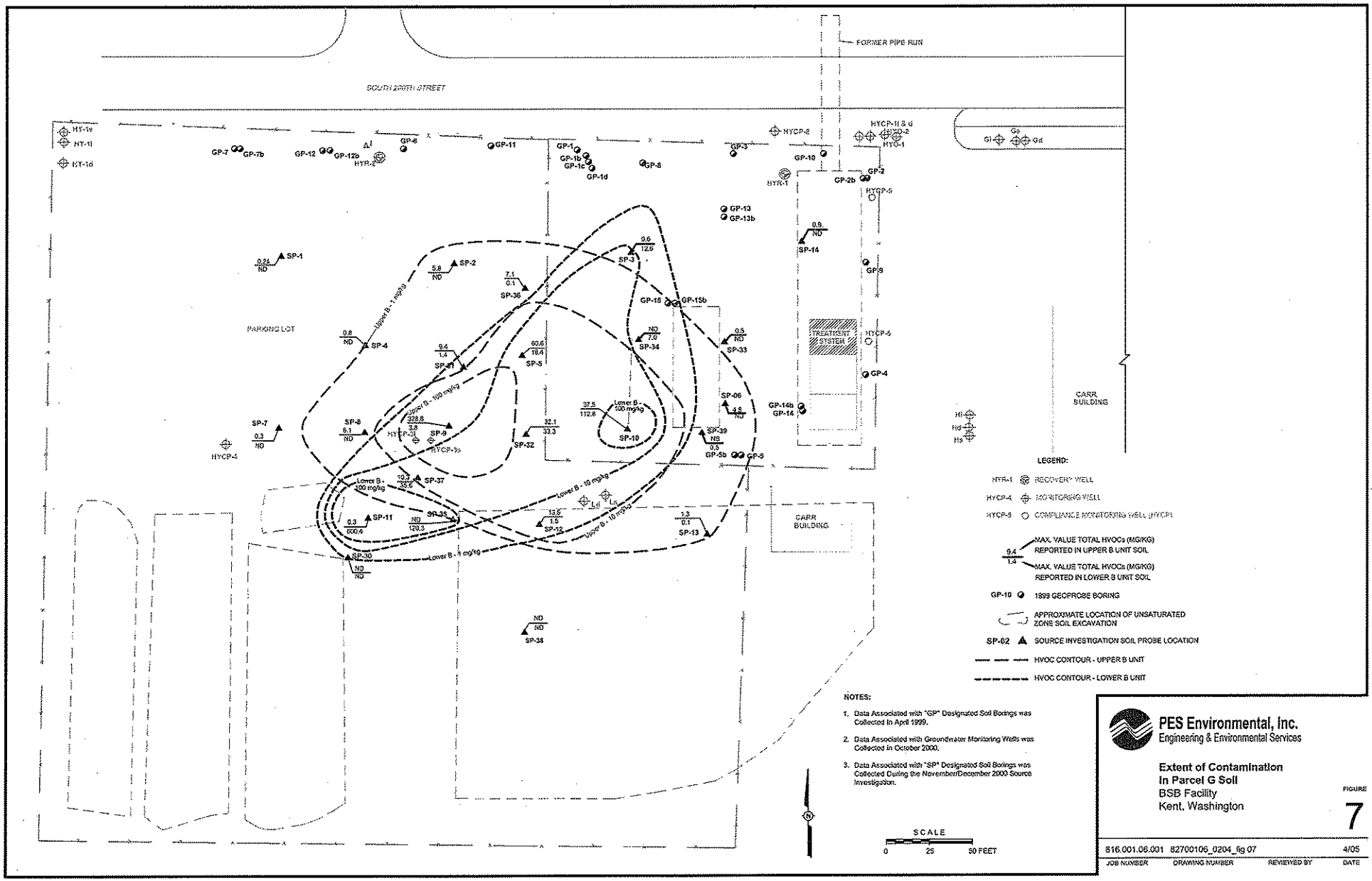
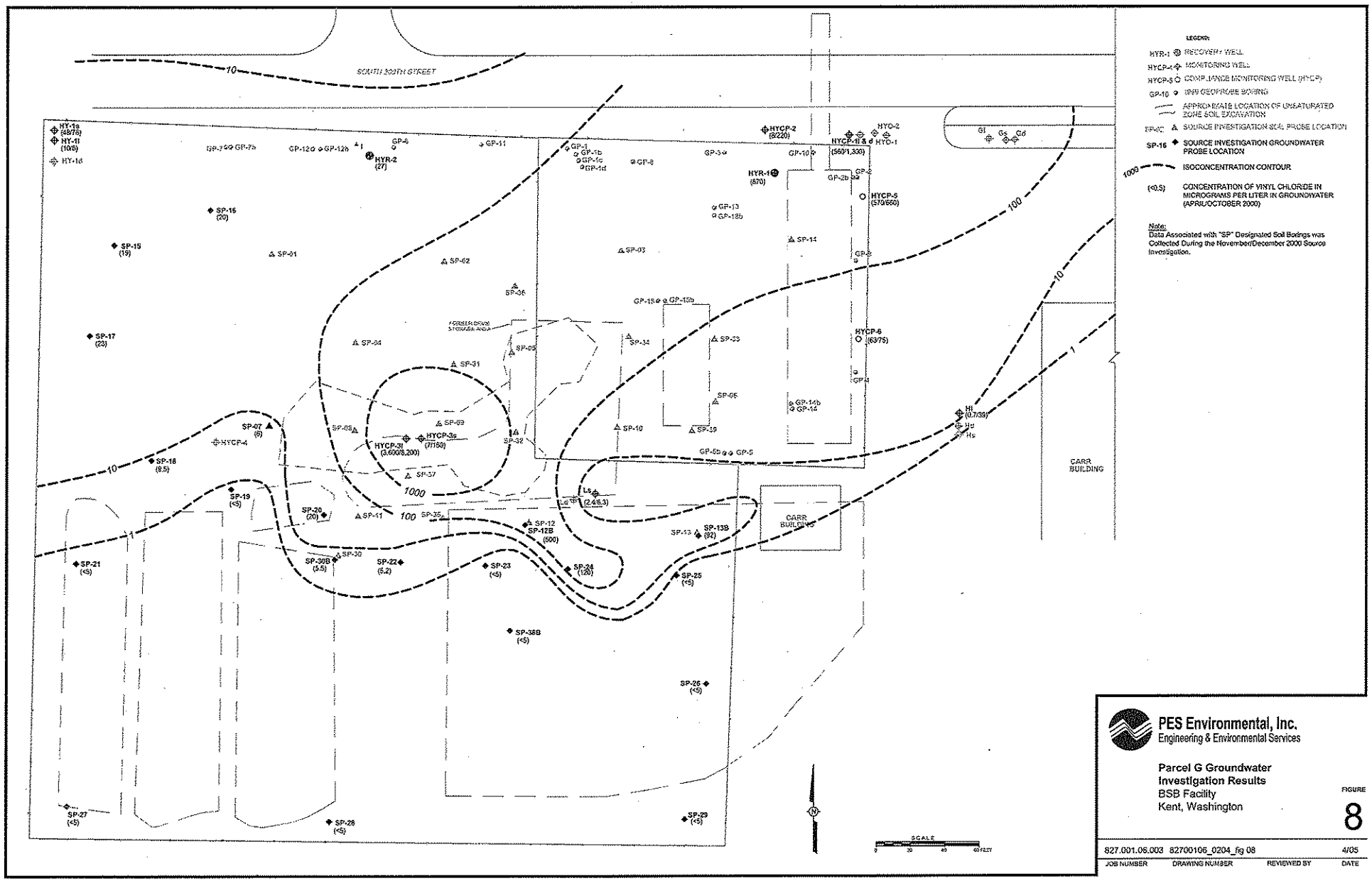


