6.3

# REQUEST FOR FUNDING PREAUTHORIZATION FOR THE HAZARDOUS SUBSTANCE RESPONSE TRUST FUND BY SPOKANE COUNTY FOR THE COLBERT LANDFILL REMEDIAL ACTION

Prepared for

Environmental Protection Agency

SEP 1 8 1988

Superfund Branch

Prepared by

Spokane County

September 12, 1988

USEPA SF
1257722

6-3

LANDAU ASSOCIATES, INC.
GEOTECHNICAL ENGINEERING AND HYDROLOGY
P.O.Box 694 / 23107 - 100th Ave. W.
Edmonds, WA 98020
(206) 778-0907

Date: Sept. 16, 1988

JOB NUMBER: 105-01
JOB TITLE: Colbert Landfill
LOCATION: Spokane County, WA

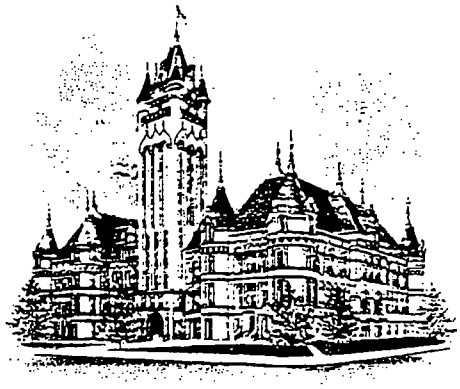
TO: Mr. Neil Thompson
EPA
1200 6th Ave.
Seattle, WA 98101

WE ARE SENDING HEREWITH:

| Copies | Description |
|---|---|
| 1 | Request for Preauthorization (Dated: Sept. 12, 1988) |

SEP 1 3 1988
Superfund Branch

LANDAU ASSOCIATES, INC.
By: Larry Beard
Larry Beard



SPOKANE COUNTY COURT HOUSE


SPOKANE COUNTY

OFFICE OF

PUBLIC WORKS DEPARTMENT

DENNIS M. SCOTT, P.E.
DIRECTOR OF PUBLIC WORKS

(509) 456-3600
NORTH 811 JEFFERSON STREET
SPOKANE, WASHINGTON 99260-0180


September 9, 1988

Office of Emergency and Remedial Response
MIS: WH-548
U.S. Environmental Protection Agency
401 "M" Street S.W.
Washington, D.C. 20460

Attention: Mr. Henry L. Longest, II, Director

RE: Colbert Landfill
Request for Preauthorization

Gentlemen:

Spokane County is filing this request for preauthorization for cost recovery related to the Colbert Landfill remedial action in Spokane County, Washington. The County would like to thank Mr. Bill Ross of your Washington, D.C., office for his guidance during preparation of this request.

Spokane County's request for preauthorization (for mixed funding) is for $1,400,000, or approximately 10 percent of the estimated cost of remediation for the Colbert Landfill Superfund site. To date, a Consent Decree (Appendix B) has been agreed to in principle. This draft Consent Decree includes a Scope of Work (Appendix C), which provides a detailed framework for implementation of the remedial action based on the EPA-selected remedy (as described in the Record of Decision [Appendix A]). The Consent Decree will be lodged following approval of Spokane County's request for preauthorization.

Spokane County intends to implement the Colbert Landfill remedial action using a design consultant and a contractor for project design and construction, respectively. As documented herein, the consultant and contractor selection process will be free and open, and will be structured such that the selected firms will have the capability, knowledge and understanding to successfully complete the remedial action. Spokane County has managed a number of large construction

projects, including some larger than the Colbert Landfill remediation, and intends on utilizing this management expertise during implementation of the remedial action.

We trust that you will find this request for preauthorization complete. However, please advise us if you have any additional information requirements.

Very truly yours,

Dennis M. Scott

Dennis M. Scott, P.E.
Director of Public Works

DMS:sla/0203o
Attachments

## TABLE OF CONTENTS


| | Page |
|---|---|
| Introduction and Site Description | 1 |
| Consent Decree and Nature of Settlement | 10 |
| Remedy | 12 |
| Background | 12 |
| Selected Remedy | 14 |
| Applicable and Relevant Standards | 15 |
| Development of the Design Package | 17 |
| Consultant Selection | 17 |
| Design Elements | 19 |
| Schedule | 21 |
| Construction of the Remedy | 22 |
| Management and Operation of the Project | 25 |
| Cost Data | 28 |
| Assurance of State Cooperation and O/M Arrangements | 29 |
| Schedule For and Documentation of Claims Against the Fund | 31 |
| Worker Training, Health and Safety | 32 |
| Community Relations | 34 |
| Monitoring and Documentation | 35 |
| Conclusions | 36 |
| References | |

APPENDICES

| | |
|---|---|
| Appendix A | Record of Decision |
| Appendix B | Consent Decree |
| Appendix C | Consent Decree Scope of Work |
| Appendix D | Revised Code of Washington: Consultant and Contractor Procurement Procedures |

## LIST OF TABLES


| Table | | Page |
|---|---|---|
| 1 | Organic Contaminants Found in Colbert Landfill Site Ground Water During Remedial Investigation | 8 |
| 2 | Funding Sources for Remediation of the Colbert Landfill Site | 11 |
| 3 | Proposed Work Sequence, Including Cost Estimates | 30 |
| 4 | Schedule of EPA Payments for the Colbert Landfill Remediation | 33 |

**REQUEST FOR FUNDING PREAUTHORIZATION FOR THE HAZARDOUS SUBSTANCE RESPONSE TRUST FUND BY SPOKANE COUNTY FOR THE COLBERT LANDFILL REMEDIAL ACTION**

Section 111(a)(2) and 122(a) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), authorizes the Hazardous Substance Response Trust Fund (Fund) to reimburse potentially responsible parties (PRPs) for costs incurred as a result of carrying out the National Contingency Plan (NCP). In order to qualify for reimbursement, the requesting party must seek and obtain prior approval (preauthorization) from the Environmental Protection Agency (EPA) administrator for the proposed remedial action. Spokane County is a PRP eligible under Section 111(a)(2) of the CERCLA, 42 U.S.C. 9611(a)(2), for reimbursement of "necessary response costs incurred...as a result of carrying out the National Contingency Plan." To fulfill the requirements for reimbursement, Spokane County is filing this request for preauthorization for cost recovery from the Fund related to the Colbert Landfill remediation. This request is for $1,400,000, which represents approximately 10 percent of estimated design, construction, and startup costs for this action. This amount has been mutually agreed upon between EPA and Spokane County, and is intended to cover the remediation costs of the non-settling PRPs.

## INTRODUCTION AND SITE DESCRIPTION

The Colbert Landfill is an inactive sanitary landfill located in northeastern Washington approximately 15 miles north-northeast of the City of Spokane. Situated in the southeast corner of

Section 3, Township 27 North, Range 43 East, W.M., the landfill covers 40 acres. It is about two and one-half miles north of the Town of Colbert and one-half mile east of U.S. Highway 2 (Newport Highway) in the northwestern quadrant of the intersection of Elk-Chattaroy, Yale, and Big Meadows Roads. Owned and operated by Spokane County (The County), the Colbert Landfill opened in 1968 and received both municipal and commercial wastes until 1986. The landfill is now filled to capacity and is no longer receiving wastes.

The remedial action site, the area of potential impact surrounding and including the landfill, extends north of the landfill about one-half mile, west about one mile to the Little Spokane River, east a similar distance, and south approximately five miles to Peone Creek (also known as Deadman Creek). The total remedial action area is approximately 6800 acres and includes parts of Sections 2, 3, 10, 11, 14, 15, 16, 21, 22, 23, 26, 27, 28, 33, 34,and 35 in T 27 N, R 43 E. The site is located on a plateau bounded by steep bluffs on the west and low granite and basalt hills to the east. Surface drainage is west to the Little Spokane River. The climate is characteristic of eastern Washington, with temperatures ranging from typical average summer highs of about 83$^{o}$ F to average winter lows of around 23$^{o}$ F. The relatively low annual precipitation of approximately 17 inches falls mainly during the winter months of November through February (NOAA 1985).

The geology of the site consists of a series of glacially-derived materials deposited on an eroded landscape of clays, basaltic lava flows, and granitic bedrock. The stratigraphic

units (layers) as described in the Remedial Investigation (RI) (Golder Associates, Inc., 1987), from youngest to oldest (i.e., from the top down), are:

Unit A. Glacial outwash/Missoula flood sands/gravels;

Unit B. Glacial Lake Columbia lacustrine silts/clays;

Unit C. Older glaciofluvial and/or alluvial sands/gravels;

Unit D. Weathered basalts and Latah (landslide deposits);

Unit E. Unweathered Latah silts/clays;

Unit F. Granite bedrock.

This specific geologic system can be hydrogeologically defined as containing three aquifers and three aquitards. There is an aquifer associated with Unit A, the glacial outwash/ Missoula flood deposits, which is designated as the upper sand/ gravel aquifer. Unit B, the lacustrine silts/clays stratum, is a relatively impermeable layer which acts as an aquitard. The second aquifer, located in Unit C, the older glaciofluvial and/or alluvial deposits, is called the lower sand/gravel aquifer. The weathered zone of the basalts and Latah, Unit D, may be considered an extension of the lower aquifer. The unweathered Latah silts/clays, Unit E, serves as the second aquitard. The upper fractured zone of the granite, Unit F, is capable of water transmission and, although a poor producer in most areas, it could be considered as an aquifer while the deeper, less fractured portions of the bedrock serve as the confining lower boundary or aquitard to the entire regional flow system.

The upper aquifer is unconfined with a water table at an approximate elevation of 1,770 feet (MSL), 90 feet below ground

surface in the area of the landfill. The thickness of the upper aquifer varies from about 8 to 15 feet along its north-south trending centerline, decreasing as it extends toward the western bluffs and eastern hills. Ground water flows predominately toward the south with velocities ranging from 4 to 13 feet per day (ft/day). The lower aquifer is generally a confined system, with its potentiometric surface at an approximate elevation of 1,680 feet (MSL), 180 feet below ground surface in the area of the landfill. The thickness of the lower aquifer varies considerably from only a few feet thick east of the landfill, to over 150 feet thick as it approaches the Little Spokane River valley where the aquifer is hydraulically connected with the river. Ground water in this lower sand/gravel aquifer flows predominantly toward the west at velocities ranging from 2 to 12 ft/day. Northeast of the landfill, the upper aquitard is not present and the lower aquifer is closer to the surface, interconnecting with the upper aquifer.

The Colbert Landfill was operated as a sanitary landfill by the Spokane County Utilities Department. It was opened in September 1968 and operations ceased in October 1986. During the five years from 1975 to 1980, a local electronics manufacturing company, Key Tronic Corporation (Key Tronic), used the Colbert Landfill to dispose of spent organic solvents, mainly methylene chloride (MC) and 1,1,1-trichloroethane (TCA), at an average rate of several hundred gallons a month (See Appendix A: ROD, Table 1, for approximate disposal volumes). These wastes were typically brought to the landfill in drums which were

emptied into open trenches to mix with the soil or municipal refuse already in the trench. A nearby military facility, Fairchild Air Force Base, also disposed of various solvent wastes at the site. Hazardous substances detected in the ground water at the site were also disposed of by a number of other parties, including Alumax Irrigation Products, A&M Manufacturing, and United Paint, Inc. A variety of other chemicals (such as pesticides and refinery tar residues) from other sources were also disposed at the site but have not, to date, been detected in the ground water at the site.

In 1980, nearby residents complained to the Eastern Regional Office of the Washington Department of Ecology (Ecology) about disposal practices at the landfill. State and county officials, under the lead of the Spokane County Utilities Department, initiated an investigation into complaints of ground water contamination in the area by sampling nearby private wells. The results of this initial investigation indicated that some of these wells were contaminated with TCA.

Since 1980, additional studies have been directed toward the contamination problem at the Colbert Landfill. The first study (Maddox 1981), initiated in response to citizen complaints, included a review of existing information on the site and some field study, and recommended a ground water monitoring program. Further studies, conducted in 1982 (Maddox 1982), involved monitoring well installation, injection tests, and two rounds of ground water quality sampling and analysis. This study included sampling of selected private and purveyor wells.

In August 1983, the EPA placed the Colbert Landfill site on its National Priorities List (NPL). CH2M Hill was then contracted by EPA to develop a Remedial Action Master Plan (CH2M Hill 1983). This plan presented a scope of work for the eventual Remedial Investigation/Feasibility Study (RI/FS). During this period, the County and Key Tronic continued sampling and analysis of well waters around the landfill (Spokane County and Key Tronic 1986).

Beginning in 1984, bottled water supplies were distributed by the County and Key Tronic to those households with high contamination levels in their wells. Ecology entered into a cooperative agreement with the EPA for conducting a RI/FS at the Colbert Landfill site in August 1984. A "Focused Feasibility Study for Initial Remedial Measures at the Colbert Landfill" (Ecology 1984a) was conducted and a "Community Relations Plan for Remedial Measures at the Colbert Landfill" (Ecology 1984b) was initiated in June 1984. The chosen Initial Remedial Measure (IRM) was to supply water to the affected area by constructing a pressurized water system through the Colbert Extension (System 9) of the Whitworth Water District No. 2. Hook-up of affected residents to this system was subsidized by two of the PRPs (the County and Key Tronic), contingent on three conditions:

- Well water contamination of more than 200 micrograms per liter TCA;
- Proximity (less than 500 feet) to water supply mains; and
- Execution of a hold-harmless agreement.

Other residents not meeting these conditions have also elected to receive this water at their own expense.

Ecology contracted Golder Associates, Inc. (Golder) to conduct a data review of the Colbert Landfill site. A recommendation report was submitted in December 1984 (Golder Associates, Inc.1984), and a work plan for the Remedial Investigation (RI) was submitted in January 1985. Authorization to conduct the RI was received in March 1985. A draft RI report was released for public review in May 1986 and the final RI report was completed in May 1987 (Golder Associates, Inc. 1987).

The primary contaminants detected in the ground water at the Colbert Landfill site during the RI were six volatile organic chemicals, all chlorinated aliphatic hydrocarbons (Golder Associates, Inc. 1987). These contaminants are listed in Table 1. Several other contaminants were also detected in the RI samples, but occurred at lower concentrations or were less widely distributed (see Table 1). Because they behaved similarly to the primary contaminants, they were not considered separately for remediation. Although the contaminants placed into the landfill traversed a considerable thickness of unsaturated soil to reach the ground water, only trace concentrations of these chemicals were found in soil samples obtained from the landfill during the RI drilling program.

In April 1986, Ecology authorized Golder to prepare a feasibility study (FS) based upon the RI. The FS was performed by Golder and a subcontractor, Envirosphere Company, with input from Hall and Associates. The FS Final Report was submitted for public comment in May 1987 (Golder and Envirosphere 1987).

**TABLE 1**

ORGANIC CONTAMINANTS FOUND IN COLBERT LANDFILL SITE GROUND WATER DURING REMEDIAL INVESTIGATION

| Contaminant | Number of Wells | Maximum Concentration (ug/l)* |
|---|---|---|
| Major Contaminants | | |
| 1,1,1-Trichloroethane (TCA) | 20 | 5,600 |
| 1,1-Dichloroethylene (DCE) | 19 | 190 |
| 1,1-Dichloroethane (DCA) | 19 | 600 |
| Trichloroethylene (TCE) | 11 | 230 |
| Tetrachloroethylene (PCE) | 9 | 23 |
| Methylene Chloride (MC) (also called Dichloromethane) | 11 | 2,500 |
| Lesser Contaminants | | |
| Acetone (also called Propanone) | 3 | 445 |
| Chloroform (also called Trichloromethane) | 11 | 6 |
| Methyl Ethyl Ketone (also called 2-Butanone) | 2 | 14 |
| 1,2-Dichloroethane (also called Ethylene Dichloride) | 2 | 5 |
| 1,2-trans-Dichloroethylene | 5 | 12 |
| Toluene (also called Methyl Benzene) | 2 | <1 |

---

* In this report, all organic contaminant concentrations will be presented in units of micrograms (ug) of chemical per liter (l) of water. This conventional unit of measurement is essentially equivalent to parts per billion (ppb).

Prior to design and construction of the final remedial action, additional site characterization will be required (termed Phase I in the Draft Consent Decree Scope of Work [Landau Associates, Inc. 1988]). Consequently, it will not be possible to describe in detail some aspects of the remedial action requested in the preauthorization guidance document (EPA 1988). However, the Draft Consent Decree Scope of Work (Scope of Work) provides a detailed framework for the remedial action and documents the review and approval authority of the EPA for aspects of remedial action not addressed within the RI/FS or the ROD. The ROD and the Scope of Work are included as Appendices A and C, respectively. Due to its size, a copy of the RI/FS is not included.

The County intends to implement the remedial action utilizing a design consultant and a contractor for design and construction, respectively; but will provide project management services internally. As will be described in greater detail in subsequent sections of this text, the design consultant and the contractor will be chosen using (separate) selection processes that provide maximum open and free competition; and that insure the selected party has the capability, knowledge, and understanding to fulfill their respective roles in completing the remedial action.

One of the primary functions of the County is to provide services, such as roadways and sewers. As such, the County has demonstrated the ability on numerous occasions to manage large construction projects, including some projects costing more than that estimated for the Colbert Landfill remediation. However, since these projects have not been related to contamination

remediation, the selected design consultant will be required to have a demonstrated knowledge and understanding of CERCLA, and will be expected to facilitate remedial activities in accordance with CERCLA requirements.

## CONSENT DECREE AND NATURE OF SETTLEMENT

An EPA PRP study resulted in notice letters being sent to 12 parties. Four of these parties were ultimately identified as PRPs. These include: the County, Key Tronic, the United States Department of Defense (the Air Force), and Alumax. A consent decree has been agreed to in principle between the Governments (EPA and Ecology), the County, and Key Tronic in July 1988. The Air Force has also settled with the Governments, the terms of which are embodied within a separate Consent Decree. Alumax has not agreed to execute the Consent Decree.

Key Tronic and the County have proposed a settlement in which the County will perform the remedy selected by EPA, as specified in the Scope of Work, and Key Tronic will pay the amount of $4,200,000 into a trust fund for remediation of the Colbert Landfill site (Trust Fund). Key Tronic's payments will be made under the schedule contained in Section VIII of the Consent Decree. The Air Force has agreed to pay $1,450,000 toward the remedial action. The County will contribute the remainder of the monies required to accomplish the remedial action (including EPA mixed funding, and State mixed funding and grants specified within the scope of work).

EPA has indicated an intent to cost-recover against non-settling PRPs if they (the PRPs) do not ultimately execute the Draft Colbert Landfill Consent Decree (Consent Decree).

Ecology has agreed to assist the County by contributing $660,000, which includes previously incurred Ecology expenses and claims against the Washington State Toxics Control Account under Chapter 70.105B (Washington Administrative Code). The County will also be eligible to apply for and may receive an unspecified amount of future State grant monies and State mixed funding.

The Consent Decree specifies that the remedy will be implemented by the County.

In accordance with the Consent Decree, the County seeks reimbursement for $1,400,000 from the Fund. The various funding sources for remediation of the Colbert Landfill site are presented in Table 2.

TABLE 2

FUNDING SOURCES FOR REMEDIATION
OF THE COLBERT LANDFILL SITE

| Source | Amount |
|---|---|
| Key Tronic | $4,200,000 |
| U.S. Air Force | 1,450,000 |
| State of Washington | 660,000 |
| E.P.A. | 1,400,000 |
| Spokane County | 6,290,000* |

* Based on an estimated total remediation cost of $14,000,000

The consent decree (attached hereto as Appendix B) will be lodged with the United States District Court, District of Eastern

Washington. After the Consent Decree has been approved and entered by the Court, the County will be obligated to carry out its terms and to implement the remedy selected by EPA in its Record of Decision (ROD; EPA 1987) and specified in the Scope of Work. Moreover, the County fully intends to undertake and complete the clean-up of this site in a timely manner.

## REMEDY

### Background

Spokane County proposes to implement a performance-based pump, treat, and discharge approach for remediation of contaminated ground water emanating from the Colbert Landfill site. This is the remedy selected by the EPA in the ROD and specified in the Scope of Work. As discussed in the ROD, a number of treatment options are acceptable, provided the selected option meets an EPA approved performance criteria, as specified in the Scope of Work. Spokane County is proposing to implement the EPA-selected option, using air stripping for treatment. The pump and treat remedy is designed to:

- prevent further spread of contaminated ground water (in the south and west) in two aquifers by installing and operating interception wells;
- remove contaminated materials (in the east) which have entered the aquifers and are contributing to the contamination plume, by installing and operating extraction wells in the area where the plumes originate;

- reduce the toxicity, mobility, and volume of the contaminants by treating all extracted ground water from both interception and extraction wells; and
- provide an alternate water supply system to any residents deprived of their domestic supply due to demonstrated contamination from the landfill or due to the action of the extraction or interception systems.

The selected remedy is based on the RI/FS, which examined several remedial options including:

- no action;
- alternate water supply;
- point of entry treatment; and
- ground water extraction, treatment, and discharge (using various technologies for each), plus an expanded water system.

Each of these alternatives was considered separately in three geographic portions of the site:

- the south area, where a contaminant plume is advancing to the south in the upper aquifer;
- the west area, where a contaminant plume in the lower aquifer is the major concern; and
- the east area, where the plumes appear to originate.

About 90 different technologies were screened and evaluated during the feasibility study. As a result of this analysis, 26 remedial alternatives were carried through a detailed evaluation using the EPA's 1985 RI/FS factors (EPA 1985): 12 for the south area, and 7 each for the west and east areas.

Selected Remedy

The remedy selected by the EPA in the ROD, as specified in the Scope of Work, includes the following components:

- in the south area, a series of extraction wells will be installed at the southern (downgradient) edge of the contaminant plume to intercept the contaminant plume in the upper aquifer;
- in the west area, a series of extraction wells will be installed to minimize future westward migration of contamination in the lower aquifer; and
- in the east area, where the plume originates, extraction wells will be installed for contaminant source control in the lower aquifer.

Contaminated ground water will be extracted using deep wells. All three systems will be designed to treat extracted water to the Scope of Work specified performance standards employing air stripping as the method of treatment. Options for disposal of treated water include discharge to the Little Spokane River (all systems), subsurface recharge (south and east systems), and discharge to Deep Creek (south system). Each of the extraction systems will include a comprehensive ground water monitoring program designed to evaluate system effectiveness. The extraction, treatment, discharge, and monitoring programs are described in detail in the Scope of Work. Additional related remedial action components, also specified in the Scope of Work, include:

- closure of the Colbert Landfill;
- comprehensive ground water supply well monitoring program and alternate water supply plan; and
- institutional controls on the future use of ground water in the area.

The remedial action will be implemented in phases. Phase I is designed to better characterize contaminant distribution and site geohydrology. Following completion of the Phase I investigation, design of the (Phase II) remedial action will be accomplished. The ROD provides for a performance-based design, allowing flexibility in the remedial approach. Specific performance criteria were presented in the ROD (Table 1 Performance Standards) and have been further refined in the Scope of Work (Tables IV-1 and V-1). The Scope of Work specifies the bases for design, the design criteria, and criteria for adjustment and modification of the remedial action if the design criteria are exceeded during operation. Thus, the Scope of Work specifies the bases for remedial action design.

Applicable and Relevant Standards

The EPA has evaluated the pump, treat, and discharge remedial approach and determined that it adequately protects human health and the environment and complies with applicable or relevant and appropriate public health or environmental requirements (ARARs). As specified in the ROD, the laws and regulations of concern include:

- Resource Conservation and Recovery Act (RCRA, 42 USC 6901); RCRA regulations (40 CFR 261 to 280); Washington State

Dangerous Waste Regulations (WAC 173-303); Minimum Functional Standards for Solid Waste Handling (WAC 173-304).

The selected remedy prevents further spread of ground water contamination and constitutes a Corrective Action program as specified in 40 CFR 264.100 and WAC 173-303-645(11). Closure of Colbert Landfill to State Minimum Functional Standards will be evaluated to ensure consistency with RCRA landfill closure standards.

- Safe Drinking Water Act (SDWA, 42 USC 300); Primary Drinking Water Standards (40 CFR 141).

  The selected remedy prevents exposing the public to drinking water which exceeds the Maximum Concentrations Levels.

- Clean Water Act (CWA, 33 USC 1251); National Pollution Discharge Elimination System (NPDES, 40 CFR 122); NPDES Permit Program (WAC 173-220).

  The selected remedy treats the extracted water before discharge to surface water. Other, mainly procedural, aspects of the NPDES Permit system will be met during the design phase. Although not actually required, it is the intent of Ecology to issue a permit.

- Rules and Regulations of the State Board of Health Regarding Public Water Systems (WAC 248-54).

  Enhancements to the alternate water supply system, in order to supply all residences that may require these supplies, as

specified in the Scope of Work will be in conformance with these regulations.

Since the remedial action will implement a ROD selected remedy and a public comment period was required as part of the ROD process, the requirement for adequate notice and opportunity for public comment on the proposed remedy has been fulfilled.

## DEVELOPMENT OF THE DESIGN PACKAGE

### Consultant Selection

A consultant will be responsible for developing the remedial action pilot study and design for the project. Selection of the consultant will be based on the demonstrated competence and qualifications of prospective consultants to perform the required services at a fair and reasonable price. The process of consultant selection was initiated on February 8, 1988, when Spokane County advertised a Request for Professional Qualifications (RFQ). In response, nine firms submitted a Statement of Professional Qualifications (SOQ). The SOQ's were evaluated and a short-list of the five best qualified firms was identified based on the following criteria:

- History of firm
- Project considerations
- Past experience on similar projects
- Expertise of project team
- Project management approach and philosophy
- Community relations experience

The next step in the selection process will be to issue a Request for Proposal (RFP) to the short-listed firms, which will be accomplished following lodging of the Consent Decree. The criteria for final selection of the design consultant are still under development. However, appropriate criteria will be selected to ensure that the retained firm has the capability, knowledge, and understanding of the project required to successfully fulfill their obligations as design consultant.

A copy of the ROD, Draft Consent Decree, and Scope of Work will be provided to each short-listed firm for use during proposal preparation. Proposals will be evaluated and the most qualified firms will be ranked in order of qualification. This process typically requires 60 to 90 days. As a "Local Agency", the County must meet Washington State Regulations for Contracts for Architectural and Engineering Services, as set forth in the Revised Code of Washington (RCW 39.80). A copy of these regulations is included in Appendix D. The consultant selection criteria will also meet federal procurement guidelines (40 CFR Part 33), in particular Section 33.525 (optional selection procedure for negotiation and award of subagreements for architectural and engineering services). Upon selection of the most highly qualified firm, the County will attempt to negotiate a design contract with that firm. If the County is unable to negotiate a fair and reasonable price with the most highly qualified firm, it will begin negotiations with the next qualified firm. Once a contract is negotiated and executed, implementation of the Scope of Work will begin.

Design Elements

Phase I, which is intended to better characterize contaminant distribution and site geohydrology for the Phase II interception system design, will be developed on the RI/FS and the ROD, as specified in the Scope of Work. Components of the Phase I design, as specified in the Scope of Work, for each project area include:

- South System: Installation of a pilot ground water extraction and treatment system; installation of a ground water monitoring system to identify the location of the contaminant plume and assess the performance of the pilot system; assessment of treated water discharge management options; and definition of the Phase II - South ground water interception and treatment system;
- West System: Installation of a pilot ground water extraction and treatment system; installation of a ground water monitoring system to identify vertical and horizontal hydraulic gradients, determine the current location and distribution of the contaminant plume, and assess the performance of the pilot extraction system; assessment of treated water discharge management options; and definition of a Phase II - West ground water interception and treatment system; and
- East System: Installation of two pilot ground water extraction wells and a common treatment system; installation of a ground water monitoring system to improve definition of the location of the contaminant plume and assess the performance

of the pilot systems; assessment of treated water discharge management options; and definition of the Phase II - East ground water extraction and treatment system.

As specified in the Scope of Work, all work accomplished during Phase I will be performed in accordance with work plans subject to the review and approval of the EPA. The following Phase I work plans will be provided:

- Health and Safety Plan;
- Quality Assurance Project Plan;
- Phase I Pilot Well Plan;
- Phase I Ground Water Monitoring Plan; and
- Phase I Treatment and Discharge Plan.

Phase I progress reports will be submitted for EPA review, either monthly or at the completion of major project milestones. The activities accomplished during Phase I, conclusions resulting from these Phase I activities, and an assessment of the impact of these conclusions on the selected remedial action will be presented for EPA review in the Phase I Engineering Report.

Following completion of the Phase I investigation, design of the remedial action (Phase II) will be accomplished. In the Phase II design, the consultant will develop the final design for the extraction, treatment, discharge, and monitoring systems for the south, west, and east project areas.

Preliminary remedial action design will be accomplished as part of the Phase II work plan preparation for the various remedial action components. Phase II Work Plans will include:

- Phase II Extraction Well Plan;
- Phase II Ground Water Monitoring Plan; and
- Phase II Treatment and Discharge Plan.

Peripherally related work plans that may be submitted at the same time as the Phase II work plans include:

- Landfill Closure Plan;
- Alternative Water Supply Plan; and
- Plan for Institutional Controls.

The County understands that some work plan components may require more EPA review than others if significant design modifications are to be avoided. Consequently, some key components will be submitted for EPA review early on in the design process. Following Government review of the work plans, Phase II Plans and Specifications will be prepared and submitted for Government review at the 30, 60, and 90 percent completion stages to complete the remedial action design package.

Schedule

Spokane County intends to accomplish the design and construction of the remedial action in a timely manner. As specified in Section XI of the Scope of Work, a schedule for submission of detailed work plans and additional documents will be submitted within two months from entry of the Consent Decree. The schedule will identify specifically when the Phase I work plans, Health and Safety Plan, Quality Assurance Project Plan, Phase I Engineering Report, and Phase I progress reports will be delivered. It will also describe the bases for establishing a

schedule for the Landfill Closure Plan, Alternative Water Supply Plan, Plan for Institutional Controls, and Phase II Progress Reports. The EPA will be kept informed of project activities through the submittal of progress reports and, if necessary, through project meetings with appropriate County representatives.

A final schedule cannot be developed until certain legal aspects (such as entry of the Consent Decree) are completed and additional (Phase I) data are collected and analyzed. However, a preliminary (non-binding) schedule of major milestone events has been prepared for this document and is presented in the Cost Data section of this document in Table 3.

Sufficient data are not available to accurately estimate the length of time to complete the remedial action. Best estimates to date indicate that it could take thirty years or longer to meet the presently established performance criteria.

## CONSTRUCTION OF THE REMEDY

The construction of the remedy (Phase II) will consist of three interrelated, and possibly overlapping, ground water extraction, treatment, and discharge systems (south, west, and east). The ground water extraction systems will each consist of several deep wells, serviced by submersible or turbine pumps and connected to the treatment system(s) by a tight-line header assembly. The treatment system(s) will consist of one or more air stripping units set on a concrete slab foundation, with appropriate utility connections for electricity and (possibly) natural gas. The need for stripping tower air abatement will be

assessed as specified in Section V.D of the Scope of Work. Treatment system effluent will be conveyed to the discharge point(s) by pipeline, with appropriate outfall structure(s) constructed to minimize erosion and promote dispersion. To the extent practicable, system components (wells, header assemblies, discharge lines, etc.) will be located below ground to minimize damage from freezing and vandalism, and to mitigate the impact of the remedial action on the local landscape.

These components will be constructed based on the Phase II Plans and Specifications (see Section XI of the Scope of Work), which will be developed from the data generated during the Phase I investigation and pilot studies. Although some of the remedial components (such as the treatment system(s)) could be designed based on available information, the use of Phase I site characterization data and observations of pilot system performance should provide a more efficient, cost-effective design.

A construction quality assurance/quality control (QA/QC) plan will be developed by the design consultant and submitted before construction begins. Methods to assure material quality and proper construction techniques will be developed and incorporated into the construction QA/QC plan. The design consultant will provide construction management, construction inspection, design support, and shop drawing review services during construction. This will ensure adherence to the QA/QC plan. Appropriate performance bonds, as specified in the final bid documents, will be required.

The County intends to use contracting practices that will provide maximum open and free competition and that will not unduly restrict or eliminate competition. Contractor selection for construction of the (Phase II) remedial action will be accomplished in accordance with statutory procedures in awarding contracts (RCW 36.32.250), using standard Spokane County procurement procedures (these statutory requirements are presented in Appendix D). Contractor selection will also be conducted in accordance with federal procurement guidelines (40 CFR, part 33). The invitation for bids will include the selection criteria and will be advertised in the legally-designated newspaper for Spokane County, a locally-circulated newspaper, and a regionally-circulated newspaper. Contractor scope of work and recommended alternatives will be reviewed by the County's design consultant. Contractor bids will be reviewed and verified, and the construction awarded to the lowest responsive responsible bidder. Following completion of all the required legal documents and public notice, a contract will be signed between the County and the Contractor, and construction of the remedial action (Phase II) can be initiated. It is presently anticipated that the contract will be based on a fixed price rather than cost reimbursement.

Construction of the remedial action will be accomplished based on Phase II Work Plans and Phase II Plans and Specifications. A Phase II construction schedule will be developed in conjunction with the schedule for submittal of Phase II deliverables discussed in Section XI of the Scope of Work.

Phase II progress reports will be submitted to EPA for review. These progress reports will be submitted either periodically or at the completion of major Phase II construction milestones.

Following completion of construction, a Phase II Construction Documentation Report will be submitted to the EPA. This report will document Phase II construction activities, including any significant variations from, or modifications to, the Phase II Plans and Specifications or Work Plans.

Phase II construction oversight will be accomplished by the County's design consultant and/or other County representatives. To provide verification of compliance with Phase II Plans and Specifications, oversight will include field monitoring of construction and review of contractor-selected materials and construction methods. A construction manager will be designated by the County to be a focus for oversight activities and to ensure that the intent of the Phase II Plans and Specifications are being followed and the construction schedule is being achieved.

## MANAGEMENT AND OPERATION OF THE PROJECT

During remediation, numerous activities involving various different kinds of skilled personnel will be undertaken at the same time. As a result of the complexity of this project, complete and effective project management is essential for proper execution. Thus, a well-defined management structure, as described below, will be established at the beginning of the project.

Project management for the Colbert Landfill remediation will be administered by the County, although many of the technically related management tasks will be accomplished by the design consultant. The County has managed a number of large projects, including a $120,000,000 waste to energy incinerator (presently under design) and $40,000,000 of sewer line construction projects. Thus, the County has a demonstrated knowledge and capability to manage projects of this size.

Spokane County will designate a County employee as Project Coordinator. The Project Coordinator will have overall responsibility for project supervision throughout remediation. The Project Coordinator will be a professional engineer with qualifications necessary for satisfactory performance of the job, including experience in managing large construction projects.

The Project Coordinator's responsibilities will include assessment of overall project progress and coordination; interaction with the EPA project manager, other federal and state regulatory agencies, other interested parties, and local citizen groups on behalf of the County; and the undertaking of any community relation activities that the County agrees to perform at the request of the United States and the State of Washington. The Project Coordinator will be responsible for budget review and direct coordination with the design consultant.

The Project Coordinator will also oversee the activity of several entities responsible for the individual segments of the remedial program, although it is anticipated that a single design consultant firm will be retained to provide management and engineering expertise for the following tasks:

- Phase I Investigation and Pilot Studies;
- Preparation of Work Plans and other Deliverables (see Scope of Work, Section XI); and
- Consulting/Design Services
  - design of extraction, treatment, and discharge systems,
  - monitoring evaluation,
  - construction oversight,
  - facilities start-up,
  - facilities operations and maintenance plans.

A single point of contact will be established within the design consultant firm to facilitate communications with the Project Coordinator. Individual Task Managers will be assigned to handle internal communications and provide technical oversight and quality control.

Contractors will be retained to implement Phase II of the Remedial Action. It may also be necessary to retain contractors for construction of some of the Phase I components and to provide occasional O&M services for the extraction, treatment, and discharge system. However, the County plans on using their own personnel to operate the facilities based on the facilities operations and maintenance plans to be developed by the design consultant.

Because this project is anticipated to generate a large volume of data, a computerized data management system will be established to effectively store and retrieve the necessary information. Data will be provided from all onsite task func-

tions to this system, and the system will be available for all tasks.

The management system will provide cost-effective project direction by minimizing the number of decision makers and streamlining communications. It will assure that the Project Coordinator is able to provide adequate project oversight and serve as a focus for remedial activities, while allowing the design consultant to implement the remedial action in a timely and cost-effective manner.

EPA oversight is to be provided by the designated EPA project manager. The EPA project manager will be kept informed of relevant site activities by the County, or their designated representative. The EPA project manager can use this information to determine the appropriate level of EPA oversight required for various site activities.

## COST DATA

Because it is ultimately responsible for between 30 to 50 percent of the total estimated costs, Spokane County has a strong incentive to conduct the remedy at this site in a cost-effective and efficient manner. Thus, the County intends to monitor closely the progress of remediation and the costs incurred.

A total project cost of about $9.4 million (present worth) was estimated in the FS. However, the County and the EPA consider a cost for remedial action of about $14 million more reasonable than the $9.4 million estimate contained in the FS. This upward adjustment in cost from $9.4 million to about $14 million is based on the following:

| | | |
|---|---|---|
| o | FS estimate | $9.4 million |
| o | Past costs | $1.7 million |
| o | Phase I | $2.0 million |
| o | 10% Contingency | $1.1 million |
| | Total | $14.2 million |

Table 3 presents the proposed construction sequence and summary cost estimates for the remedial action. Initiation of remedial activities (first year) is assumed to start once the Consent Decree has been entered with the court. The timing of remedial activities presented in this table should be considered preliminary and is intended solely for the purposes of this request for preauthorization. As specified in Section XI of the Scope of Work, a schedule for work plans and other deliverables (which will be based upon a schedule for completion of project tasks) will be submitted within two months of entry of the Consent Decree by the County. However, since this schedule is subject to EPA approval, the EPA has sufficient assurance that the project will be accomplished in a timely manner.

The County's proposed procurement practices were described in the Construction of the Remedy section of this document. These practices will ensure cost-effective choice of general contractors. Proper oversight and management of the project will also ensure efficient remediation.

## ASSURANCE OF STATE COOPERATION AND O/M ARRANGEMENTS

The State of Washington will be a party to the Consent Decree in this matter (which includes the Scope of Work). Addi-

**TABLE 3**

PROPOSED WORK SEQUENCE, INCLUDING COST ESTIMATES:

| Description of Work | Cost |
|---|---|
| **1st Year** | $2,000,000 |
| Data review/design Phase I<br>Construction of pilot systems (Phase I)<br>Additional monitoring wells<br>Air monitoring<br>Alternate water supply | |
| **2nd Year** | $1,600,000 |
| Air monitoring<br>Phase I evaluation and report<br>Start Phase II design | |
| **3rd Year** | $5,600,000 |
| Design Phase II<br>Start Phase II construction<br>Begin start-up<br>Additional monitoring wells | |
| **4th Year** | $3,000,000* |
| Complete Phase II construction<br>Continue start-up and verification<br>Additional monitoring wells<br>Begin operation and maintenance | |
| **5th Year** | $ 200,000 |
| Complete start-up and verification<br>Operation and maintenance<br>Periodic evaluation and reports | |
| **ALL FOLLOWING YEARS (total cost, present worth)** | $2,000,000 |

* Includes payment for RI/FS.

tionally, the State will assist the County in funding the remedial action through grant monies and State mixed funding. The State of Washington maintains that such participation constitutes agreement as to the appropriateness of the remedy and assurance of State cooperation.