PES Environmental, Inc.
Engineering & Environmental Services

Extent of Contamination in Parcel G Soil
BSB Facility
Kent, Washington

FIGURE
7

816.001.06.001	82700106_0204_fig 07		4/05
JOB NUMBER	DRAWING NUMBER	REVIEWED BY	DATE



PES Environmental, Inc.
Engineering & Environmental Services

Parcel G Groundwater Investigation Results
BSB Facility
Kent, Washington

FIGURE
8

827.001.05.003	82700105_0204_fig 08		4/05
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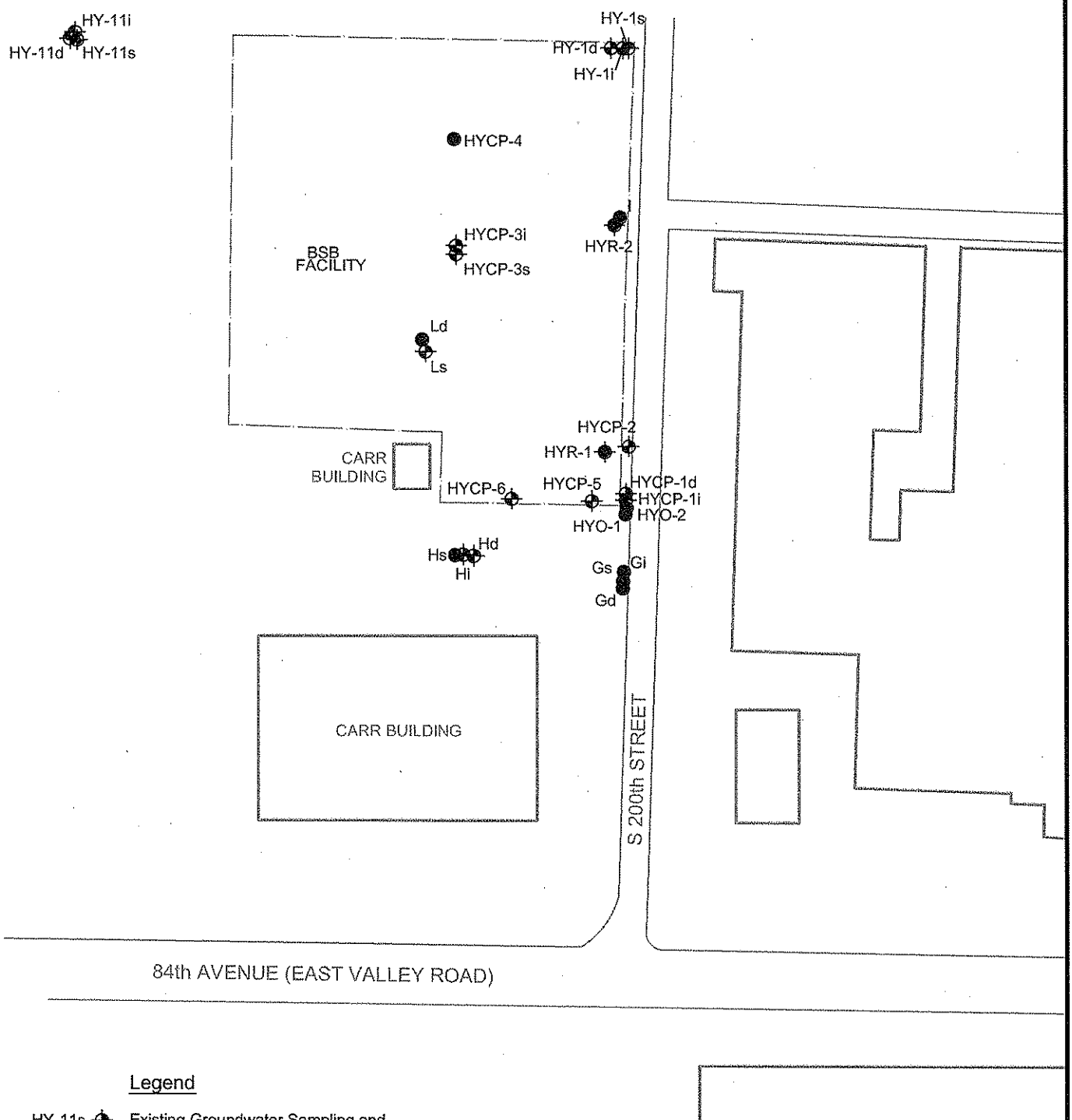