The County plans on providing for long-term operation and maintenance of the site. A remedial action fund is to be established to provide operating capital for the design, construction, operation, and maintenance of the remedial action. Contributions to the fund are to be made by the PRPs on a schedule of annual payments designed to ensure sufficient monies are available when needed. The proposed schedule for payment is provided for in Section VIII, the Obligations of Consenting Parties, within the Consent Decree (Appendix B).

## SCHEDULE FOR AND DOCUMENTATION OF CLAIMS AGAINST THE FUND

As a part of developing cost estimates for the remedy at this site, the County and its consultant have analyzed how the costs would be incurred over time. The goal of this analysis was to ensure that the remedial action trust will, at all times, have sufficient funds for the work to proceed without interruption. Accordingly, the PRPs (the County and Key Tronic) have proposed a schedule of payments in accordance with the Consent Decree. In addition, the County proposes that reimbursement from the Fund be scheduled. The schedule for reimbursement calls for payments from the Fund at those points during the work at which several Tasks will have been completed and at completion of

system start-up. The schedule is set out in more detail in Table 4.

Although the present cost estimate of $14 million represents the best estimate based on available data, EPA and the County recognize that costs may increase due to the uncertainties regarding subsurface conditions. Because of these uncertainties, the parties have agreed that if it becomes necessary to modify the scope of the actions that EPA authorizes pursuant to this request, the County may submit a revised application for preauthorization to reflect these modifications. Any such modifications will be structured to reflect an EPA mixed funding contribution totaling 10 percent of the design, construction, and startup costs.

## WORKER TRAINING, HEALTH AND SAFETY

As specified in Section XI of the Scope of Work, a Health and Safety Project Work Plan will be developed for this site. This health and safety plan will be developed by the design consultant to protect individuals from the hazards that might be encountered during remedial action activities at the site. It will be developed based on the toxicological properties of the contaminants present at the site, as well as consideration of relevant government regulations and guidances, including "Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities" (U.S. Department of Health and Human Services 1985), and EPA's "Standard Operating Safety Guides" (Nov. 1984 FOAG). The Health and Safety Plan, as with the other work plans discussed in Section XI of the Scope of Work, requires the

**TABLE 4**

SCHEDULE OF EPA PAYMENTS FOR THE
COLBERT LANDFILL REMEDIATION

| Payment No. | Amount | Schedule* |
|---|---|---|
| 1 | $250,000 | Completion of Phase I, including submittal of the Phase I Engineering Report (within about 2 years of entry of the Consent Decree) |
| 2 | $670,000 | Completion of construction of one or more of the (south, east, or west) Phase II systems (within about 3 years of entry of the Consent Decree) |
| 3 | $480,000 | Completion of Startup for the three Phase II systems (within about 4 years of entry of the Consent Decree) |

---

* Specific tasks are more thoroughly described in Table 2 of this document. Payments are to be made following completion of tasks, with documentation by appropriate major milestone reports.

approval of the EPA prior to implementation. Work will not be initiated at the site (Phase I or Phase II) until an EPA-approved health and safety plan has been implemented.

## COMMUNITY RELATIONS

The County recognizes that the community should be kept informed during remediation and that community concerns should be considered to the extent practicable. Although the County intends to maintain an active role, Section XXIX of the Consent Decree specifies that the Government Plaintiffs (EPA and Ecology) will be the lead for community relations, while the County will be responsible for helping to coordinate and implement community relations for the site.

The County will (at a minimum) assist in:

- distribution of fact sheets;
- coordination of public meetings;
- provide appropriate County representatives for public meetings and presentations; and
- supply of appropriate documents and information for information repositories.

The County is ready and willing to implement any part of the Community Relations Plan which EPA and Ecology deem "appropriate." The County will cooperate with and support the Governments' community relations effort, and will provide any information needed. Additionally, the County will undertake other community relations activities on request from the EPA and Ecology.

## MONITORING AND DOCUMENTATION

Spokane County recognizes that, pursuant to Section 300.69 of the NCP, documentation must be maintained for all phases of response action at this site. The remedial action has not progressed to the point where a detailed documentation plan has been developed. However, appropriate documentation of remedial activity will be accomplished through the submittal of work plans and other deliverables, as specified in Section XI of the Scope of Work. Specifically, documentation will include:

- Health and Safety Plan,
- Quality Assurance Project Plan,
- Phase I Pilot Well Plan,
- Phase I Ground Water Monitoring Plan,
- Phase I Treatment and Discharge Plan,
- Phase II Extraction Well Plan,
- Phase II Ground Water Monitoring Plan,
- Phase II Treatment and Discharge Plan,
- Landfill Closure Plan,
- Alternative Water Supply Plan,
- Plan for Institutional Controls,
- Phase I Engineering Report,
- Phase II Plans and Specifications,
- Phase II Construction Documentation Report; and
- Phase I and Phase II Progress Reports.

The Quality Assurance Project Plan and the various work plans will provide documentation of procedures and practices, construction methodology, and material requirements to be

followed during accomplishment of all aspects of the remedial action. Phase II Plans and Specifications will document the final remedial design; while the Phase II Construction Documentation Report will document the as-built status of the remedial action following completion of construction.

Progress reports will be issued by the County or their design consultant periodically throughout the remedial action. As specified in the Consent Decree, progress reports will be submitted monthly during periods of construction and quarterly thereafter.

The County will maintain all records -- including sampling and QA/QC reports -- generated as a part of the remedial efforts for a minimum of ten years following termination of the Consent Decree.

## CONCLUSIONS

The information presented in this Request for Preauthorization has been prepared to meet the prior notification and prior approval requirements of Section 300.25(d) of the NCP for EPA mixed funding. Due to the present status of the remedial action, some of the informational requests outlined within the EPA Preauthorization Guidance Document (EPA 1988) could not be addressed in detail. However, the attached Scope of Work documents the EPA's review and approval authority for specific aspects of the remedial action for which detailed information is not presently available.

EPA mixed funding is an integral part of the Consent Decree negotiated between the EPA and Spokane County. Final agreement and lodging of the Consent Decree cannot be accomplished until this Request for Preauthorization has been reviewed and approved.

## REFERENCES


CH2M Hill. Remedial Action Master Plan, Colbert Landfill, Colbert, Washington. A report prepared for the U.S. Environmental Protection Agency, Remedial Planning/Field Investigation Team, Zone II (Contract No. 68-01-6692). Washington, D.C., 124 pp., 1983.

Ecology (Washington State Department of Ecology). Focused Feasibility Study for Initial Remedial Measure at Colbert Landfill. Prepared by C.R. Thompson, Hazardous Waste Remedial Action Section, Remedial Action Division, Olympia, Washington, 26 pp., 1984a.

Ecology. Community Relations Plan for Initial Remedial Measure at Colbert Landfill. Prepared by C.R. Thompson, Hazardous Waste Remedial Action Section, Remedial Action Division, Olympia, Washington, 10 pp., 1984b.

Golder Associates, Inc.(Golder). Data Review and Recommendations for Remedial Investigations at the Colbert Landfill. Prepared for State of Washington, Department of Ecology, Olympia, Washington, 59 pp., 1984.

Golder. Remedial Investigation Report for the Colbert Landfill, Spokane, Washington. Prepared for State of Washington Department of Ecology, Vol. I and II, May 1987.

Golder and Envirosphere Company. Feasibility Study Report for the Colbert Landfill, Spokane, Washington. Prepared for State of Washington, Department of Ecology, Vol. I and II, May 1987.

Key Tronic Corporation and County of Spokane (Defendants) and State of Washington, Department of Ecology and the United States of America on behalf of the U.S. Environmental Protection Agency (Plaintiffs). Draft Consent Decree. June 24, 1988.

Landau Associates, Inc., Draft Scope of Work for Remedial Action to Address Ground Water Contamination Emanating from Colbert Landfill, Spokane County, Washington, Appendix B of the Colbert Landfill Draft Consent Decree. July 7, 1988.

Maddox (George Maddox and Associates, Incorporated). A Preliminary Report on the Geohydrology of the Colbert Landfill, Spokane County, Washington-Phase I. Prepared for Spokane County Utilities Department, Spokane, Washington, 19 pp., 1981.

Maddox. Geohydrologic Investigations of Colbert Landfill, Phase II. Prepared for Spokane County Utilities Department, Spokane, Washington, 65 pp., 1982.

NOAA (National Oceanic and Atmospheric Administration). Summary of Day-First Order TD3210, Entire Period of Record Through 1985 for Spokane, Washington. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Environmental Satellite Data and Information Service, National Climatic Data Center, Asheville, North Carolina, 1985.

Spokane County and Key Tronic Corporation. Results of Continued Studies at Colbert Landfill, Colbert, Washington, by George Maddox and Associates. Personal Communications with Bruce Austin (Spokane County and Key Tronic, Incorporated), Spokane, Washington.

USEPA. Guidance on Feasibility Studies under CERCLA. EPA Hazardous Waste Engineering Research Laboratory, Office of Research and Development. Cincinnati, Ohio. EPA 540/6-85/003.

USEPA, Record of Decision, Decision Summary and Responsiveness Summary for Interim Final Remedial Action, Colbert Landfill Site, Colbert, Washington. September 1987.

USEPA, Guidance on Requests for Preauthorization by Potentially Responsible Parties, January 24, 1988.

U.S. Department of Health and Human Services, National Institute of Occupational Safety and Health. Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities. DHHS (NIOSH) Pub. No. 85-115. October 1985.

# APPENDIX A

# RECORD OF DECISION

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 6TH AVENUE
SEATTLE, WASHINGTON

# RECORD OF DECISION,
# DECISION SUMMARY,
# AND
# RESPONSIVENESS SUMMARY

FOR

INTERIM FINAL REMEDIAL ACTION
COLBERT LANDFILL SITE
COLBERT, WASHINGTON

SEPTEMBER 1987

RECORD OF DECISION
REMEDIAL ALTERNATIVE SELECTION

## SITE

Colbert Landfill Site
Colbert, Spokane County, Washington

## PURPOSE

The decision document presents the selected interim final remedial action for this site, developed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and to the extent practicable the National Contingency Plan (NCP, 40 CFR Part 300). The State of Washington has been consulted and has concurred with the selected remedy.

## BASIS

This decision is based upon the administrative record for the site, as obtained from the files of the U.S. Environmental Protection Agency (EPA) and the Washington State Department of Ecology. This record includes, but is not limited to, the following documents describing the site, the costs and effectiveness of the remedial alternatives, and community concerns:

- Remedial Investigation Report for the Colbert Landfill, Spokane, Washington;

- Feasibility Study Report for the Colbert Landfill, Spokane, Washington (includes the Risk Assessment);

- Decision Summary of Remedial Alternative Selection (attached hereto);

- Responsiveness Summary (Appendix A); and

- Staff summaries and briefing documents.

An index (Appendix D) identifies other items which are included in this administrative record.

## DESCRIPTION

This Record of Decision addresses management of the migration of contamination using a groundwater interception system and attempts source control through extraction in the areas of highest contaminant concentrations.

The remedy is designed to:

- prevent further spread of contaminated groundwater in two aquifers by installing and operating interception wells,

- remove contaminated materials which have entered the aquifers and are contributing to the contaminant plume, by installing and operating extraction wells in the area where the plumes originate,

- reduce the toxicity, mobility, and volume of the contaminants by treating all extracted groundwater from both interception and extraction wells, and

- provide an alternate water supply system to any residents deprived of their domestic supply due to demonstrated contamination from the landfill or due to the action of the extraction or interception systems.

Treatment will be sufficient to reduce contaminant levels in the aquifers and in the wastewater effluent to or below performance standards. These have been set at the Maximum Contaminant Levels (MCLs, 40 CFR 141.61), or a similarly defined health-based level (a $10^{-6}$ risk level for carcinogenic constituents). Numeric values for these performance standards are presented in Table 1. Treatment should be permanent, and should effectively reduce the toxicity, mobility, and volume of the contaminants. Any treatment system which will produce air emissions will be designed to meet any appropriate state Air Toxics Guidelines and to use Best Available Control Technology (BACT) on the effluent air stream.

In order to implement this remedial action, adequate monitoring will be required in private wells in the area of impact, as well as in monitoring wells as needed to assess progress of the remediation and performance of the containment system. Treated water effluents also will be monitored to assure that they meet the appropriate performance standards (Table 1). Treated water discharge shall at all times be consistent with U.S. and Washington State laws including but not limited to RCW 90.48 (Water Pollution Control) and WAC 173-218 (Underground Injection Control Program). Plume containment will be confirmed by installation and periodic sampling of monitoring wells and residential wells downgradient of the interception zone. Extraction will continue until all wells in contaminated zones show that the contaminants from the landfill have been reduced to and consistently remain below the health protection maximum levels.

Those residents who are deprived of domestic drinking water, either because their well water quality shows demonstrated contamination from the landfill or because the quantity available has been reduced by the action of the extraction and interception systems, will be connected to an adequate supply of safe drinking water for in-home domestic use. The present community water system serving the area, the Colbert Extension of the Whitworth Water District No. 2, may require upgrading to provide these supplies. The system will be designed to meet state public water system standards.

TABLE 1

PERFORMANCE STANDARDS

MAXIMUM ALLOWABLE CONTAMINANT CONCENTRATIONS

Health Protection Levels 1/

| | Contaminant | Maximum Concentration (µg/l) | Basis |
|---|---|---|---|
| 5600 | 1,1,1-Trichloroethane (TCA) | 200 | MCL |
| 190 | 1,1-Dichloroethylene (DCE) | 7 | MCL |
| 420 | 1,1-Dichloroethane (DCA) | 4,050 | MAC |
| 230 | Trichloroethylene (TCE) | 5.0 | MCL |
| 1 | Tetrachloroethylene (PCE) | 0.7 | $10^{-6}$ cancer risk |
| 2500 | Methylene Chloride (MC) | 2.5 | $10^{-6}$ cancer risk |

1/ Health Protection Levels are not to be exceeded, during operational life of remedial action, in effluents from groundwater treatment systems. Permanent reduction of contaminant concentrations below these levels throughout the site will indicate completion of the remedial action.

7411a

Institutional controls will be developed consistent with the final design to assure that the remedial action will continue to protect human health and the environment. Colbert Landfill will be closed to meet state Minimum Functional Standards for Landfill Closure (WAC 173-304-460), including capping, regrading, groundwater and gas monitoring and post-closure maintenance.

This is designed to be the final remedial action to be implemented at the Colbert Landfill site. It is an interim final action because the extraction and interception well systems will be in operation for decades before remediation is complete and changes in the selected action may be required during that period. The design therefore will be reassessed and adjusted periodically, at intervals not to exceed five years. It builds on the Interim Remedial Measure which provided alternate water supply, through the Colbert Extension of the Whitworth Water District No. 2, to residents whose wells had shown contamination from the landfill at levels above public health concern.

The performance standards described above will serve both as minimum treatment levels for effluents and as maximum residual levels for groundwater within the contaminant plumes. Completion of the treatment requirements is conditional upon reaching and maintaining contamination at concentrations below these maximum residual levels. The time required for this remedy is not presently known, but the entire treatment system will be reassessed by the EPA at intervals not to exceed five years.

## DECLARATION

Consistent with CERCLA, as amended by SARA, and the NCP, it is determined that the selected remedy as described above is protective of human health and the environment, attains Federal and State requirements which are applicable or relevant and appropriate, and is cost-effective. This remedy satisfies the preference expressed in SARA for treatment that reduces toxicity,

mobility or volume, as a principal element. Finally, it is determined that this remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable.

Date

Robie G. Russell
Regional Administrator
Environmental Protection Agency
U.S. EPA - Region 10

7411a

# DECISION SUMMARY
# REMEDIAL ALTERNATIVE SELECTION
# INTERIM FINAL REMEDIAL ACTION
# COLBERT LANDFILL SITE, COLBERT, WASHINGTON

TABLE OF CONTENTS


| Section | | Page |
|---|---|---|
| I | SITE LOCATION AND DESCRIPTION | 1 |
| II | SITE HISTORY | 5 |
| | Landfill History, Operations, and Regulatory Actions | 5 |
| | Site Environment | 8 |
| | Nature and Extent of Problem | 12 |
| | Organic Contaminants Detected | 12 |
| | Extent of Soil Contamination | 12 |
| | Extent of Groundwater Contamination | 16 |
| | Future Migration and Impacts of Contaminants- Upper Aquifer | 22 |
| | Future Migration and Impacts of Contaminants - Lower Aquifer | 25 |
| | Future Migration and Impacts of Contaminants - Surface Water | 27 |
| | Risk Assessment | 28 |
| | Risk Assessment of Contaminants | 30 |
| | Risks to Human Health and the Environment | 30 |
| III | ENFORCEMENT | 33 |
| IV | COMMUNITY RELATIONS HISTORY | 34 |
| V | ALTERNATIVES EVALUATION | 36 |
| | Alternatives | 36 |
| | Performance Criteria | 37 |
| | Evaluation Methodology | 39 |
| | Results | 40 |

TABLE OF CONTENTS (Continued)


| Section | Page |
|---|---|
| VI SELECTED REMEDY | 46 |
| Description | 46 |
| Statutory Determinations | 53 |
| VII REFERENCES | 56 |

APPENDIX A - RESPONSIVENESS SUMMARY

APPENDIX B - APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

APPENDIX C - STATE CONCURRENCE WITH REMEDY

APPENDIX D - INDEX TO THE ADMINISTRATIVE RECORD

## LIST OF FIGURES


| Figure No. | | Page |
|---|---|---|
| 1 | REGIONAL LOCATION MAP OF COLBERT LANDFILL SITE . . . . | 2 |
| 2 | COLBERT LANDFILL REMEDIAL ACTION SITE . . . . . | 3 |
| 3 | SCHEMATIC CROSS-SECTION OF LITTLE SPOKANE RIVER VALLEY THROUGH COLBERT LANDFILL SITE SHOWING GEOLOGIC STRATIGRAPHY . . . . . | 10 |
| 4 | RESIDENTIAL SUBDIVISIONS IN AND NEAR COLBERT LANDFILL SITE . . . . . | 13 |
| 5 | DISTRIBUTION OF CONTAMINANTS IN UPPER AQUIFER . . . . . | 17 |
| 6 | DISTRIBUTION OF CONTAMINANTS IN LOWER AQUIFER . . . . . | 18 |
| 7 | SCHEMATIC OF DENSE, NONAQUEOUS PHASE LIQUID (DNAPL) MIGRATION BENEATH COLBERT LANDFILL . . . . . | 21 |
| 8 | ESTIMATED POTENTIAL EXTENT OF CONTAMINATION IN UPPER AQUIFER IF PLUME IS NOT CONTAINED . . . . . | 23 |
| 9 | ESTIMATED POTENTIAL EXTENT OF CONTAMINATION IN LOWER AQUIFER IF PLUME IS NOT CONTAINED . . . . . | 26 |
| 10 | POSSIBLE REMEDIAL IMPLEMENTATION FOR SOUTHERN AREA (CONCEPTUAL DESIGN) . . . . . | 48 |
| 11 | POSSIBLE REMEDIAL IMPLEMENTATION FOR WESTERN AREA (CONCEPTUAL DESIGN) . . . . . | 49 |
| 12 | POSSIBLE REMEDIAL IMPLEMENTATION FOR EASTERN AREA (CONCEPTUAL DESIGN) . . . . . | 51 |