Legend

HY-11s — Existing Groundwater Sampling and Groundwater Level Monitoring Well

HYR-1 — Interim Recovery Well

HYCP-4 — Interim Water Level Monitoring Well

N

0 150

SCALE IN FEET

PES Environmental, Inc.
Engineering & Environmental Services

Interim Groundwater Extraction and Monitoring Network
BSB Facility
Kent, Washington

FIGURE
9

827.001.06.001	82700106_0204_fig 09		4/05
JOB NUMBER	DRAWING NUMBER	REVIEWED BY	DATE

EXHIBIT D

INTERIM ACTION PLAN
HEXCEL PLANT 1 FACILITY
KENT, WASHINGTON

Prepared for:

HEXCEL CORPORATION
11711 Dublin Boulevard
Dublin, California 94568

Prepared by:

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Tucson, Arizona 85705
(520) 293-1500

June 20, 2005

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1. INTRODUCTION

This Interim Action Plan (IAP) was prepared on behalf of Hexcel Corporation (Hexcel) of Dublin, California, by Hydro Geo Chem, Inc. (HGC). The IAP describes the implementation, operation and maintenance (O&M), monitoring, and performance assessment of actions to contain and remediate volatile organic compounds (VOCs) in shallow groundwater at the Hexcel Plant 1 facility, also known as the Hexcel Parcels, at 19819 84th Avenue South in Kent, Washington (Figures 1 and 2). The components of the IAP are based on guidance for the Model Toxics Control Act (MTCA) cleanup regulation (Washington Administrative Code [WAC], Chapter 173-340).

1.1 Interim Action Objectives

Groundwater beneath Plant 1 has been impacted by VOCs, primarily cis-1,2-dichloroethene (cis-1,2-DCE) and vinyl chloride (VC). Hexcel Parcel characterization activities and groundwater monitoring at Plant 1 and adjacent properties have been ongoing since the early 1980s. Since 1992, groundwater pumping for remediation has been conducted at both the CG wells at Plant 1 and HYR wells on the upgradient BSB Diversified, Inc. (BSB) property (Figures 2 and 3). The objective of the groundwater pumping, which has been operated and monitored by BSB, has been hydraulic containment of VOCs.

Hexcel plans to implement the IAP for Plant 1 pursuant to terms agreed upon with the Washington Department of Ecology (Ecology). Per the agreement, Hexcel will implement the IAP at Plant 1, while BSB retains responsibility for groundwater containment on its property south of South 200th Street. The interim action objectives for Plant 1 are:

1. Achieve hydraulic containment of groundwater with concentrations of VOCs in excess of applicable guidance levels at the downgradient boundary of the Plant 1 along 84th Avenue South and South 196th Street, recognizing that the capture zone of the CG wells can extend east of 84th Avenue South, and

2. Achieve VOC mass removal and reduction in overall concentrations at Plant 1.

Although it is Hexcel's intent to achieve these objectives, the success of the interim action in reducing the overall concentrations at Plant 1 is partially dependent on the efficacy of hydraulic containment and any other cleanup actions undertaken at the upgradient BSB property, a known source of VOCs. Additionally, any other sources upgradient of Hexcel, the existence of which is still under investigation, can result in background contamination that will limit the ability of the interim action to lower Plant 1 concentrations.

1.2 Scope

The scope of the interim action is limited to shallow groundwater VOC contamination at Plant 1. Plant 1 is partially underlain by at least two distinct, shallow (less than 80 feet below land surface [ft bls]) groundwater zones (Units B and D on Figure 4). The scope of the IAP encompasses only the shallow groundwater zone to a depth of approximately 40 ft bls (Units A and B, the uppermost groundwater at the facility).

Section 2 of this IAP summarizes existing Plant 1 conditions. The interim action is described in Section 3. An implementation plan describing engineering and construction activities to modify the existing pumping system is in Section 4. Section 5 describes O&M procedures for the interim action, including environmental monitoring and performance assessment. Reporting requirements are in Section 6.