## LIST OF TABLES


| Table No. | | Page |
|---|---|---|
| 1 | REPORTED SOLVENT MATERIALS DISPOSED AT THE COLBERT SITE | 6 |
| 2 | ORGANIC CONTAMINANTS FOUND IN COLBERT LANDFILL SITE GROUNDWATER DURING REMEDIAL INVESTIGATION | 14 |
| 3 | MAXIMUM CONTAMINANT CONCENTRATIONS IN GROUNDWATER AT COLBERT LANDFILL SITE | 19 |
| 4 | ESTIMATED CONTAMINANT FLUXES IN LOWER AQUIFER AND RESULTANT FUTURE CONCENTRATIONS IN LITTLE SPOKANE RIVER | 29 |
| 5 | RESULTS OF RISK ASSESSMENT FOR INGESTION AND DERMAL EXPOSURE | 31 |
| 6 | PERFORMANCE STANDARDS - MAXIMUM ALLOWABLE CONTAMINANT CONCENTRATIONS (HEALTH PROTECTION LEVELS) | 38 |
| 7 | SUMMARY OF DETAILED EVALUATION 1985 RI/FS GUIDANCE FACTORS | 41 |
| 8 | EVALUATION OF CERCLA SECTION 121(b)(1)(A-G) FACTORS | 43 |

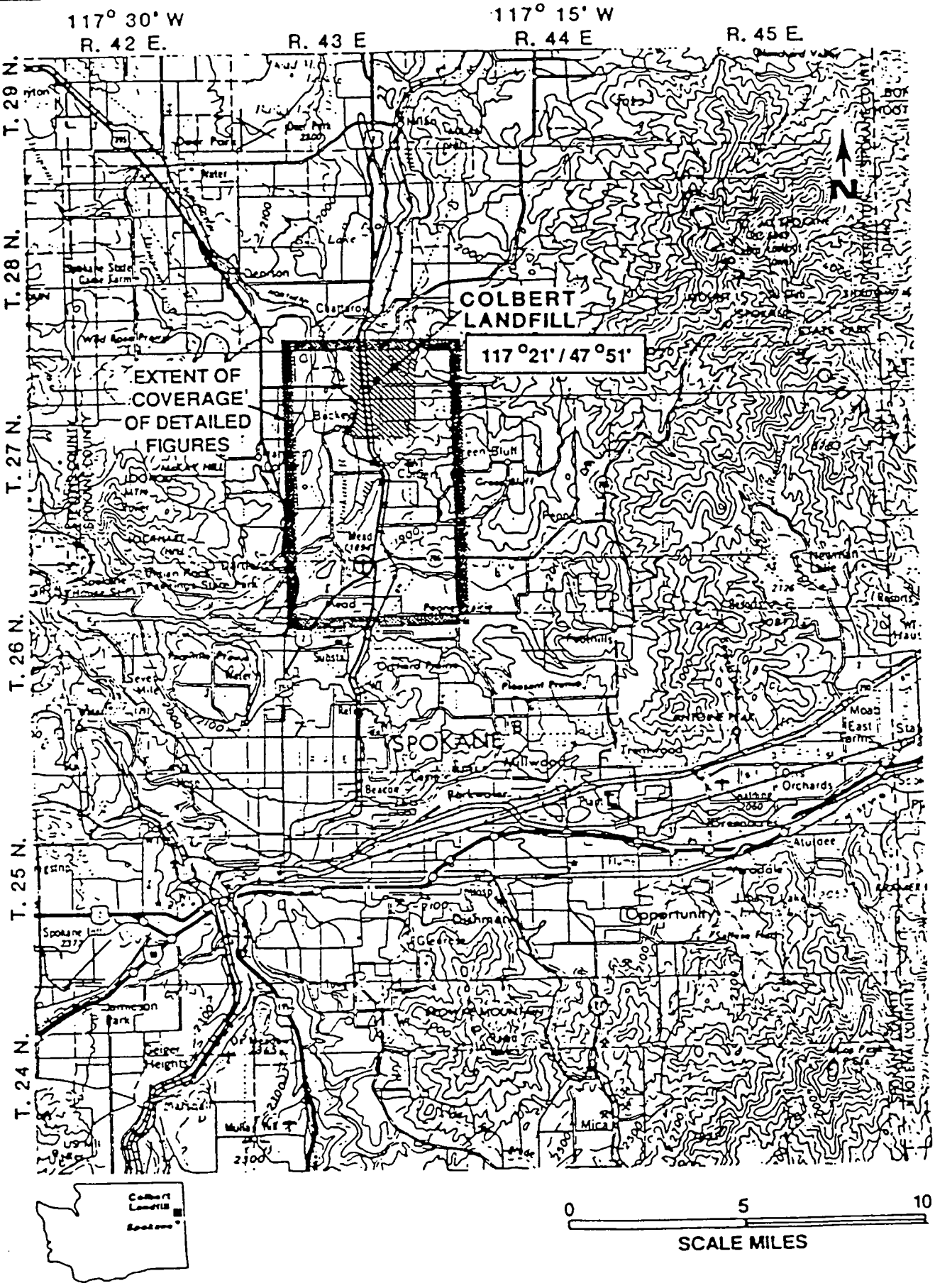
# I. SITE LOCATION AND DESCRIPTION

The Colbert Landfill is a Spokane County-owned sanitary landfill that was operated from 1968 through 1986. The Colbert area is in northeastern Washington, in Spokane County, approximately 15 miles north-northeast of Spokane, Washington. The landfill covers 40-acres and is located about 2.5 miles north of the Town of Colbert and a half mile east of U.S. Highway 2 (Newport Highway) in the northwestern quadrant of the intersection of Elk-Chattaroy, Yale, and Big Meadows Roads. It is situated in the southeast corner of Section 3, Township 27 North, Range 43 East, W.M. (Figure 1). The landfill received both municipal and commercial wastes up to 1986, is now filled to capacity, and is no longer receiving waste.

The remedial action site, the area of potential impact surrounding the landfill, extends north of the landfill about a half mile, west about a mile to the Little Spokane River, east a similar distance, and south approximately five miles to Peone (or Deadman) Creek. The total area is approximately 6800 acres which includes parts of Sections 2, 3, 10, 11, 14, 15, 16, 21, 22, 23, 26, 27, 28, 33, 34, and 35 of the same township and range. The site is entirely within the drainage basin of the Little Spokane River, mainly on a plateau bounded by bluffs down to the river on the west and knobby granite and basalt hills to the east.

The area is semi-rural with an estimated population of about 1,500 people within a 3-mile radius of the landfill. There are residences on all sides of the landfill; however, the closest residences are located north and east. Land use within the remedial action site is predominantly suburban residential, with some agricultural use, mainly truck farming or livestock production. The land immediately surrounding the landfill is planned to remain rural, according to the Spokane County Generalized Comprehensive Plan (Figure 2), a designation which allows a maximum of one house every ten acres. West and south of this zone are found, successively, areas designated semi-rural (one house per two acres), suburban (one house per half acre), and urban (five houses per acre).

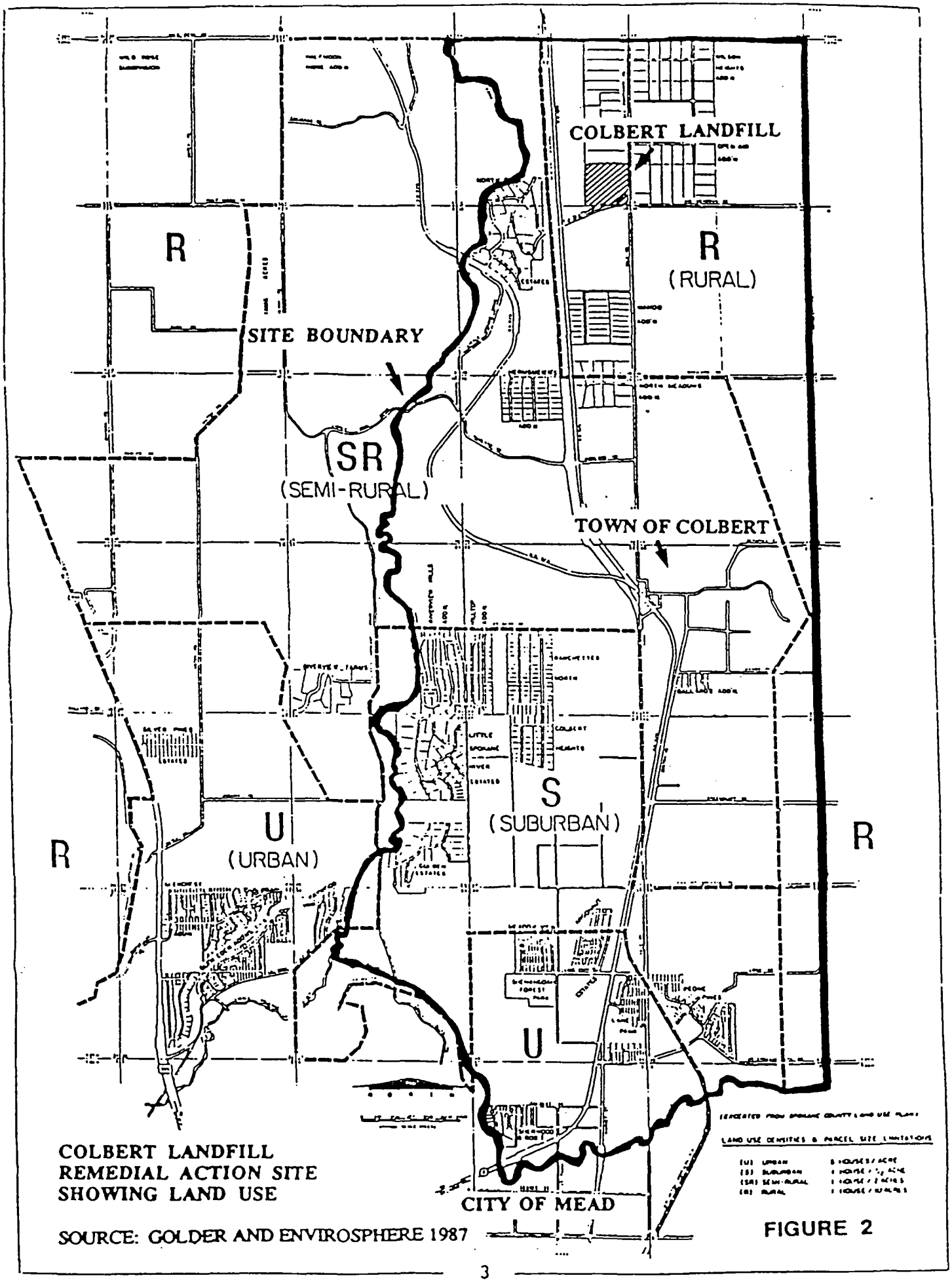
7331a




REGIONAL LOCATION MAP OF COLBERT LANDFILL SITE

SOURCE: USGS 1:250,000 MAP OF SPOKANE, WA.

FIGURE 1




COLBERT LANDFILL
REMEDIAL ACTION SITE
SHOWING LAND USE

SOURCE: GOLDER AND ENVIROSPHERE 1987

FIGURE 2

The population density is much lower than permitted because most of the area is vacant or agricultural; 1980 census data indicate approximately 6.5 persons per acre in the areas which include the semi-rural, suburban, and urban portions of the site.

Surface water resources include the Little Spokane River along the western edge of the area, Peone Creek on the southern edge, and Little Deep Creek flowing southwest through the middle of the site. Groundwater in the area is obtained from several aquifers but mainly from the upper and lower sand and gravel aquifers which have become contaminated by releases from the landfill.

The presence of groundwater contamination in the aquifers has had socioeconomic impacts in the area. Many of the nearby homeowners operate their properties as small crop and livestock farms. Water was supplied only by local groundwater resources until 1984 when the Whitworth Water District extended service to the currently impacted area.

# II. SITE HISTORY

## LANDFILL HISTORY, OPERATIONS, AND REGULATORY ACTIONS

Colbert Landfill had been operated as a sanitary landfill by the Spokane County Utilities Department since it was opened in September 1968 to its cessation of operations in October 1986. During the five years from 1975 to 1980, a local electronics manufacturing company, Key Tronic Corporation, used the Colbert landfill to dispose of spent organic solvents, mainly methylene chloride (MC) and 1,1,1-trichloroethane (TCA), at an average rate of several hundred gallons a month (Table 1). These wastes were typically brought to the landfill in drums, and were poured out down the sides of open trenches to mix with the soil or ordinary municipal refuse already in the trench. During the same period a nearby military facility, Fairchild Air Force Base, also disposed of various solvent wastes at the site. A variety of other chemicals (such as pesticides and refinery tar residues) from other sources were also disposed at the site but have not, to date, been detected in the groundwater at the site.

In 1980 nearby residents complained to the Eastern Regional Office of the Washington Department of Ecology (Ecology) about these disposal practices. State and county officials, under the lead of the Spokane County Utilities Department, initiated an investigation into complaints of groundwater contamination in the area by sampling nearby private wells of which some were found to be contaminated with TCA.

In the following years, a number of studies have been directed toward the contamination problem at the Colbert Landfill. The original investigation, which was initiated in response to citizen complaints, was conducted by George Maddox and Associates. The Phase I study, carried out in 1981 (Maddox 1981), included a review of existing information on the site and some field study, and recommended a groundwater monitoring program. Phase II studies, carried out in 1982

TABLE 1

REPORTED SOLVENT MATERIALS DISPOSED AT THE COLBERT SITE

| Source | Compound | Estimated Quantity (Gallons/Month) |
|---|---|---|
| Key Tronic Corporation | Methylene Chloride (20 - 25 percent acrylic resins by weight) | 300 - 400 |
| | 1,1,1-trichloroethane (20 - 25 percent acrylic resins by weight) | 150 - 200 |
| | Mix of above (10 percent acrylic resins by weight) | 100 - 150 |
| Fairchild Air Force Base | Methyl Ethyl Ketone | 25 |
| | Poly Thinner | 12.5 |
| | Enamel Thinner | 10 |
| | Toluene | 10 |
| | Paint Remover | 10 |
| | Primer Wastes | 10 |

Source: $CH_2M$ Hill, 1983, p. 25.

(Maddox 1982), involved monitoring well installation, injection tests, and two rounds of groundwater quality sampling and analysis which also included selected private and purveyor wells.

In August 1983 the U.S. Environmental Protection Agency (EPA) placed the Colbert Landfill Site on its National Priorities List. Subsequently, Spokane County and Key Tronic Corporation, who were both identified as potential responsible parties (PRPs), continued to have George Maddox and Associates sample and analyze well waters around the landfill (Spokane County and Key Tronic 1986). The EPA contracted $CH_2M$ Hill to conduct a Remedial Action Master Plan ($CH_2M$ Hill 1983) which presented a scope of work for an eventual Remedial Investigation / Feasibility Study (RI/FS). Also in 1983, Timothy D. Cook conducted an earth resistivity survey at the landfill site as part of a Masters Thesis (Cook 1985).

Beginning in 1984, bottled water supplies were distributed by Spokane County and Key Tronic Corporation to some of the households with high contamination levels in their wells. Ecology entered into a cooperative agreement with the EPA for conducting a RI/FS at the Colbert Landfill Site in August 1984. A "Focused Feasibility Study for Initial Remedial Measures at the Colbert Landfill" (Ecology 1984a) and a "Community Relations Plan for Remedial Measures at the Colbert Landfill" (Ecology 1984b) were developed in June 1984. The chosen Initial Remedial Measure (IRM) was to supply water to the affected area by constructing a pressurized water system through the Colbert Extension (System 9) of the Whitworth Water District No. 2. The hookup of affected residents to this system was subsidized, again by the PRPs, contingent on three conditions imposed by the PRPs:

- Contamination of well water of more than the then-proposed MCL values, including a 200 µg/l limit for TCA
- Proximity (less than 500 ft) to water supply mains
- Signing of a hold-harmless agreement

Other residents, although not meeting these conditions, have also elected to receive this water supply at their own expense.

Ecology contracted Golder Associates to conduct a data review of the Colbert Landfill Site. They submitted their recommendation report in December 1984 (Golder 1984), and then developed a work plan for the Remedial Investigation (RI) which was submitted in January 1985. Authorization to conduct the RI was received in March 1985. A draft RI report was released for public review in May 1986 and the final RI report was completed in May 1987 (Golder 1987).

In the summer of 1985, the EPA contracted Lockheed-EMSCO to perform soil gas and earth resistivity surveys near the landfill. A subcontractor, Tracer Research Company, performed the soil gas survey for three of the detected chlorinated hydrocarbons while Lockheed conducted the resistivity survey. The County of Spokane and Key Tronic Corporation retained George Maddox and Associates and ABC Laboratory to continue monitoring of private wells in cooperation with the efforts of Ecology and Golder through 1985, 1986, and 1987.

In April 1986, Ecology authorized Golder to prepare a Feasibility Study (FS) based upon the RI. The FS was performed by Golder and their subcontractor, Envirosphere Company, with input from Hall and Associates. The FS Final Report was submitted for public comment in May 1987 (Golder and Envirosphere 1987).

SITE ENVIRONMENT

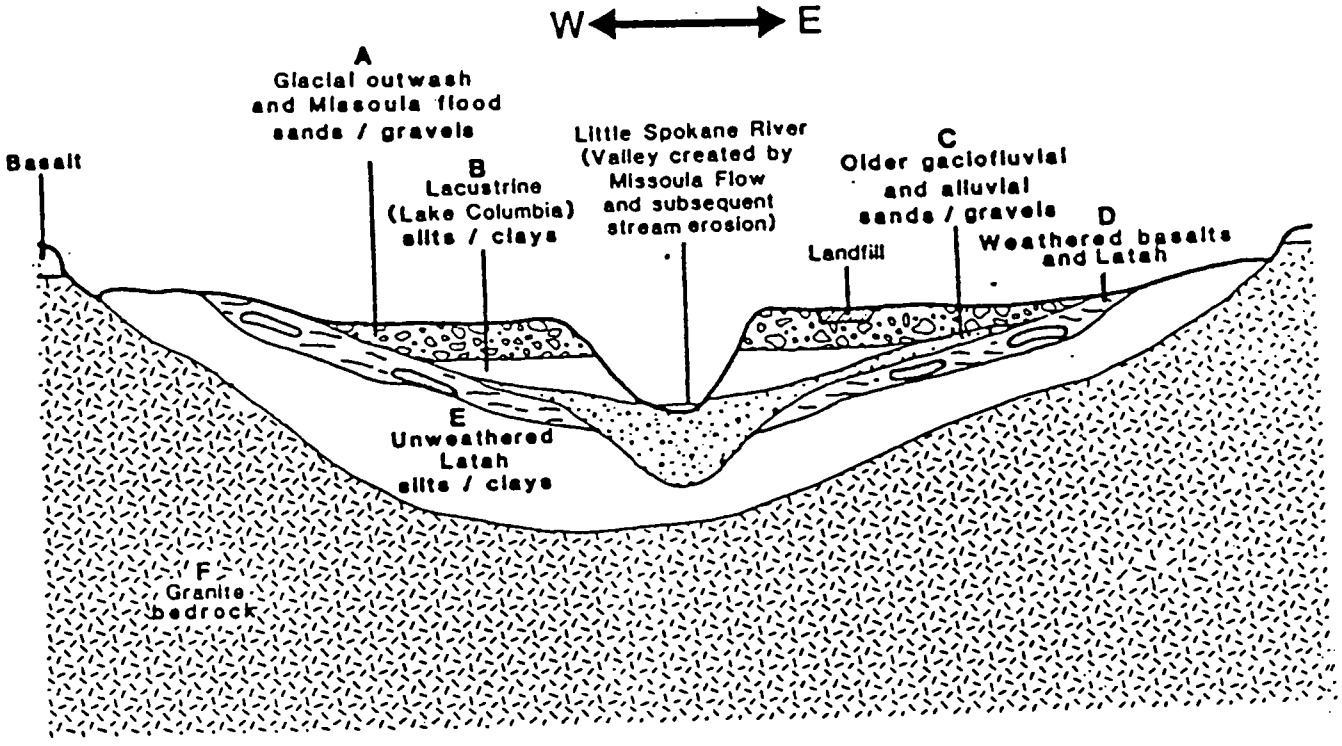
The site is in the drainage basin of the Little Spokane River, on a plateau bounded by bluffs down to the river on the west and knobby granite and basalt hills to the east. The climate is characteristic of eastern Washington with mild temperatures ranging from typical summer highs around 83°F to typical winter lows around 23°F, and a relatively low annual precipitation of approximately 17 inches falling mainly during the winter months of November through February (NOAA 1985).