2. SUMMARY OF PLANT 1 CONDITIONS

2.1 Existing Plant 1 Conditions

Environmental investigations at Plant 1 and adjacent areas have been conducted since the 1980s, pursuant to Resource Conservation and Recovery Act regulations (Sweet-Edwards/ EMCON, Inc., 1984a, 1984b, and 1988; S.S. Papadopalous & Associates, Inc. [SSPA], 1993). Hexcel conducted a voluntary source investigation at Plant 1 in 2003, installing and sampling a network of monitoring wells to track water quality in the shallow aquifer (HGC, 2003 and 2004a). In 2004, Hexcel submitted to Ecology a work plan for a focused remedial investigation (RI) to further characterize conditions at Plant 1 (HGC, 2004b) and an outline for a focused feasibility study (FS) (HGC, 2004c). A complete listing of Plant 1 investigation documents is set forth in Section 7, References.

The previous investigations determined hydrogeologic conditions at and in the area of Plant 1 (e.g., identification of aquifers, subsurface stratigraphy, hydraulic conductivity, and hydraulic gradients) and delineated a groundwater plume of cis-1,2-DCE and VC in the shallow sandy aquifer beneath Plant 1. Figure 5 shows VC concentrations at Plant 1 and vicinity in 2004.

Plant 1 is underlain by unconsolidated sediments consisting of sand, silt, and clay. Two sandy hydrostratigraphic units, Units B and D, comprise the most permeable units (Figure 4). In

the southern portion of Plant 1, Unit C acts as a aquitard between Units B and D. Unit C is absent in the vicinity of the CG wellfield, and Units B and D appear to coalesce into a single hydrostratigraphic unit.

The depth to groundwater at Plant 1 ranges between 3 and 7 ft bls. The apparent regional hydraulic gradient is to the northeast in the area around Plant 1. The hydraulic gradient is modified along the east boundary of Plant 1, where drawdown around the CG pumping wells causes a reversal of the hydraulic gradient defining the capture zone of the wellfield (Figure 6).

VOCs are largely restricted to Units A and B at the south end of Plant 1 as evidenced by VOC concentrations of hundreds of micrograms per liter (µg/L) in wells in Units A and B (Figure 5) and by low concentrations (less than 5 µg/L total VOCs) in samples from Unit D well HEX-10 (Figures 4 and 5) between November 2003 and March 2004 (HGC, 2004a). The Unit C aquitard pinches out in the vicinity of the CG wells. Water quality monitoring data for well pairs HY-7i/HY-7d, HY-8i/HY-8d, and Ki/Kd around the CG wellfield indicate that VOCs are primarily restricted to the upper portion of the aquifer (PES Environmental, Inc. [PES], 2005).

Additional information on the Plant 1 history, hydrogeologic conditions, water quality, and remedial activities at Plant 1 will not be reviewed, except as needed to describe the interim action. Further descriptions of the history, hydrology, and water quality at Plant 1 are provided in HGC (2003, 2004a, and 2004b). Groundwater monitoring data for BSB wells at Plant 1, wells

HY-12s and HY-13s downgradient of Plant 1, and at the BSB property are reported in PES (2003, 2004a and 2004b). Soil and groundwater conditions at BSB were described by a source investigation in 2000 (IT Corporation, 2001).

2.2 Existing Groundwater Pumping System

In 1992, BSB implemented a corrective measures system using groundwater pumping at wellfields upgradient and downgradient of Plant 1. The downgradient wellfield consists of four wells—the CG wells—on the east property boundary of Plant 1 (Figure 3). The upgradient wellfield consists of two wells—the HYR wells—on Parcel G south of South 200th Street. The results of corrective measures system pumping, water level measurement, and groundwater sampling at Plant 1 have been reported annually (e.g., PES, 2003 and previous annual reports).

A pumping rate objective totaling 54 gallons per minute (gpm) for the upgradient and downgradient wellfields was specified based on numerical modeling by SSPA (1993). The objective of the two wellfields was groundwater containment at the downgradient boundaries of both the BSB and Hexcel properties. The current pumping rate objectives for each well and average annual pumping rates for 2000, 2001, and 2002 are in Table 1.

Descriptions of wellfield operations in annual reports indicate the pumping wells require regular redevelopment to remove scaling that reduces their pumping efficiency. Table 2

summarizes monthly average pumping rates for 2002 (PES, 2004b). Water levels in the CG pumping wells for 2002 indicate drawdowns on the order of 10 to 15 feet (ft). Geologic and well construction logs for the CG wells are in Appendix A.

The data in Table 2 show that pumping rates at the CG wells varied throughout 2002, with declines likely due to diminished well efficiency, and increases due to well redevelopment. From 2000 through the last quarter of 2002, CG-3 was unable to meet its pumping objective (Table 1). The apparent increase in production at CG-3 in the last quarter of 2002 was probably due to well redevelopment work described by PES (2004b).

3. DESCRIPTION OF THE INTERIM ACTION

3.1 Interim Action Objectives

The interim action objectives are to:

1. Achieve hydraulic containment of groundwater with concentrations of VOCs in excess of applicable guidance levels at the downgradient boundary of the Plant 1 along 84th Avenue South and South 196th Street , recognizing the capture zone of the CG wells can extend east of 84th Avenue South, and

2. Achieve VOC mass removal and reduction in overall concentrations at Plant 1.

Potentially applicable guidance levels are either MTCA cleanup levels (WAC 173-340-700), U.S. Environmental Protection Agency primary drinking water maximum contaminant levels, or other levels that may be developed for the MTCA cleanup action selection process (WAC 173-340-360). Table 3 lists potentially applicable numeric objectives for cis-1,2-DCE and VC, the only VOCs at Plant 1 with groundwater concentrations that are elevated with respect to guidance levels.

3.2 Interim Action Description

The interim action will consist of groundwater pumping at the CG wells at sufficient rates to maintain hydraulic containment of impacted groundwater. Hydraulic containment will

prevent impacted groundwater from migrating downgradient of the capture zone of the CG wellfield. For the interim action, Hexcel will take over BSB's operation of the CG wellfield and maintain pumping rates at design levels unless Ecology approves revised pumping rates. Initially, water pumped for the interim action will be discharged to the King County municipal sanitary sewer system pursuant to a Wastewater Discharge Permit.

Sections 3.4 and 4 describe infrastructure modifications needed for Hexcel to take control of groundwater pumping at Plant 1. Section 5 is a preliminary O&M plan for the wellfield including monitoring for operational control and compliance.

3.3 Performance Criteria

The primary performance criteria for the interim action will be wellfield data (total wellfield and individual well pumping rates, and service time), groundwater level data (water levels and hydraulic gradients), water quality monitoring data, and, possibly, numerical analysis of groundwater flow. Section 5.5 discusses performance assessment methods.

3.4 Infrastructure Modifications

Transferring wellfield operations to Hexcel will require minor modifications of the existing infrastructure. The primary modifications will be to:

- eliminate BSB control of the pumping wells and provide new control and data acquisition capabilities to Hexcel, and
- discontinue water conveyance to the BSB property and modify the discharge piping to route water for sewer discharge on Hexcel property.

The implementation plan in Section 4 describes specific modifications to the wellfield system.

3.5 Future Changes to the Interim Action Plan

The IAP may change over time based on the results of ongoing work for the focused RI (HGC, 2004b) and focused FS (2004c). Hexcel may propose alternative pumping schemes using different pumping rates or wells, depending on the results of testing and operating the wellfield. The disposition of the remediation water may also change over time from discharge to the municipal sanitary sewer to direct discharge to the storm sewer. Hexcel will provide Ecology the technical justification for any changes to the IAP. Modifications to operational procedures would be made pending approval of the proposed change by Ecology.

4. IMPLEMENTATION PLAN

4.1 Existing Infrastructure

HGC's engineer and two PES representatives visited Plant 1 on August 5, 2004 to observe the existing water treatment infrastructure. The four Hexcel groundwater wells, CG-1, CG-2, CG-3, CG-4, are aligned parallel to 84th Avenue and are approximately 160 ft apart (Figure 7). Each well completion includes a 6 ft x 4 ft x 4 ft concrete vault with a lockable steel hatch. A pump starter, disconnect switch, water sampling port, and shut-off valve are installed within each vault. Each well is equipped with a level transducer. Discharge piping from each well runs south towards South 200th Street in a common trench approximately 3 ft deep. The piping turns west at South 200th Street for approximately 500 ft and then crosses South 200th Street to the original, now unused, treatment system on BSB property. The original controls cabinet and electrical panel for the wellfield and treatment system are also located at BSB.

4.2 Engineering Design

From a construction perspective, the scope of this project is to divert the CG wellfield groundwater discharge near South 200th Street from its current route to BSB property and route it to a new sanitary sewer tie-in connection located on Hexcel property. Additionally, the portion of the system within Hexcel property, including piping, electrical power, instrumentation, and

controls, is to be modified so that it may be operated independently of BSB's portion of the system. These modifications will include the provision of a new electrical power source and a new programmable logic control (PLC). Hexcel will coordinate with BSB to disconnect at both properties the piping beneath South 200th Street and ensure its proper abandonment. Figure 8 shows proposed modifications to the groundwater pumping system.

The scope of work comprises the following elements:

- Excavation: Unearth, cut, and cap four 1-1/2 inch (in) polyvinyl chloride (PVC) buried pump discharge pipes near the driveway entrance to Plant 1 at Chem Stores Building parallel to South 200th Street. Abandon remaining pipe in place. Similarly, unearth electrical conduit and transducer cables in same location as pipe. Cut and abandon in place.

- Piping: Connect four new 1-1/2-in Schedule 40 PVC pipes at point of demolition cuts and route them in a new trench to a sanitary sewer tie-in point in the driveway at Chem Stores Building. Provide tie-in to sewer. Provide a sample port on each of the four pipes at the sewer tie-in a flush mounted vault. Provide a flow meter on each line within the vault and provide a hand operated diaphragm valve for flow rate control and isolation. Connect the four pipes to a manifold with a single discharge and sampling port. Repave trench to match existing conditions as necessary.

- Instrumentation and Controls: A new PLC for pump control and alarm notification will be provided on Hexcel property. The four pumps will be controlled independently of each other. Existing level transducers will be used for pump control. New instrument cable will be spliced to existing cable and routed to the new PLC. Telemetry capability will be provided so that trouble alarms may be transmitted via modem to the system maintenance operator. Figure 9 is a preliminary process flow diagram for the wellfield.