The geology of the site consists of a series of glacially-derived materials laid down on an eroded landscape of clays, basaltic lava flows, and granitic bedrock. The stratigraphic units (layers) as described in the Remedial Investigation (Golder 1987), from youngest to oldest (i.e., from the top down), are:

A. Glacial outwash/Missoula flood sands/gravels.
B. Glacial Lake Columbia lacustrine silts/clays.
C. Older glaciofluvial and/or alluvial sands/gravels.
D. Weathered basalts and Latah (landslide deposits).
E. Unweathered Latah silts/clays.
F. Granite bedrock.

A schematic view of a cross-section of the Little Spokane River valley at the site of the landfill showing the general configuration of these units is provided in Figure 3.

This specific geological system can be hydrogeologically defined as containing three aquifers and three aquitards. There is an aquifer associated with Unit A - the glacial outwash/Missoula flood deposits which is designated as the upper sand/gravel aquifer. Unit B - The lacustrine silts/clays stratum is a relatively impermeable layer which acts as an aquitard. The second aquifer, located in Unit C - the older glaciofluvial and/or alluvial deposits, is called the lower sand/gravel aquifer. The weathered zone of the basalts and Latah, Unit D, may be considered an extension of the lower aquifer. The unweathered Latah silts/clays, Unit E, serves as the second aquitard. The upper fractured zone of granite, Unit F, is capable of water transmission and, although a poor producer in most areas, it could be considered as an aquifer while the deeper, less fractured portions of the bedrock serve as the confining lower boundary or aquitard to the entire regional flow system.




SCHEMATIC CROSS-SECTION OF
LITTLE SPOKANE RIVER VALLEY THROUGH COLBERT LANDFILL SITE
SHOWING GEOLOGIC STRATIGRAPHY

FIGURE 3

SOURCE: GOLDER 1987

The upper aquifer is unconfined with a water table at an approximate elevation of 1,770 feet, 90 feet below ground surface in the area of the landfill. The thickness of the upper aquifer varies from 8 to 15 feet in the central channel, decreasing as it extends toward the western bluffs and eastern hills. Groundwater is flowing predominately toward the south with velocities ranging from 4 to 13 feet per day (ft/day). The lower aquifer is generally a confined system, with its potentiometric surface at an approximate elevation of 1,680 feet, 180 feet below ground surface in the same area. The thickness of the lower aquifer varies considerably from only a few feet, east of the landfill, to over 150 feet as it approaches the river valley, where the aquifer is hydraulically connected to the Little Spokane River. Groundwater in this lower sand/gravel aquifer flows predominately toward the west at velocities ranging from 2 to 12 ft/day. Northeast of the landfill, the lower aquifer is closer to the surface, and becomes unconfined, interconnecting with the upper aquifer.

Both aquifers would be classified as current sources of drinking water (Class IIA) according to the EPA Groundwater Classification System (EPA 1986).

The vegetation in the vicinity of the landfill is dominated by ponderosa pine, with an undergrowth of grasses that are green in the spring and dry-brown by summer. Along the Little Spokane River the forest is somewhat denser and includes more species of trees. This riparian zone also supports a variety of shrub species and broadleafed herbaceous plants in addition to grasses. Game animals, small birds, and small mammals inhabit the wooded areas, and the river supports a variety of aquatic species, including trout. Bald eagles are seen occasionally along the river, especially in winter. Much of the landfill site itself has been cleared of trees, generally leaving bare soil, with occasional patches of grasses and shrubs in unworked sections. Adjacent to the site are both wooded areas and private residences. Wildlife use of the landfill property is probably limited to birds, insects, and perhaps small reptiles and mammals, similar to species found in surrounding areas.

Most of the nearby residences are multiple-acre homesteads, although a number of residential subdivisions are located within a short distance of the landfill, including Wilson Heights, Open Air, Wahoo, North Meadows, and Hermsmeier Additions, and North Glen Estates (Figure 4). Several other residential subdivisions are located further south but still within the site (the total potential area of impact); these include Riverview Hills Addition, Hilltop Addition, Ranchettes North, Ballards Addition, Colbert Heights, Little Spokane River Estates, Golden Estates, Meadow View, Argonaut Estates, Lane Park, Peone Pines, and Sherwood and Robert. In addition, the site includes the town of Colbert and part of the City of Mead. The area is primarily semi-rural with limited agricultural land use consisting of part-time farming to produce garden vegetables and livestock.

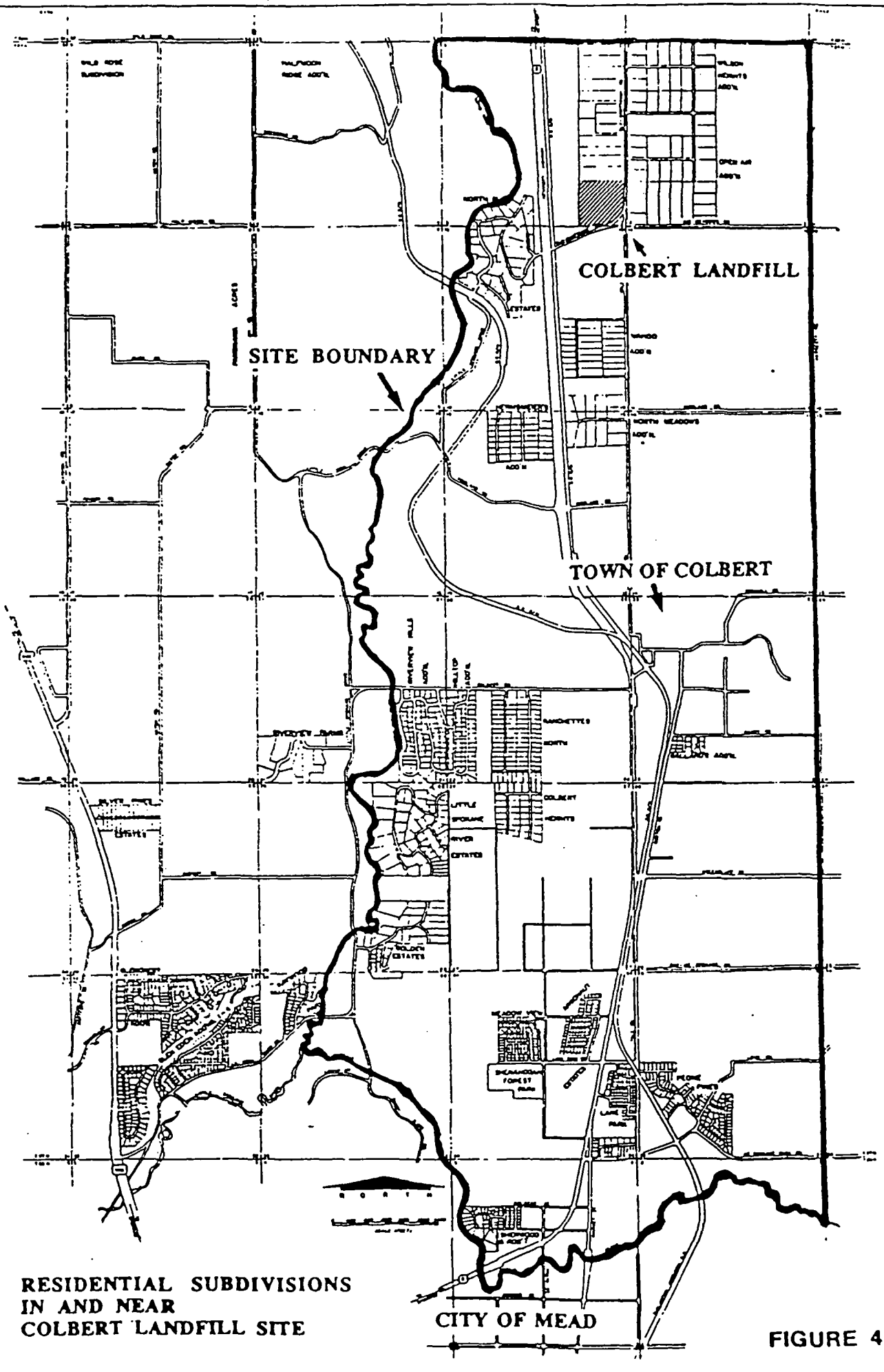
## NATURE AND EXTENT OF PROBLEM

### *Organic Contaminants Detected*

Six volatile organic chemicals, all chlorinated aliphatic hydrocarbons, were the main contaminants detected in the groundwater at the Colbert Landfill Site during the Remedial Investigation (Golder 1987) and are listed in Table 2. Several other contaminants were also detected in the RI samples, but occurred at lower concentrations or were less widely distributed (bottom of Table 2). Because they behave similarly to the above contaminants they were not considered separately for remediation. There is no potential for reuse or recycle of any organic contaminants that were detected at this site.

### Extent of Soil Contamination

Although the contaminants placed into the landfill traversed a considerable thickness of unsaturated soil to reach the groundwater, the drilling program carried out during the RI found little trace of these chemicals in the soil samples obtained. This may be because




RESIDENTIAL SUBDIVISIONS
IN AND NEAR
COLBERT LANDFILL SITE

FIGURE 4

TABLE 2
ORGANIC CONTAMINANTS FOUND IN COLBERT LANDFILL
SITE GROUNDWATER DURING REMEDIAL INVESTIGATION

| Contaminant | Number of Wells | Maximum Concentration (μg/l)1/ |
|---|---|---|
| Major Contaminants | | |
| 1,1,1-Trichloroethane (TCA) | 20 | 5,600 |
| 1,1-Dichloroethylene (DCE) | 19 | 190 |
| 1,1-Dichloroethane (DCA) | 19 | 600 |
| Trichloroethylene (TCE) | 11 | 230 |
| Tetrachloroethylene (PCE) | 9 | 23 |
| Methylene Chloride (MC) (also called Dichloromethane) | 11 | 2,500 |
| Lesser Contaminants | | |
| Acetone (also called Propanone) | 3 | 445 |
| Chloroform (also called Trichloromethane) | 11 | 6 |
| Methyl Ethyl Ketone (also called 2-Butanone) | 2 | 14 |
| 1,2-Dichloroethane (also called Ethylene Dichloride) | 2 | 5 |
| 1,2-trans-Dichloroethylene | 5 | 12 |
| Toluene (also called Methyl Benzene) | 2 | <1 |

1/ In this report, all organic contaminant concentrations will be presented in the units of micrograms (μg) of chemical per liter (l) of water. This conventional unit of measurement is essentially equivalent to parts per billion (ppb).

borings happened to be placed outside of areas where the solvents were actually disposed, or due to a combination of influences from drilling procedures (volatilization of the compounds by the air circulation of the air rotary drilling) and from natural forces which have had sufficient time to drive off virtually all the contamination which might have originally adsorbed onto the soil particles. The only contaminant of concern which was detected in any of the soil samples from auger or well borings was methylene chloride (MC). It was measured at levels of about 4 milligrams per kilogram (mg/kg) in auger borings from the intermediate cover and garbage within the landfill. This was unexpected since MC had not been detected in the upper aquifer beneath the landfill. Similar concentrations of MC were also detected in well borings of the lower aquifer in the immediate vicinity of the landfill. For these deeper borings, the presence of MC was probably due to its lower volatilization compared to the other contaminants, and the presence of higher MC levels in the lower aquifer. It should also be noted that MC is a common laboratory chemical and when it is found at low concentrations, it is possible that it was introduced accidentally during analysis.

Another form in which contamination exists in the vicinity of the landfill is in the soil atmosphere. Chapter 3 of the RI Report (Golder 1987) describes the soil atmosphere survey carried out in August 1985 by Tracer Research (Marrin 1986). They tested for three of the contaminants known to exist in the groundwater, TCA, TCE, and PCE, at probe depths of 3 to 5 feet. Draft results for TCA were presented in Figure 3-3 of the RI Report, and showed detectable levels of soil gas contamination over much of the area where groundwater contamination has been found, both in the upper and lower aquifers. Maximum soil gas concentrations of TCA were in the 100-200 μg/l level (except for one reading of 940 μg/l) and were generally found in a semicircular pattern around and to the east of the landfill, an area where "secondary sources" of the contaminants are suspected to lie. Secondary sources are points where contaminants migrating from their original disposal site collected and from which contaminants are now migrating.

Much lower levels of TCE and PCE than TCA were detected in the soil atmosphere during this investigation. According to Marrin (1986), the highest quantified soil gas concentration of TCE at 0.09 µg/l was measured southwest of the landfill. However, an area to the northeast of the landfill is identified as having possibly higher concentrations. This is the same area where secondary sources of contamination are suspected. For PCE, the highest measured soil gas concentration was 1 µg/l northwest of the landfill, in the vicinity of the highest levels of PCE groundwater contamination (23 µg/l) found during the RI.

Extent of Groundwater Contamination

Contour maps included in the RI Report (Figures 5-17 through 5-25 of Golder 1987) show the distribution of the contaminants of concern in the two aquifers associated with the Colbert Landfill Site:

a. 1,1,1-Trichloroethane (TCA)
b. 1,1-Dichloroethylene (DCE)
c. 1,1-Dichloroethane (DCA)
d. Trichloroethylene (TCE)
e. Methylene chloride (MC)

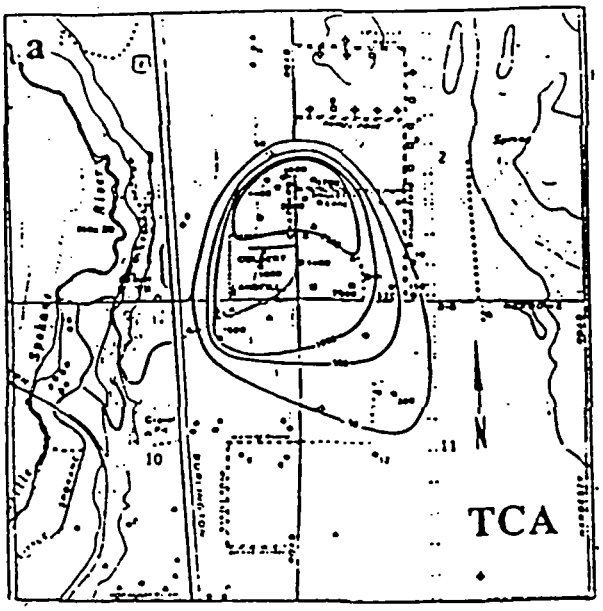
These maps are presented here in reduced form as Figures 5 and 6 in order to show the general pattern in which each contaminant has spread in the upper and lower aquifers respectively.

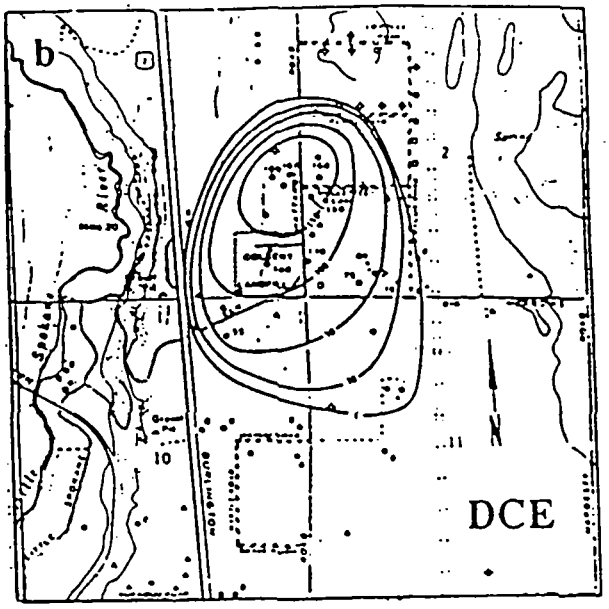
The maximum levels of these contaminants, plus tetrachloroethylene (PCE), which were detected in the 1985 RI groundwater sampling program are summarized in Table 3. These values are rather dynamic and suffer from two limitations for representing the maximum contamination levels in the aquifers. First, they fluctuate due to movement of the plumes, variations in sampling, laboratory inaccuracies, or some combination of these. Second, the wells may not be located at the point of highest concentration in the aquifer. Nevertheless, they indicate the relative magnitude of the problem in the two aquifers.

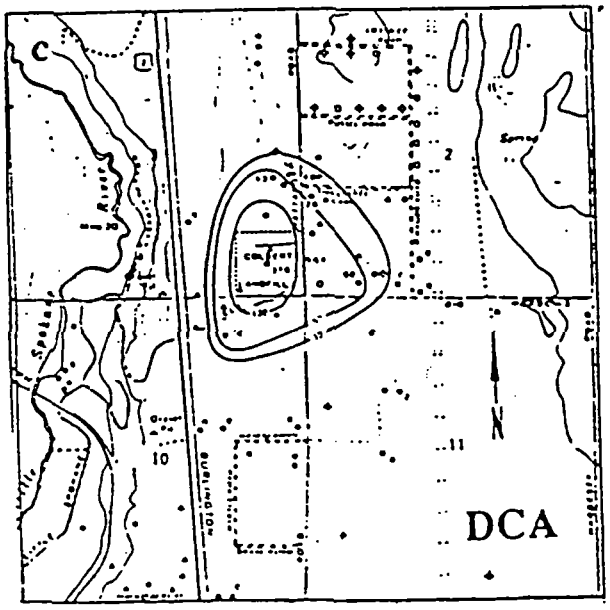
**DISTRIBUTION OF CONTAMINANTS IN UPPER AQUIFER**

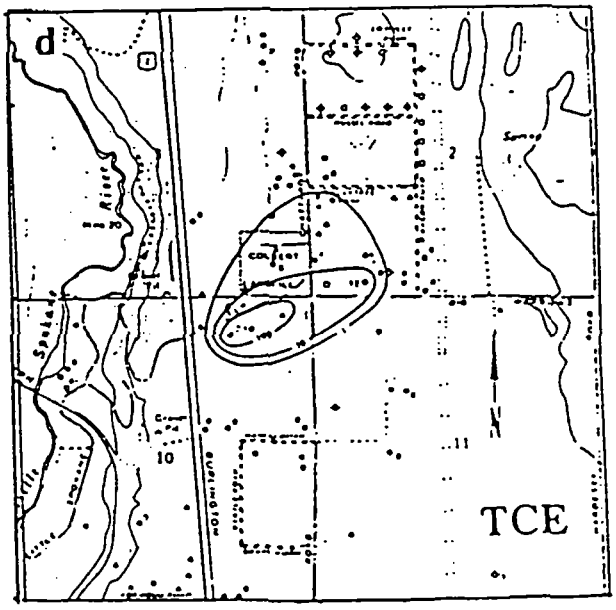
(a) 1,1,1-Trichloroethane (TCA) (b) 1,1- Dichloroethylene (DCE)
(c) 1,1-Dichloroethane (DCA) (d) Trichloroethylene (TCE)

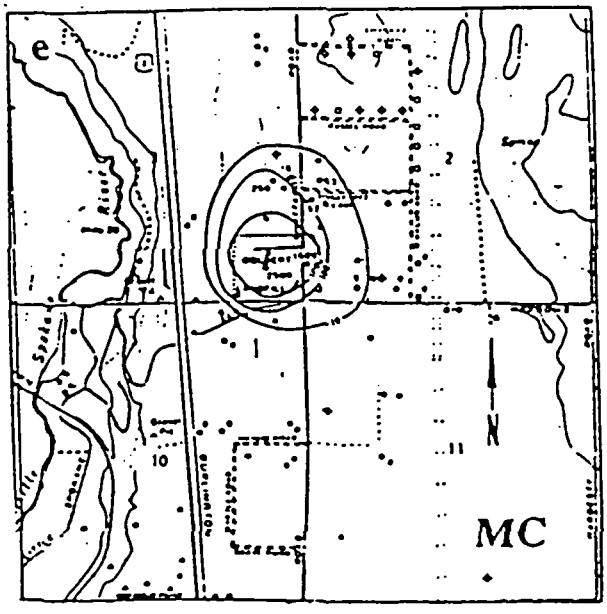
**FIGURE 5**




## DISTRIBUTION OF CONTAMINANTS IN LOWER AQUIFER

(a) 1,1,1-Trichloroethane (TCA)
(b) 1,1-Dichloroethylene (DCE)
(c) 1,1-Dichloroethane (DCA)
(d) Trichloroethylene (TCE)
(e) Methylene Chloride (MC)

SOURCE: GOLDER AND ENVIROSPHERE 1987

**FIGURE 6**

TABLE 3

MAXIMUM CONTAMINANT CONCENTRATIONS IN GROUNDWATER AT COLBERT LANDFILL SITE

| Contaminant | Concentration (µg/l) Upper Aquifer | Lower Aquifer |
|---|---|---|
| 1,1,1-Trichloroethane (TCA) | 1,300 | 5,600 |
| 1,1-Dichloroethylene (DCE) | 47 | 190 |
| 1,1-Dichloroethane (DCA) | 600 1/ | 420 |
| Trichloroethylene (TCE) | 72 1/ | 230 |
| Tetrachloroethylene (PCE) | 23 | 1 |
| Methylene Chloride (MC) | ND 2/ | 2,500 |

1/ Latest concentrations recorded in 1984 by George Maddox and Associates in Well CS-13 which could not be sampled in 1985 due to low water levels.