  New, conventional, paddle wheel flow meters will be installed on each of the four discharge lines. These will provide instantaneous and totalized flow rates of the discharge. The meters will likely be installed in a common vault at the point of discharge at the sanitary sewer connections.
- Electrical: The existing pump wells, treatment system, and PLC are currently powered electrically from panel 8075-EE-403 inside Hexcel's "Hytek" building. New conductors will be spliced to existing conductors at the point of trench

excavation and routed to the same panel. Power will also be supplied to the new PLC at its new location. Its source panel is dependent on the new PLC location. Panel 8075-EE-403 has sufficient capacity for the controls system.

A construction drawing package and a set of specifications will be prepared by HGC for use in bidding and construction. Drawings and specifications will be sealed by a mechanical engineer and an electrical engineer, both of whom are registered in the state of Washington. Specifications will be in the Construction Specifiers Institute format. Specifications will address all materials and requirements for the PLC and related equipment.

Design progress drawing and specification review sets will be issued to Hexcel at 30%, 60% and 90% completion stages. Two weeks will be allowed for reviewers to provide written comments on the design and related project issues. Review comments will be logged, and written responses provided to document each response to the comments. This provides complete tracking of comments and responses throughout the review process for improved quality assurance (QA). Upon issuance of the construction documents, HGC will also provide a complete bid package for use in soliciting bids from prospective contractors.

4.3 Construction Planning

The construction phase of the implementation project will be predicted through two models: a construction cost estimate and a construction schedule. These will be included in each

design review submittal and updated as design progresses. Bidding, contracting, construction scheduling, and sequencing will be coordinated in advance with Hexcel personnel.

4.4 Construction Management

The work will be competitively bid and construction will be overseen by an HGC employee to ensure conformance to the construction documents. Selected contractors will be contracted directly to Hexcel.

HGC's construction manager will remain at Plant 1 for the duration of the construction. The construction manager will oversee the following facets of the construction phase:

- coordination with Ecology project manager,
- assistance with bidding and contractor selection,
- coordination of construction activities with Hexcel's daily operations,
- reports and records,
- quality control (QC),
- material control,
- schedule implementation,
- budget controls, and
- construction safety.

4.5 Construction Permitting

Although building codes require that a construction permit be applied for through the City of Kent Department of Public Works (the City), the procedural exemption provisions of the Revised Code of Washington (RCW) Title 70, Chapter 105D, Section 090 apply to the interim action. Thus, the interim action is exempt from the requirement of a City construction permit. Nonetheless, the construction documents will be prepared in such a way that they meet the content and format requirements stipulated by the City. HGC's construction manager will be responsible for coordinating with the Ecology project manager regarding notification of the City and calling for any City inspections of the construction as it is completed.

5. OPERATING AND MAINTENANCE PLAN

5.1 Operating Responsibilities

Operation of the CG wellfield will be the responsibility of Hexcel and its representatives. HGC will be responsible for overall management of the remedial system including monitoring, operation, and reporting to Ecology. A local engineering firm will be retained to provide close support for routine operational monitoring of equipment, equipment maintenance, and rapid response to equipment malfunctions.

An efficient transfer of pumping responsibilities will ensure successful continuation of the groundwater containment for the interim action. After completion of construction, HGC will prepare an O&M manual for the interim action. The O&M manual will include the following:

- facility maps, as-built drawings, equipment specifications and descriptions, and manufacturers' manuals;
- O&M chain of command flow chart;
- start-up/shut-down procedures;
- list of normal operational parameters;
- water disposal procedures;
- routine maintenance requirements, procedures, schedule, checklists, and access procedures;

- manufacturer, project, and emergency contact lists;
- troubleshooting guide;
- monitoring, sampling, and analysis requirements, procedures, schedule, checklists, and field data forms;
- data management needs and methods and performance report requirements;
- health and safety plan (HASP); and
- QA/QC plan.

5.2 Operating Procedures

The O&M manual will specify operating procedures for the component systems of the wellfield. Sections 5.2.1 through 5.2.3 describe the general operating strategy for the wellfield.

5.2.1 Pumping Rates

Pumping rates at the CG wells will be monitored by both the PLC and physical checks as described in Section 5.3. The interim action will maintain pumping sufficient to establish a reverse hydraulic gradient on a continuous basis, except during periods of maintenance and repair. The current pumping rate objectives for the CG wells are in Table 1. The target pumping rates of 7,10,10, and 7 gpm will be maintained for wells CG-1, CG-2, **CG-3** and CG-4, respectively, for a total target pumping rate of 34 gpm. During periods of low recharge, water levels may decline and hydraulic gradients may decrease affecting the design pumping rates in

the wells. If the total target pumping rate of 34 gpm cannot be attained on a daily average basis for any period longer than 10 days, then Hexcel shall provide Ecology notice of the pumping deficiency within 15 days. If Ecology requests, Hexcel shall submit to Ecology a schedule, not to exceed 60 days in duration, for implementing sufficient additional pumping capabilities to obtain the total target pumping rate, or submit a technical analysis and a confirmation monitoring plan to demonstrate that a lower total pumpage rate, during a period of low recharge and dropping groundwater levels, will maintain hydraulic containment of the chlorinated organics plume.

The pumping rates will be reevaluated based on the results of pumping tests discussed in Section 5.3.2, updated performance data for CG-3, and water levels observed at various pumping rates. Hexcel may propose a modification to the pumping rates and configuration of the CG-well system. Such a proposal shall include, at a minimum, a technical demonstration supporting the modification, an implementation schedule, and a monitoring plan to confirm containment. Ecology will review and approve/reject the proposal. Ecology will approve, approve with conditions, or disapprove the proposal. If Ecology disapproves the proposal, Ecology will provide comments to Hexcel.

5.2.2 Hydraulic Control

Water levels will be measured in pumping and monitoring wells to document potentiometric conditions in the vicinity of the wellfield (Section 5.4.1). Water level maps and cross-sections will be prepared to demonstrate hydraulic control and groundwater containment. In addition to wells at Plant 1, wells HY-9, HY-12s, HY-13s, HY-14s, HY-15s, and Ki will be critical monitoring points for demonstrating a reverse hydraulic gradient and defining the capture zone of the CG wellfield.

5.2.3 Water Disposal or Treatment

Initially, groundwater pumped for the interim action will be discharged to the municipal sanitary sewer administered by the King County Department of Natural Resources and Parks, Wastewater Treatment Division. Hexcel will apply for a Wastewater Discharge Permit under the Industrial Waste Program. Hexcel will also apply for a permit to direct discharge some or all of the pumped water to surface water via the storm sewer. Hexcel may coordinate with the Ecology project manager to obtain a permit for direct discharge pursuant to the procedural exemption in RCW 70.105D.090 if such exemption is available. The decision to direct discharge will be made based on water quality at the wells and permit effluent limits. Hexcel may also decide at some time to treat the pumped groundwater depending on a technical assessment of cost and benefit.

5.3 Maintenance Procedures

5.3.1 System Inspections

A complete inspection schedule for the wellfield system will be included in the O&M manual. System inspections will be conducted both remotely using the PLC interface and physically. In general, the inability to obtain the pumping rate objectives and any systematic degradation in pumping capacity will be the primary measures indicating the need for well or pump maintenance.

Wellfield pumping and water levels will be monitored at least twice weekly via the PLC interface. The pumping rates and water levels will be checked for trends indicating a decline in pumping capacity or an unexpected change in conditions. The PLC will send automatic notices of out-of-specification conditions, such as a pump failure or rapid cycling.

Physical inspections of the system will be conducted weekly for the first month of operation under the IAP, and monthly thereafter. The physical inspections will check the equipment operational status and condition, verify the flow rates and water levels measured by

the PLC, and check for any leaks or potentially adverse conditions. After the first month, the monthly physical inspections will coincide with water level monitoring.

5.3.2 Wells and Pumps

At the beginning of the interim action, short term step pumping tests will be conducted in each of the CG wells to determine their specific capacities and benchmark their hydraulic efficiency. Based on historical operations, the extraction wells are expected to undergo eventual performance deterioration due to biofouling and iron scaling along the well screen, filter pack, or pump intake. If a drop-off in well performance is indicated by a systematic decline of 25% or more of the pumping rate objective or frequent on/off cycling, the well will be taken out of service, the pump pulled, and maintenance will be performed by a well development company. Well maintenance will occur on an as-needed basis.

After pulling the pump and riser pipe, the well will be redeveloped by a combination of chemical or mechanical methods including surging, swabbing, and bailing. During development, the well pump impellers and bearings will be inspected for wear and damage, and repaired or replaced as necessary. After redevelopment, the well will be tested by pumping for a short period to evaluate the effectiveness of the work.

5.3.3 Controls

Controls will include PLC-linked systems such as flow meters, high-low sensors, and pressure transducers (Figure 9). The O&M manual will specify a maintenance timetable and procedures based on manufacturers' recommendations. These system components would be reconditioned or replaced on an as-needed basis.

5.3.4 Conveyances

The well riser piping and transfer pipelines may require periodic cleaning, depending on scaling conditions. An assessment of the conveyances will be made during step pumping tests for the implementation of the interim action. Cleaning will be conducted on an as-needed basis.

5.4 Environmental Monitoring

5.4.1 Water Levels

Water levels will be monitored for operational, performance assessment, and routine monitoring objectives. Water levels in the CG wells and OW-4 will be measured continuously using existing transducers to obtain operational data such as drawdown in the pumping wells and in wells proximal to the wellfield. Section 5.2.2 describes water level monitoring for performance assessment and to determine the degree of capture at the wellfield. Water level

measurements for routine monitoring will be conducted monthly to track potentiometric conditions, both in the vicinity of the wellfield and across the property. Table 4 lists coordinates and construction information for the Plant 1 wells and off-property wells of interest to the interim action. Water level monitoring for the interim action is summarized on Table 5. To the degree practicable, water level measurements will be coordinated with BSB to provide contemporaneous data.

5.4.2 Groundwater Quality

Groundwater quality samples will be collected every 6 months using the methods described in the focused RI work plan (HGC, 2004b) for routine groundwater monitoring. Samples will be analyzed for VOCs by U.S. Environmental Protection Agency Method 8260B. Table 5 lists the wells to be sampled for the interim action. Work proposed for the focused RI will install three new wells that will be added to the water quality monitoring schedule. Monitoring wells not identified for routine monitoring may be sampled from time to time to support the RI or FS. Groundwater quality samples will be collected at off-property wells Ki, HY-9, HY-12s, and HY-13s to assess the performance of the interim action. Sampling at wells HY-12s and HY-13s will not be necessary if these wells are sampled for the downgradient area groundwater investigation and within a reasonable time period of the CG-well system semi-annual groundwater quality monitoring event.