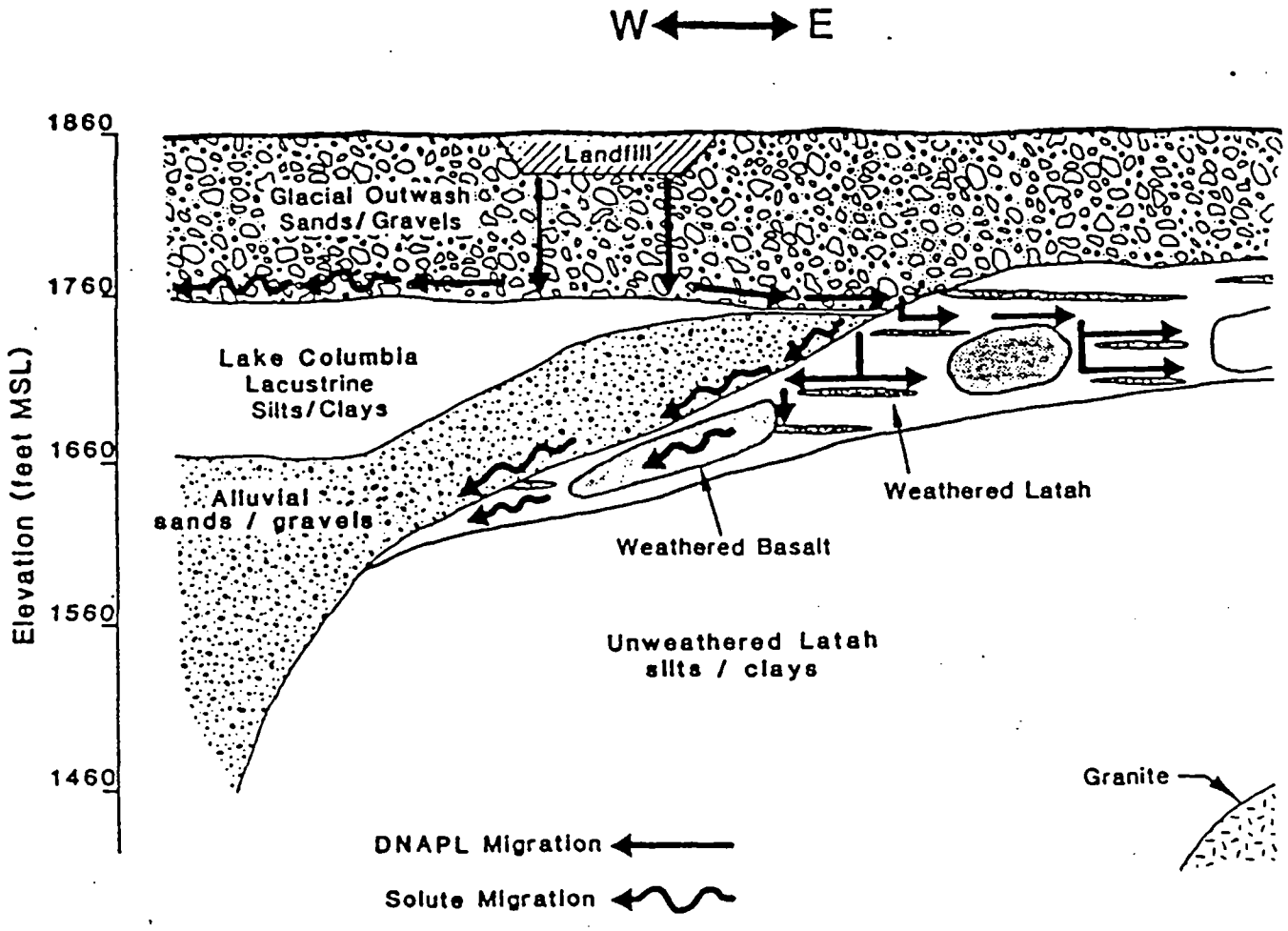
2/ ND = not detected to date in any well in aquifer.

Source: Golder 1987. Measurements are from the Fall/Winter 1985 RI samples, except as noted.

As can be seen in the distribution maps, the contamination has spread much further in the upper aquifer than it has in the lower, with the upper aquifer plume extending south of the landfill toward the town of Colbert. The lower aquifer plume, on the other hand, has proceeded further north and southeast. The highest levels of contamination in the groundwater are divided between the two aquifers, with TCA, DCE, TCE, and MC found at higher concentrations in the lower aquifer, with DCA and PCE more concentrated in the upper aquifer.

Section 5.4.1 of the RI Report (Golder 1987) presents an estimate that only about 10 percent of the TCA documented to have been disposed at Colbert Landfill can be accounted for in solution in the groundwater. It has been proposed that substantial quantities of the contaminants remain at the bottom of the aquifers in the form of dense, nonaqueous phase liquids (DNAPLs), i.e., relatively undiluted chemicals existing as separate liquids rather than in solution in the groundwater. While it is difficult to estimate how much was lost to volatilization at the time of disposal and subsequently during contaminant migration, it appears possible that some portion of the remaining 90 percent of this material could remain in the subsurface in DNAPL form. Since these chemicals have a density greater than water, they are likely to have flowed along the bottom of the upper aquifer under gravitational influence. Contaminant flow would then occur both to the east and to the west since, according to stratigraphic interpretation, the landfill is situated over a ridge formed by the upper surface of the lacustrine silt/clay aquitard, which slopes to both the east and the west. The DNAPL flow would continue along the bottom of the aquifer until it came to a confined low point where it could pond. There it would remain and slowly release its chemical constituents into the groundwater flowing over it. A schematic illustration of this contaminant migration is reproduced from the RI Report as Figure 7.

The quantity of these DNAPL residuals is impossible to determine with any accuracy. Their location is likely to be to the north and east of the landfill, and probably more in the lower aquifer than in the upper




SCHEMATIC OF DENSE, NONAQUEOUS PHASE LIQUID (DNAPL) MIGRATION BENEATH COLBERT LANDFILL

FIGURE 7

aquifer. The existence of these constituents is further indicated by the centers of contamination in the lower aquifer being shifted toward the northeast (see Figure 6), and by the high levels of contaminants detected in the groundwater at this depth despite the fact that the lower aquifer should be further from the original source. As such, the hypothetical pools of contaminants at the bottom of the aquifer would constitute secondary sources which could cause continuing groundwater contamination for an extended period of time.

Future Migration and Impacts of Contaminants-Upper Aquifer

In the upper aquifer, the fronts of the contamination plumes for TCA, DCE, and DCA have extended over the past 8 to 10 years as far as 9000 feet south of the landfill (see Figure 5). Golder (1987) calculated a solute plume velocity of about 2 to 3 ft/day for the TCA plume by two separate methods. The other contaminants mentioned above appear to have similar velocities. These transport rates are likely to continue for the next several years, although the stratigraphy in the area ahead of the plumes is less well understood and so cannot be used to confirm this. The plumes appear to be migrating toward the town of Colbert. A portion of the groundwater flow in the upper aquifer appears to move toward a granite bedrock outcrop just north of the town, where runoff from the eastern hills and the upper aquifer infiltrate down into the lower aquifer, in which groundwater flows westward to the Little Spokane River Valley. Therefore, contamination in the upper aquifer could also pass into the lower aquifer here and migrate westward.

An estimate was made of the future extent of the upper aquifer contaminant plume if remediation is not undertaken (Figure 8). This was based on an interpretation of the topography of the site and general vicinity as shown on the USGS Mead and Dartford 7.5-Minute Quadrangles, the regional geology as derived by Griggs (1973) and shown in Figure 2-1 of the RI Report, and the stratigraphy and hydrogeology of the site delineated in the course of the Remedial Investigation. The upper aquifer plume seems to be advancing toward the south along a

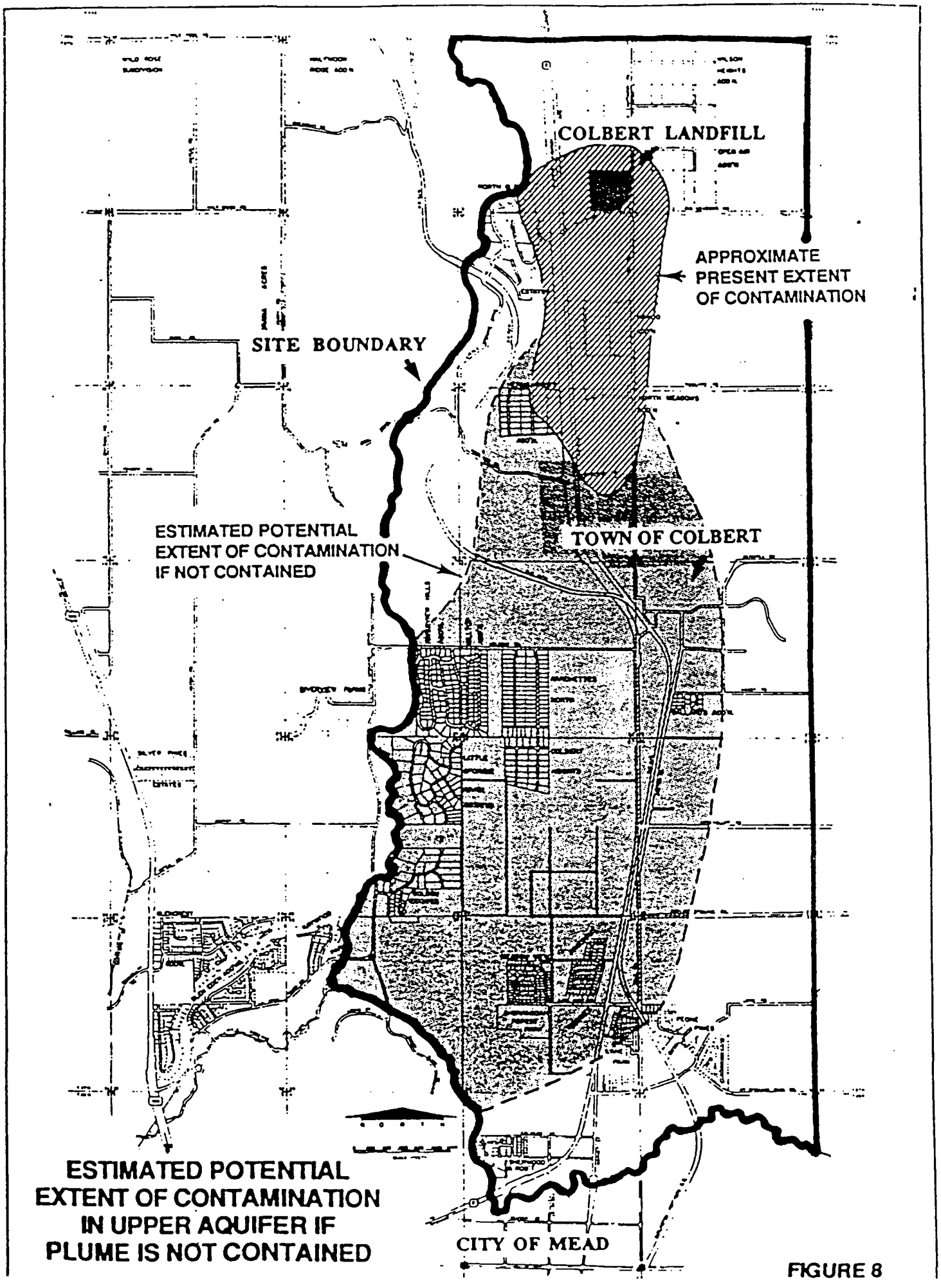

COLBERT LANDFILL
APPROXIMATE PRESENT EXTENT OF CONTAMINATION
SITE BOUNDARY
ESTIMATED POTENTIAL EXTENT OF CONTAMINATION IF NOT CONTAINED
TOWN OF COLBERT
ESTIMATED POTENTIAL EXTENT OF CONTAMINATION IN UPPER AQUIFER IF PLUME IS NOT CONTAINED
CITY OF MEAD

FIGURE 8

trough in the Lake Columbia lacustrine silt/clay aquitard. This is most likely a channel incised in the lake bottom from recessional glacial outwash flows and flooding events following the draining of the ice age lake. The channel follows a paleo-valley bounded by the granitic hills and older glacial outwash materials to the east, and the bluffs down to the Little Spokane River to the west. There are no obvious discharge areas although portions of the flow may discharge as small springs on the western bluff, feed Little Deep Creek where it is perennial south of Green Bluff Road, or drain down through a connection into the lower aquifer. The bulk of the flow, and thus ultimately the plume, however, probably continues south and discharges in the valley sides of Peone (or Deadman) Creek. The overall course of the groundwater flow is interpreted to be approximately parallel to Highway 2. Approaching Peone Creek the flow will probably be diverted slightly by the granitic bedrock high to the south beyond and align with the westerly course of the Little Spokane Valley. Groundwater flows from other areas, such as Peone Prairie to the east, would also tend to divert the plume to the west.

Based on available stratigraphic and hydrogeologic information, this interpretation represents a best estimate rather than worst case. Using the 2- to 3-feet-per-day advance of contaminants calculated to date, it is estimated that the plume will migrate the remaining four miles to Peone Creek in about 20 to 30 years. Actual migration time may be shorter or longer than this due to the width, depth, and hydraulic properties of the aquifer. Clearly, however, it is possible that any wells in the upper aquifer in the area delineated in Figure 8 could become contaminated during the 30-year planning period of the FS.

Various processes could occur that may cause the quantity of contaminants in the plume to be reduced and thereby diminish in concentration during the period of transport. These include:

- Volatilization into vadose soil gas, and then into the atmosphere;

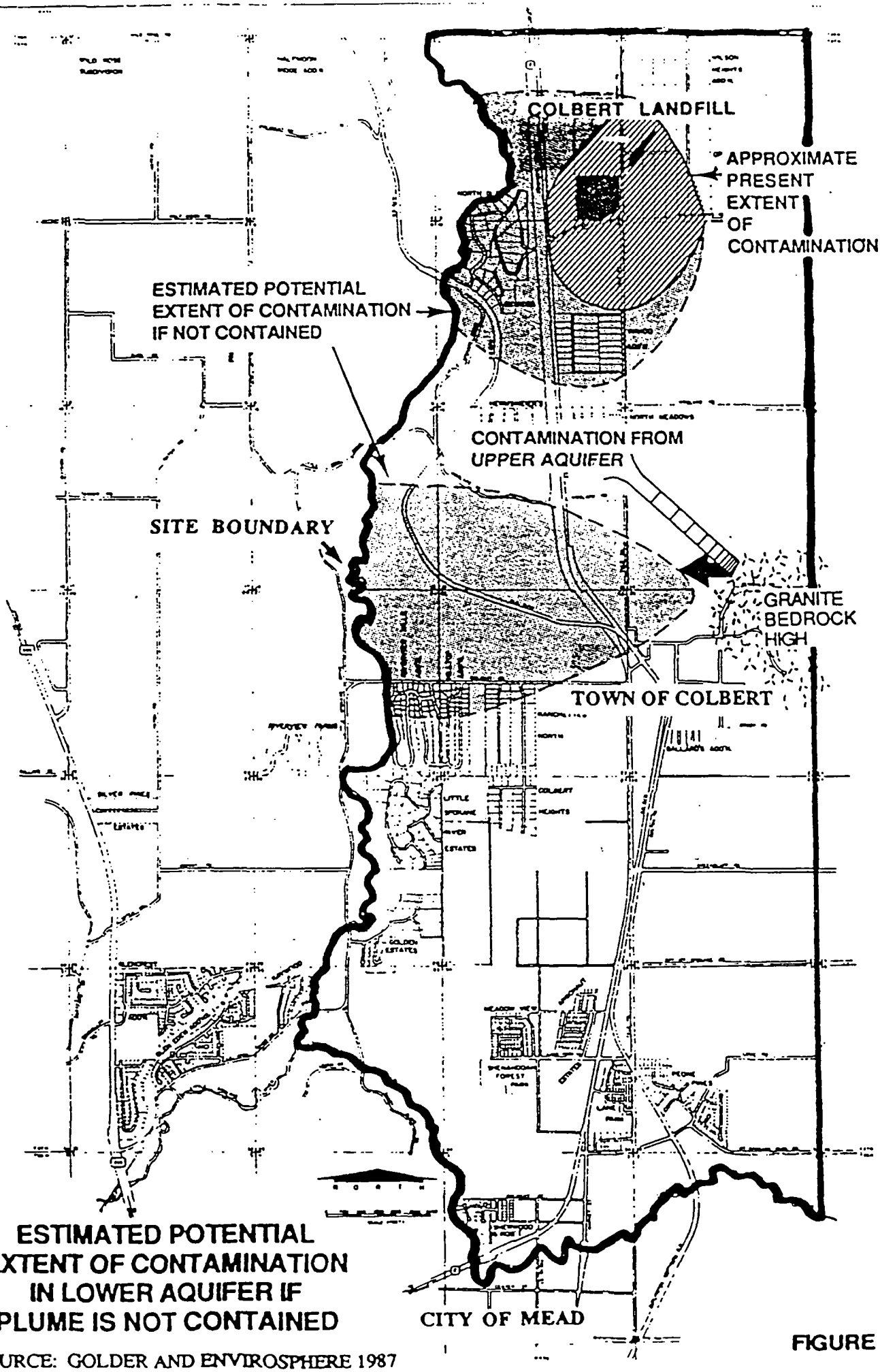
- Adsorption onto soil particles, particularly organic matter;
- Microbial degradation; and
- Hydrolysis, the decomposition of a chemical compound by reaction with water.

Based upon the observation that the concentration levels, at least for the contaminants TCA and DCE, are fairly constant over most of the plume, it appears that the natural degradation is slow. If degradation were occurring, the concentration of contaminants at the front of the plume would have diminisned. There has been a trend in the upper aquifer for contamination levels near the source areas to diminish over the time they have been monitored. Chemical concentrations for the upper aquifer will remain elevated for a significant time, certainly longer than the estimated time for migration to Peone Creek.

Future Migration and Impact of Contaminants - Lower Aquifer

The RI Report did not develop a plume velocity for the contaminants in the lower aquifer partially because the plume has not advanced far enough to provide the data required to make any accurate estimates based upon historical data, and also because the hydrogeology of this aquifer is complicated. Migration of the contamination to the west, for example, is expected to slow down considerably over the next several years as the plume moves into thicker saturated zones adjacent to the river (see Figure 3).

Following a similar procedure to that described in the previous section for the upper aquifer, the future extent of the lower aquifer plume is predicted to impact a much smaller area (see Figure 9). It is also suggested that the upper aquifer may be connected with the lower aquifer in areas other than those identified east of the landfill. For example, in the area of the granite bedrock high north of the town of Colbert, groundwater elevations from wells indicate that flow in the upper aquifer is diverted southeasterly (i.e., toward the bedrock high). This appears indicative of a partial sink in the upper aquifer due to connection to the lower aquifer in this area. If this




**ESTIMATED POTENTIAL EXTENT OF CONTAMINATION IN LOWER AQUIFER IF PLUME IS NOT CONTAINED**

SOURCE: GOLDER AND ENVIROSPHERE 1987

FIGURE 9

connection does exist and contamination from the upper aquifer plume enters the lower aquifer, it may affect residents who obtain water from the lower aquifer in the area between the town of Colbert and the Little Spokane River.

The same natural reduction processes mentioned in the previous section may also occur in the lower aquifer and reduce contamination levels, albeit very slowly. The volatilization pathway through the vadose zone soils is active in areas where the aquifer is unconfined despite its depth, as can be seen in the results of the Tracer Research soil atmosphere survey. In the areas where the aquifer dips below an aquitard and becomes confined, there is no air interface in which interchange can occur, so volatilization is much slower. Thus, natural restoration of the lower aquifer will require more time than for the upper aquifer. For the most part the contamination will decrease only as the secondary sources, apparently mainly in the lower aquifer, are solubilized and depleted. Estimation of the mass of chemicals solubilized in the groundwater indicate that only about 10 percent of the chemicals have gone into solution in the past 8 to 10 years since disposal occurred. At the same rate, dissolution of the entire volume of contaminants could thus require decades. However, it is very possible that the emission rate from the secondary sources could diminish over the years as the more soluble contaminants are exhausted. As a result, the plume could continue to exist for a longer period of time at a lower, but still significant, concentration level.

## Future Migration and Impacts of Contaminants - Surface Water

There is a small amount of seepage emerging from the upper aquifer at a few locations along the valley walls in areas where that aquifer is known to be contaminated. One of the discharge points, the King Springs, was sampled by Ecology personnel and found to have an initial TCA contamination level of 111 μg/l as it emerges from the aquifer. This level of contamination is consistent with concentrations recorded in the groundwater in the vicinity. The contamination in the spring water diminished rapidly as the water trickled as little as 10 feet

away, apparently due to the contaminants volatilizing into the air. Contamination reaching the Little Spokane River from these springs which are located several hundred feet away from the river will be dissipated to undetectable levels.

The contamination in the lower aquifer has not reached the vicinity of the river. If it does, it will flow into the river below the water surface and not be subjected to the same immediate aeration processes. Future contaminant concentrations in the river were predicted (see Table 4) based on four assumed conditions: the present-day flux of the chemicals in solution in the lower aquifer beneath the landfill; unimpeded transfer from the aquifer to the river; full mixing in the river; and no volatilization from the river surface.

It is expected that the levels attained immediately upon mixing will be diminished through in-stream processes, predominantly aeration, before the Little Spokane reaches the Spokane River some 20 miles downstream, at which point the flow in the larger river will further reduce any remaining contaminant levels.

## RISK ASSESSMENT

A Risk Assessment (RA) of the Colbert Landfill Site was conducted to provide a quantitative determination of the potential for harm to the general public as a result of exposure to site contaminants (Appendix A - Golder and Envirosphere 1987). Three primary pathways potentially expose humans to the contaminants, which include both carcinogenic and noncarcinogenic compounds. The pathway of most concern is ingestion, as site groundwaters are presently used as a potable water supply by many residents in the Colbert area. In addition, many residents of the community use their properties for crop production and livestock grazing. Therefore, a potential risk to human health also occurs from the ingestion of crops irrigated by or grown in contaminated water and ingestion of beef or dairy products from livestock grazing in the area. Pathways of less concern, but still evaluated in the RA, are dermal contact from bathing and inhalation of volatile contaminants, and health impacts for livestock drinking contaminated water.

TABLE 4

ESTIMATED CONTAMINANT FLUXES IN LOWER AQUIFER
AND RESULTANT FUTURE CONCENTRATIONS IN LITTLE SPOKANE RIVER

Colbert Landfill

| Contaminant | Present-day flux (g/day) | Maximum Future River Concentration (μg/l): Mean river flow conditions $q_{avg}$ = 236 cfs 1/ | Maximum Future River Concentration (μg/l): Drought flow conditions $q_{7,10}$ = 75 cfs 2/ |
|---|---|---|---|
| 1,1,1-Trichloroethane (TCA) | 9700 | 17 | 53 |
| 1,1-Dichloroethylene (DCE) | 680 | 1.2 | 3.7 |
| 1,1-Dichloroethane (DCA) | 730 | 1.3 | 4.0 |
| Trichloroethylene (TCE) | 95 | 0.2 | 0.6 |
| Methylene Chloride (MC) | 4400 | 7.6 | 24 |

Source: Golder and Envirosphere 1987.

1/ $q_{avg}$ is long-term average flow in the Little Spokane River, calculated for the reach adjacent to the site.

2/ $q_{7,10}$ is the seven-day average flow which is exceeded (on the low side) only once every ten years (on average).

## Risk Assessment of Contaminants

For each of the indicator contaminants identified above, Acceptable Doses (AD) were derived. Noncarcinogen ADs were based on available toxicity data that indicate a no adverse effect level. For carcinogens the ADs were based on a one-in-a-million ($10^{-6}$) or one-in-a-hundred-thousand ($10^{-5}$) chance of developing cancer from a lifetime exposure, using the EPA Cancer Assessment Group (CAG) evaluation of the cancer potency. The different pathways were analyzed as sequences of steps, with partitioning of contaminants occurring at each specific step. The results of these calculations are presented in Table 5 as Maximum Acceptable Concentrations (MAC) values which should not be exceeded in water used for drinking (ingestion) or bathing (dermal). The Federal Drinking Water Maximum Concentration Levels (MCLs) and the maximum concentration detected in the upper and lower aquifers are also presented for comparison.

## Risks to Human Health and the Environment

Based upon the Risk Assessment, the following conclusions were made concerning risks to human health and the environment from contaminants associated with the Colbert Landfill Site.

- Concentrations for the contaminants TCA, DCE, TCE, and MC frequently exceed their human ingestion MAC values for both of the aquifers. Therefore, drinking the water from contaminated wells poses the most significant risk to human health. The subdivisions that are already within the areas of aquifer contamination above the MAC values are: Wilson Heights, Open Air, Wahoo, North Meadows, and Hermsmeier Additions. Other subdivisions which are in the total potential area of impact include: North Glen Estates, Ranchettes North, Hilltop Addition, Riverview Hills Addition, Little Spokane River Estates, Colbert Heights, Golden Estates, Ballards Addition, Meadow View, Argonaut Estates, Lane Park, Peone Pines, and

TABLE 5

RESULTS OF RISK ASSESSMENT FOR INGESTION AND DERMAL EXPOSURE 1/

| etected ontaminant | Indicator Parameter | Carcinogens 2/ | Acceptable Dose (µg/day) | Maximum Acceptable Concentration (MAC) Values (µg/l) | | EPA Maximum Contaminant Levels (MCLs) (µg/l) | Maximum Concentrations (µg/l) 4/ | |
|---|---|---|---|---|---|---|---|---|
| | | | | Ingestion Pathway | Dermal Exposure | | Upper Aquifer | Lower Aquifer |
| ,1,1-Trichloro-ethane (TCA) | Yes | No | 400 | 200 | 97,000 | 200 | 1,300 | 5,600 |
| ,1-Dichloro-ethylene (DCE) | Yes | Possible | 14 | 7 | 3,050 | 7 | 47 | 190 |
| ,1-Dichloro-ethane (DCA) | No | No | 8,100 | 4,050 | NA 3/ | None | 600 | 420 |
| richloroethylene (TCE) | No | Yes | 6.4 | 3.2 | NA | 5 | 72 | 230 |
| etrachloro-ethylene (PCE) | No | Yes | 1.4 | 0.7 | NA | None | 23 | 1 |
| lethylene Chloride (MC) | Yes | Yes | 5 | 2.5 | 1,200 | None | ND 5/ | 2,500 |

/ See Risk Assessment document (Appendix A of Feasibility Study Report, Golder and Envirosphere 1987).
2/ Data for carcinogens is given for the $10^{-6}$ (one-in-a-million) risk level only. MAC values for a $10^{-5}$ (one-in-a-hundred thousand) risk levels can be computed by multiplying the MAC by 10.
3/ NA = not analyzed as part of Risk Assessment.
4/ From Table 3.
5/ ND = not detected to date in any well.

7331a

Sherwood and Robert. Some of these subdivisions or portions of them are already serviced by Whitworth Water District No. 2. However, the Meadow View and Kellogg Wells, which presently serve System 9, could become contaminated by the advancing plume.

- Exposure from ingestion of crops grown in contaminated waters does not pose a significant health risk due to the volatile nature of the contaminants and the location of the contaminated aquifers below the root zone of local vegetation. Similarly, a human health risk is not expected from the ingestion of beef or dairy products.

- Some contaminant concentrations exceed the dermal MAC values for MC and DCE both as a carcinogen and noncarcinogen; therefore, bathing in contaminated water could pose a risk to human health.

- Although exceedances of the MAC values for MC could occur in the Little Spokane River, the river is not used as a potable supply. Therefore, human health risks are negligible, as only incidental ingestion is expected. Since no exceedances of the dermal MAC values occur for any of the indicators, swimming in the Little Spokane River does not appear to pose a risk to human health.

- The inhalation exposure to volatile organics was calculated using two different models for showering and normal domestic water use, both of which indicated that volatilization of organics does not present a public health risk.

## III. ENFORCEMENT

The remedial action is anticipated to be accomplished voluntarily by the Responsible Parties who have been identified to date. These include Spokane County, Key Tronic Corporation, and Fairchild Air Force Base. Other responsible parties may be identified in the future. There have never been any enforcement actions taken by the regulatory agencies (EPA or the Washington Department of Ecology) regarding the Colbert Landfill Site. If the Responsible Parties decline to implement the selected remedy as described in this Record of Decision, however, EPA will seek appropriate enforcement action.

## IV. COMMUNITY RELATIONS HISTORY

Community interest in groundwater contamination at Colbert Landfill has been high since 1980, when local residents complained to Ecology and the Spokane County Utilities Department that hazardous materials were being disposed of at the landfill. At that time, Spokane County hired a consultant to study the extent of the contamination. The County also developed a community relations plan and began a public information program to explain the study to local residents. The County distributed fact sheets and press releases about the situation, notified well owners of their test results, and established an information repository at the Colbert Water District building.

The Utilities Department also held seven public meetings between May 1981 and November 1983, explaining each phase of the study and the test results. Representatives of several agencies, including the Spokane County Health Department and the Tax Assessor's Office, were available to respond to questions. Citizens expressed numerous significant concerns at these meetings. The primary concern was whether or not the well water was safe to use for drinking or for other purposes, and what the potential health impacts could be from drinking the water. Residents were also concerned about how the contamination would affect their property values.

There were three official actions in response to these concerns. In March 1983, Spokane County and Key Tronic Corporation began supplying bottled water to homes whose wells had over 1,000 μg/l of 1,1,1-trichloroethane (TCA). Shortly afterward, the Spokane County Tax Assessor reduced the assessed valuation of homes with wells at this contamination level and of the other homes within 3/4 mile of the landfill.

In response to continued public requests for safe drinking water supplies, the County and Key Tronic constructed an extension to the Whitworth Water District to serve the contaminated area. This Initial Remedial Measure was completed in early 1985. Homes having wells with contamination levels over 200 μg/l TCA were connected to the system.

In the fall of 1985, local residents, not satisfied with County responses to their requests, formed the Colbert Landfill Contaminate Area Committee. The group's purpose was to collect information and make it available to interested people. In December 1985 this group presented seven recommendations to the Spokane County Commissioners. The major requests were: free water hookup for all homes in the contaminated area, with no water payments for twenty years; revaluation of property in the area; and continued well monitoring for twenty years. The County's response continued the policy of hooking up only those homes with specified contamination levels. The citizens saw this as too restrictive, which increased their frustration.

Ecology met frequently with concerned citizens and County and Key Tronic representatives between 1985 and 1987. Ecology held a public meeting in 1986 to explain the Remedial Investigation/Feasibility Study process and the results of the RI and held another meeting in May 1987 when the FS report was released for public comment. The main purpose of this meeting was to explain the cleanup alternatives and the options for treating the contaminated water. Over 200 people, primarily local residents, attended. Twenty-nine people returned the detailed comment forms and six sent letters commenting on the alternatives. Response strongly favored the recommended extraction-treatment-surface water discharge alternative and the air stripping treatment option.

The major citizen concerns regarding the FS recommendations were the shortness of the comment period (which was then extended), the concentration on the County and Key Tronic without searching for other responsible parties, potential air pollution from air stripping, and reduced ground water levels caused by the extraction system. These comments are discussed in detail in the Responsiveness Summary.

## V. ALTERNATIVES EVALUATION

### ALTERNATIVES

The remedial alternatives which were developed and evaluated in the Feasibility Study included:

1) No action;
2) Alternate water supply;
3) Point of entry treatment;
4 - 12) Groundwater extraction, treatment, and discharge (using various technologies for each) plus an expanded water system.

Each of these alternatives was considered separately in three geographic portions of the site:

- The Southern area, where the plume in the upper aquifer is advancing;
- The Western area, where the plume in the lower aquifer is the major concern;
- The Eastern area, where the plumes appear to originate, probably from accumulations of concentrated solvent fluids.

Each of the alternatives is designated by a letter indicating its area (S-, W-, or E-) followed by a number, denoting the technology.

About 90 different technologies were screened and evaluated during the feasibility study. As the result of this detailed analysis, 12 remedial alternatives in the southern area, 7 in the western area and 7 in the eastern area were carried through for detailed evaluation using EPA's 1985 RI/FS guidance factors (EPA 1985).

PERFORMANCE CRITERIA

One remedial alternative will be selected for each of the areas of concern. This Record will not, however, specify a particular technology in order to allow the responsible parties a sufficient degree of latitude in selecting the technology required to achieve the desired performance. This performance is defined as treating the wastewater effluent to or below the Maximum Contaminant Levels (MCLs, 40 CFR 141.61) or a similar health-based level (the $10^{-6}$ risk level for carcinogens) for contaminants for which MCLs have not been determined. Numeric standards are presented in Table 6 for discharge levels and for termination of the remedial action. Treated water effluents also will be monitored to assure that they meet the appropriate performance standards. Treated water discharge shall at all times be consistent with U.S. and Washington State laws including but not limited to RCW 90.48 (Water Pollution Control) and WAC 173-218 (Underground Injection Control Program). WAC 173-218 states in part that any permit issued in accordance with the provisions of the chapter are designed: "(a) to satisfy the intent and requirements of Part C of the Federal Safe Drinking Water Act (SDWA) 42 U.S.C. Section 300k et seq. as authorized by RCW 43.21A.445 and of the Water Pollution Control Act, chapter 90.48 RCW; and (b) to preserve and protect groundwaters, including underground sources for drinking water, for existing and future beneficial uses (173-218-010 (a)(b))."

WAC 173-218-020 enunciates Washington State policy regarding the carrying out of chapter purposes. Further, WAC 173-218 prohibits certain classes of new wells.

Treatment systems which may result in air emissions will be designed and monitored to meet appropriate state Air Toxics Guidelines and to use Best Available Control Technology (BACT).

TABLE 6

PERFORMANCE STANDARDS

MAXIMUM ALLOWABLE CONTAMINANT CONCENTRATIONS

(HEALTH PROTECTION LEVELS)[1/]

| Contaminant | Maximum Concentration (µg/l) |
|---|---|
| 1,1,1-Trichloroethane (TCA) | 200 |
| 1,1-Dichloroethylene (DCE) | 7 |
| 1,1-Dichloroethane (DCA) | 4,050 |
| Trichloroethylene (TCE) | 5 |
| Tetrachloroethylene (PCE) | 0.7 |
| Methylene Chloride (MC) | 2.5 |

1/ Health protection levels are not to be exceeded, during operational life of remedial action, in effluents from groundwater treatment systems. In addition, permanent attainment of these levels in the groundwater throughout the site will indicate completion of the remedial action.

## EVALUATION METHODOLOGY

The detailed evalution in the Feasibility Study discusses the cost-effectiveness of an alternative in terms of technical, environmental and public health, and institutional concerns. According to NCP Section 300.68(h), the detailed analysis of each alternative should include:

- Refinement and specification of alternatives in detail, with emphasis on use of established technology;
- Evaluation in terms of engineering implementation, reliability, and constructibility;
- An assessment of the extent to which the alternative is expected to effectively prevent, mitigate, or minimize threats to, and provide adequate protection of public health and welfare and the environment;
- An analysis of adverse environmental impacts, methods for mitigating these impacts, and costs of mitigation; and
- Detailed cost estimation, including operation and maintenance costs, and distribution of costs over time.

The detailed aspects of evaluating these alternatives are presented by five major criteria:

- Technical Feasibility,
- Institutional Requirements,
- Public Health Impacts,
- Environmental Impacts, and
- Cost Analysis.

This presentation facilitates the comparison of similar components among the alternatives for the same criteria.

The technical evalution addresses the feasibility of the technologies and associated components which make up each alternative. The evaluation of institutional requirements analyzes compliance with current EPA policy on the use of applicable and relevant standards and other criteria, guidance, and advisories at Superfund remedial sites, as well as coordination with other agencies and community concerns. Each alternative is evaluated as to how well it can limit the concentrations of hazardous substances in the environment to avoid unacceptable threats to public health as established by the Risk Assessment. The environmental impacts of each alternative are evaluated by comparing beneficial and adverse effects. The cost for each alternative includes the capital costs for implementation and the operation and maintenance costs spanning the thirty year study period.

The results of the detailed evaluation for each alternative are expressed in a rating system utilizing the terms high, moderate, and low.

A high rating indicates that the alternative promotes the intent of the criteria and/or meets or exceeds the remedial objectives. A moderate rating indicates that the alternative only partially promotes the intent of the criteria, however, the alternative does remediate the problem to an acceptable extent even though it does not meet all the remedial objectives. A low rating indicates that the alternative does not promote the criterion and/or does not meet the remedial objectives.

RESULTS

The detailed evaluation according to 1985 RI/FS Guidance Factors (EPA 1985) is presented on Table 7, and an evaluation of these remedial alternatives according to the Section 121(b)(1)(A-G) factors is shown on Table 8. The rating system for Table 8 is similar to that for Table 7, using ratings of high, moderate, and low to indicate a degree of compliance with each factor.