5.5 Performance Assessment

Performance assessment includes evaluating wellfield operation and evaluating the measured response of the aquifer to pumping. The goal of performance assessment is to verify that the interim action objectives are being achieved.

5.5.1 Wellfield Service and Pumping Rates

The wellfield shall remain in service at a pumping rate sufficient to maintain a reverse hydraulic gradient east of the wellfield, or according to an operating plan modified by Hexcel and approved by Ecology. A wellfield shut down or low average pumping rates might temporarily jeopardize containment. The procedures in the O&M manual will be followed to minimize downtime, maximize contaminant removal rates, and meet the interim action objectives. Appendix B, Impacts of Wellfield Shut Down, provides evaluation of the impact on the hydraulic containment to the groundwater plume in the event of a wellfield shut down and the contingency plan that addresses a possible wellfield shut down that would adversely affect the hydraulic containment for the groundwater plume at the downgradient border of the Hexcel property. The contingency plan will also include an implementation schedule.

5.5.2 Verification of Hydraulic Capture

To the extent practicable, the interim action will empirically verify hydraulic capture through measurement of groundwater levels. The results of water level monitoring will be evaluated to assess the degree of drawdown and gradient reversal over time at the wellfield. The existing pumping system creates demonstrable drawdown around the wellfield and a local reversal of the hydraulic gradient (Figure 6). At a minimum, groundwater levels in wells Ki, HY-9, HY-12s, HY-13s, HY-14s, and HY-15s will be used to demonstrate hydraulic capture with the CG wells.

As described in Section 5.4.1, water levels will be monitored monthly after start-up. Initially, water levels will be measured more frequently to record the aquifer response during the change in pumping rates at the CG wells. Water level data will be portrayed on potentiometric maps and cross-sections to assess the extent of capture. If conditions arise for which water level maps are ambiguous regarding capture, capture may be assessed numerically using either a semi-analytical model such as WELL2D, developed by HGC, or with a numerical model such as MODFLOW. WELL2D calculates pathlines for the hydraulic head and flow field in an aquifer with multiple pumping wells in a steady, uniform flow field.

5.5.3 Groundwater Quality Assessment

Water quality monitoring data for downgradient wells Ki, HY-9, HY-12s, and HY-13s will be used to track groundwater concentrations downgradient of the CG wells. An increase in VOC concentrations at these wells might be an indication of inefficient capture at the CG wells, or could occur due to another reason such as an increase in water levels resaturating and mobilizing VOCs from impacted soil. If concentrations increase at Ki, HY-9, HY-12s, and HY-13s and the increase cannot be accounted for, an assessment will be made as to whether pumping rates should be increased. Sampling at wells HY-12s and HY13s will not be necessary if these wells are sampled for the downgradient area groundwater investigation and within a reasonable time period of the CG-well system semi-annual groundwater quality monitoring event.

Data on cis-1,2-DCE and VC concentrations in Plant 1 monitoring wells will be used to prepare isoconcentration maps and time-series plots to document changes in Plant 1 groundwater concentrations over time. The concentration changes will be evaluated to determine whether they are consistent with the conditions expected under both the Hexcel IAP and the BSB corrective action plan. Any anomalous water quality trend will be identified and further evaluated in an attempt to understand its cause.

5.6 Contingency Response

A local engineering firm will be retained to respond to any out-of-specification conditions. The firm will be contracturally obligated to respond to a system alarm within 24 hours, and to diagnose and begin corrections on any complete system shutdown or individual well failure. Repairs will be made as quickly as practicable, depending on the availability of equipment and crews. To ensure rapid contingency response to equipment failures, Hexcel will maintain an inventory of spare parts for pumps and motors and any long lead time equipment essential for wellfield operation. Any well or wellfield shutdown taking longer than 5 days to correct will be reported to the Ecology project manager.

5.7 Documentation of Operations

Documentation of wellfield operations will consist of electronic files of pumping rates and water levels collected by the data management system, wellfield inspection checklists and notes generated per the procedures of the O&M manual, and any reports or work records produced for maintenance or equipment replacement. Documentation files will be maintained at HGC's Tucson office.

5.8 Health and Safety Plan

A HASP for environmental investigations at Plant 1 is contained in the focused RI work plan (HGC, 2004b). This plan will be modified, if needed, to account for any specific hazards related to the containment system and included in the O&M manual.

6. REPORTING

6.1 Monthly Operations Summary

A monthly operations summary will be submitted to the Ecology project manager. The summary will be a brief letter reporting the monthly average pumping rates for each well, total wellfield pumpage, system operational availability, any significant down times or maintenance events, and water levels around the wellfield. The monthly operations summary will be submitted within 15 days of the end of the prior month.

6.2 Annual Groundwater Monitoring Report

An annual groundwater monitoring report will be prepared to summarize wellfield operations, water level measurements, and water quality sampling for the interim action. A performance assessment of the interim action will be prepared based on wellfield operational, water level, and water quality data as described in Section 5.5. The annual groundwater monitoring report will cover the period of January through December and will be submitted to Ecology by the following March.

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TABLES

FIGURES

APPENDIX A

GEOLOGIC LOGS FOR CG PUMPING WELLS

APPENDIX B

IMPACTS OF WELLFIELD SHUTDOWN
(to be added)