TABLE 7

SUMMARY OF DETAILED EVALUATION

1985 RI/FS GUIDANCE FACTORS

| dial Alternatives | Technical Feasibility Rating | Institutional Requirements Rating | Public Health Requirements Rating | Environmental Impacts Rating | Cost Analysis ($ Million) | |
|---|---|---|---|---|---|---|
| HERN AREA 1/ | | | | | Capital Cost | Present Worth |
| No action | High | Low | Low | Moderate | .330 | 0.592 |
| Alternate Water Supply/Water Use Restrictions | High | Moderate | Moderate | Moderate | 17.09 | 18.08 |
| Point of Entry Treatment | High | Low | Low | Low | 2.77 | 17.90 |
| Deep Well Extraction/Carbon Adsorption/Creek Outfall | High | High | Moderate | High | 2.4 | 4.10 |
| Deep Well Extraction/Air Stripping/Creek Outfall | Moderate | High | Moderate | High | 2.23 | 2.88 |
| Deep Well Extraction/Ozone/UV/Creek Outfall | High | High | Moderate | High | 2.66 | 3.69 |
| Deep Well Extraction/Hydrogen Peroxide/UV/Creek Outfall | High | High | Moderate | High | 2.92 | 7.02 |
| : Deep Well Extraction/Carbon Adsorption/Drainfield | High | High | Moderate | High | 2.43 | 4.42 |
| : Deep Well Extraction/Air Stripping/Drainfield | Moderate | High | Moderate | High | 2.28 | 3.00 |
| : Deep Well Extraction/Ozone/UV/Drainfield | High | High | Moderate | High | 2.86 | 4.23 |
| Deep Well Extraction/Hydrogen Peroxide/UV/Drainfield | High | High | Moderate | High | 3.15 | 5.31 |
| 0: Deep Well Extraction/Carbon Adsorption/Recharge Wells | High | Moderate | Moderate | High | 2.62 | 4.68 |
| 1: Deep Well Extraction/Air Stripping/Recharge Wells | Moderate | Moderate | Moderate | High | 2.47 | 3.26 |
| 2: Deep Well Extraction/Ozone/UV/Recharge Wells | High | Moderate | Moderate | High | 3.05 | 4.49 |
| Deep Well Extraction/Hydrogen Peroxide/UV/Recharge Wells | High | Moderate | Moderate | High | 3.34 | 9.57 |
| TERN AREA: | | | | | | |
| : No Action | High | Low | Low | Moderate | 0 | 0.124 |
| : Alternate Water Supply/Water Use Restrictions | High | Moderate | Moderate | Moderate | 2.81 | 2.99 |
| : Point of Entry Treatment | High | Low | Low | Low | 52.70 | 571.0 |
| : Deep Well Extraction/Carbon Adsorption/River Outfall | High | High | Moderate | High | 1.53 | 41.58 |

TABLE 7 (Continued)

SUMMARY OF DETAILED EVALUATION

1985 RI/FS GUIDANCE FACTORS

| ial Alternatives | Technical Feasibility Rating | Institutional Requirements Rating | Public Health Requirements Rating | Environmental Impacts Rating | Cost Analysis ($ Million) | |
|---|---|---|---|---|---|---|
| | | | | | Capital Cost | Present Worth |
| ERN AREA (Continued): | | | | | | |
| Deep Well Extraction/Air Stripping/River Outfall | Moderate | High | Moderate | High | 1.02 | 2.15 |
| Deep Well Extraction/Air Stripping & Carbon Adsorption/ River Outfall | Moderate | High | Moderate | High | 1.81 | 22.84 |
| Deep Well Extraction/Ozone/UV/River Outfall | Moderate | High | Moderate | High | 2.34 | 6.26 |
| Deep Well Extraction/Hydrogen Peroxide/UV/River Outfall | Moderate | High | Moderate | High | 2.26 | 15.37 |
| ERN AREA | | | | | | |
| No Action | High | Low | Moderate | Moderate | 1.32 | 1.50 |
| Alternate Water Supply/Water Use Restrictions | High | Moderate | High | High | 2.54 | 2.89 |
| Point of Entry Treatment | High | Low | Low | Low | 2.32 | 3.06 |
| Deep Well Extraction/Carbon Adsorption/River Outfall | High | High | High | High | 3.73 | 22.7 |
| Deep Well Extraction/Air Stripping/River Outfall | Moderate | High | High | Moderate | 3.39 | 4.34 |
| Deep Well Extraction/Air Stripping & Carbon Adsorption/ River Outfall | Moderate | High | High | Moderate | 3.92 | 14.13 |
| Deep Well Extraction/Ozone/UV/River Outfall | Moderate | High | High | High | 4.20 | 6.52 |
| Deep Well Extraction/Hydrogen Peroxide/UV/River Outfall | Moderate | High | High | High | 4.33 | 13.58 |

Costs for Southern Area Extraction/Treatment/Discharge Alternatives (S-4 through S-12) include improvements to Whitworth Water District No. 2 water supply system.

TABLE 8

EVALUATION OF CERCLA SECTION 121(b)(1)(A-G) FACTORS 1/

| :dial Alternatives | A<br>Land Disposal Uncertainties | B<br>Solid Waste Disposal Act Objectives | C<br>Persistence, Toxicity, Mobility of Hazardous Substances | D<br>Adverse Health Effects | F 2/<br>Future Costs if Failure | G<br>Threats due to Excavation, Transportation, Containment |
|---|---|---|---|---|---|---|
| THERN AREA | | | | | | |
| : No action | N/A | Low | Low | Low | N/A | Low |
| : Alternate Water Supply/Water Use Restrictions | N/A | Low | Low | Moderate | Low | Low |
| : Point of Entry Treatment | N/A | Low | Low | Moderate | Low | Low |
| : Deep Well Extraction/Carbon Adsorption/Creek Outfall | N/A | High | High | High | High | High |
| : Deep Well Extraction/Air Stripping/Creek Outfall | N/A | Moderate | Moderate | Moderate | High | Hign |
| : Deep Well Extraction/Ozone/UV/Creek Outfall | N/A | High | High | High | High | High |
| Deep Well Extraction/Hydrogen Peroxide/UV/Creek Outfall | | High | High | High | High | High |
| : Deep Well Extraction/Carbon Adsorption/Drainfield | N/A | High | High | High | Moderate | High |
| : Deep Well Extraction/Air Stripping/Drainfield | N/A | Moderate | Moderate | Moderate | Moderate | High |
| : Deep Well Extraction/Ozone/UV/Drainfield | N/A | High | High | High | Moderate | High |
| Deep Well Extraction/Hydrogen Peroxide/UV/Drainfield | | High | High | High | Moderate | High |
| 0: Deep Well Extraction/Carbon Adsorption/Recharge Wells | N/A | High | High | High | Moderate | High |
| 1: Deep Well Extraction/Air Stripping/Recharge Wells | N/A | Moderate | Moderate | Moderate | Moderate | High |
| 12: Deep Well Extraction/Ozone/UV/Recharge Wells | N/A | High | High | High | Moderate | High |
| Deep Well Extraction/Hydrogen Peroxide/UV/Recharge Wells | | High | High | High | Moderate | High |
| STERN AREA: | | | | | | |
| 1: No Action | N/A | Low | Low | Low | N/A | Low |
| 2: Alternate Water Supply/Water Use Restrictions | N/A | Low | Low | Moderate | Low | Low |

TABLE 8 (Continued)

EVALUATION OF CERCLA SECTION 121(b)(1)(A-G) FACTORS

| dial Alternatives | A | B | C | D | F[2/] | G |
|---|---|---|---|---|---|---|
| ERN AREA (Cont.) | | | | | | |
| Point of Entry Treatment | N/A | Low | Low | Moderate | Low | Low |
| Deep Well Extraction/Carbon Adsorption/River Outfall | N/A | High | High | High | High | High |
| Deep Well Extraction/Air Stripping/River Outfall | N/A | Moderate | Moderate | Moderate | High | High |
| Deep Well Extraction/Air Stripping a Carbon Adsorption/ River Outfall | N/A | High | High | High | High | High |
| Deep Well Extraction/Ozone/UV/River Outfall | N/A | High | High | High | High | High |
| Deep Well Extraction/Hydrogen Peroxide/UV/River Outfall | | High | High | High | High | High |
| ERN AREA | | | | | | |
| No Action | N/A | Low | Low | Low | N/A | Low |
| Alternate Water Supply/Water Use Restrictions | N/A | Low | Low | Moderate | Low | Low |
| Point of Entry Treatment | N/A | Low | Low | Moderate | Low | Low |
| Deep Well Extraction/Carbon Adsorption/River Outfall | N/A | High | High | High | High | High |
| Deep Well Extraction/Air Stripping/River Outfall | N/A | Moderate | Moderate | Moderate | High | High |
| Deep Well Extraction/Air Stripping a Carbon Adsorption/ River Outfall | N/A | High | High | High | High | High |
| Deep Well Extraction/Ozone/UV/River Outfall | N/A | High | High | High | High | High |
| Deep Well Extraction/Hydrogen Peroxide/UV/River Outfall | | High | High | High | High | High |

IOTES:
- A = The long-term uncertainties associated with land disposal
- B = the goals, objectives, and requirements of the Solid Waste Disposal Act
- C = the persistence, toxicity, mobility, and propensity to bioaccumulate of such hazardous substances and their constituents
- D = short- and long-term potential for adverse health effects from human exposure
- E = cost of remediation (see Table 7)
- F = the potential for future remedial action costs if the alternative remedial action in question were to fail
- G = the potential threat to human health and the environment associated with excavation, transportation, and redisposal, or containment

For factor E (cost of remediation) see Table 7

As shown on these tables, all of the deep well extraction, treatment, and disposal alternatives were evaluated either moderate or high with respect to all of the 1985 RI/FS Guidance Factors and the A-G Factors. Any of these technologies is acceptable, as long as the performance standards in Table 6 are met.

Alternatives that did not employ deep well extraction were rated low with respect to one or more evaluation criteria. As a result, none of these is considered acceptable.

## VI. SELECTED REMEDY

DESCRIPTION

There are contamination problems in the southern, western, and eastern areas of the site. This interim final remedial action addresses management of the migration of contaminants using a groundwater interception system in the south and west areas, and attempts source control in the east area through extraction of groundwater with the highest contaminant concentrations. All extracted water will be treated to specified Performance Standards, monitored to assure compliance, and will be properly discharged. The water supply system in the area will be improved to assure sufficient supplies for all residents who require it.

The remedy is designed to:

- prevent further spread of contaminated groundwater (in the south and west) in two aquifers by installing and operating interception wells and treating the extracted groundwater,

- remove contaminated materials (in the east) which have entered the aquifers and are contributing to the contaminant plume, by installing and operating extraction wells in the area where the plumes originate and treating the effluent, and

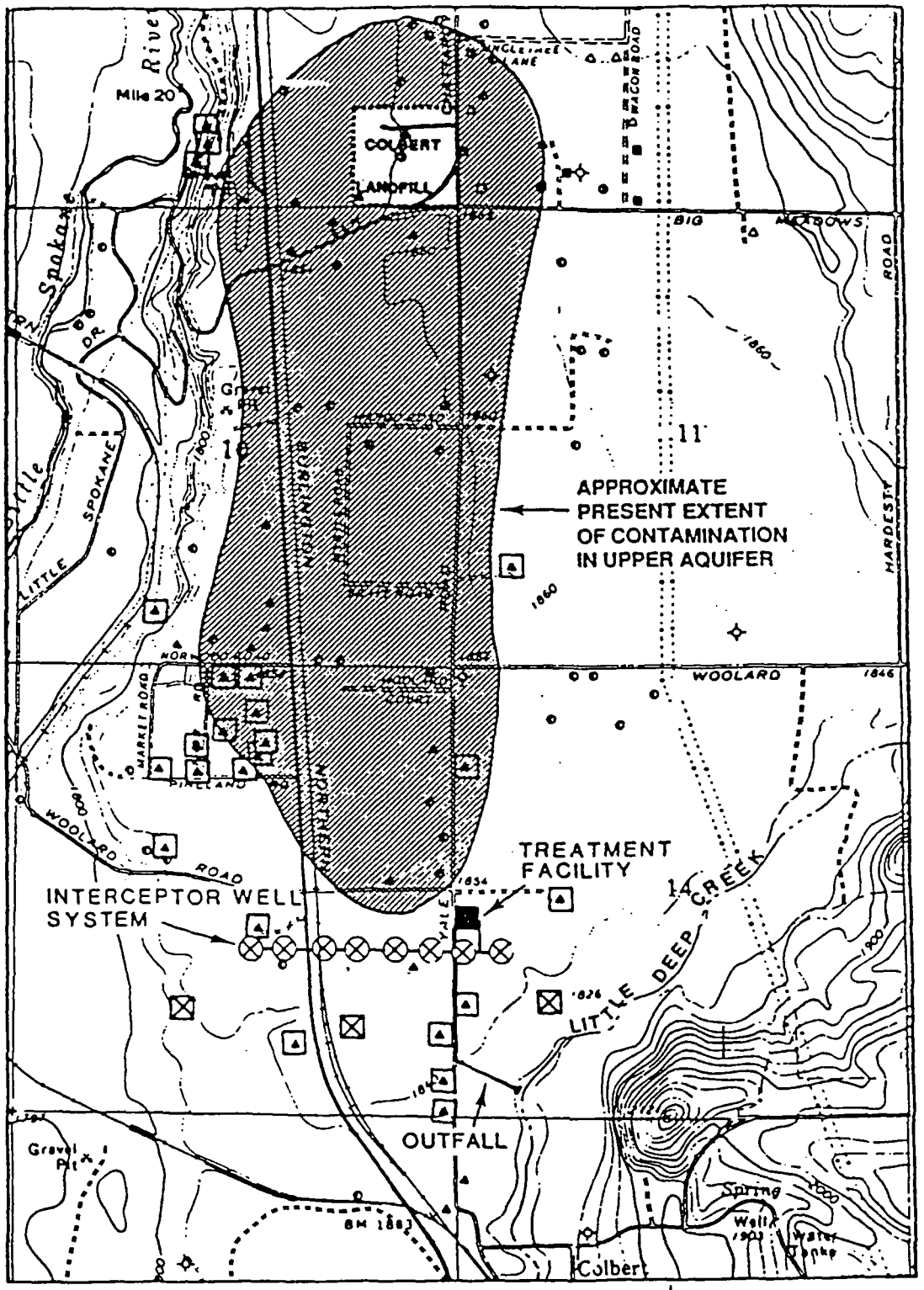
- provide an alternate water supply system to any residents who are deprived of their domestic supply by demonstrated contamination from the landfill or due to the action of the extraction systems.

For interception of the contaminant plume in the upper aquifer (southern area), a line of wells will be required downgradient of the plume at the time of implementation. Placement of the wells and extraction rates will be sufficient to prevent any significant amount

of the contamination from proceeding beyond this line of wells. One possible configuration, based on the location of the plume as determined at the time of the Remedial Investigation (December 1985) and developed for the evaluated alternatives S-4, S-5, and S-6 of the Feasibility Study, is shown in Figure 10. In this arrangement, about eight wells, each approximately 100 feet deep, would be used, with each pumping 20 to 30 gallons per minute (gpm). To confirm successful interception as well as limiting spreading of the plume, several other wells will be sampled and analyzed, including in this scenario 24 private wells and three new monitoring wells.

In the western area, a configuration similar to that analyzed in the Feasibility Study for alternatives W-4, W-5, W-6, and W-7 will be necessary to prevent future westward migration of this contamination as shown in Figure 11. In this suggested arrangement ten extraction wells may be necessary, each pumping approximately 130 gpm. Monitoring would involve 33 private wells and four new monitoring wells. Note that these extraction/monitoring well field concepts are not required for the selected alternative but are rather merely illustrative suggestions; such details will instead be chosen in the design phase of the remedial action, with EPA and state review to assure conformance with the objectives of the selected remedial alternative.

Treatment for both areas will be sufficient to reduce contaminant levels in the aquifers and in the wastewater effluent to or below the Maximum Contaminant Levels (MCLs, 40 CFR 141.61) or similar health-based criteria (a $10^{-6}$ risk level for carcinogenic constituents). Numeric performance standards have been presented in Table 6. Treatment should be permanent, and should effectively reduce the toxicity, mobility, and volume of the contaminants. Possible methods of treatment which were analyzed in the Feasibility Study include carbon absorption, air stripping, and chemical oxidation using ultraviolet (UV) light and either ozone or hydrogen peroxide. Any treatment system which may result in contaminant air emissions will be designed to meet appropriate state Air Toxics Guidelines and will

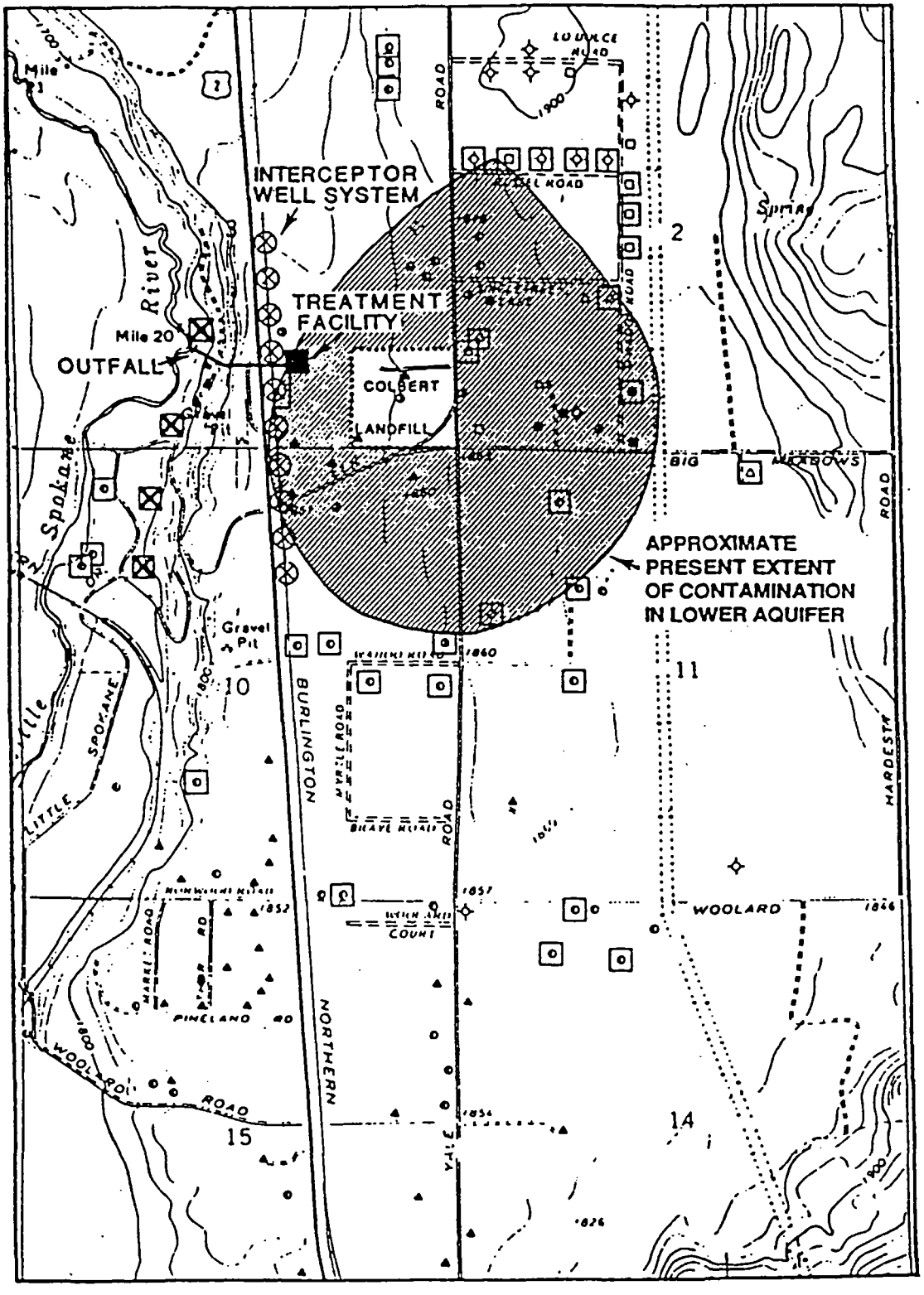



INTERCEPTOR WELL
NEW MONITOR WELL
UPPER SAND AQUIFER WELL
PERIODICALLY SAMPLED WELLS

**POSSIBLE REMEDIAL IMPLEMENTATION FOR SOUTHERN AREA (CONCEPTUAL DESIGN)**

SOURCE: COLBER AND ENVIROSPHERE 1987

FIGURE 10




0 1000 2000 3000 4000 Feet

- UNKNOWN
- UPPER SAND
- LOWER SAND
- MULTIPLE COMPLETION
- WEATHERD BASALT/LATAH
- LATAH
- GRANITE
- INTERCEPTOR WELL
- NEW MONITOR WELL
- PERIODICALLY SAMPLED WELLS

**POSSIBLE REMEDIAL IMPLEMENTATION FOR WESTERN AREA (CONCEPTUAL DESIGN)**

SOURCE: COLDER AND ENVIROSPHERE 1987

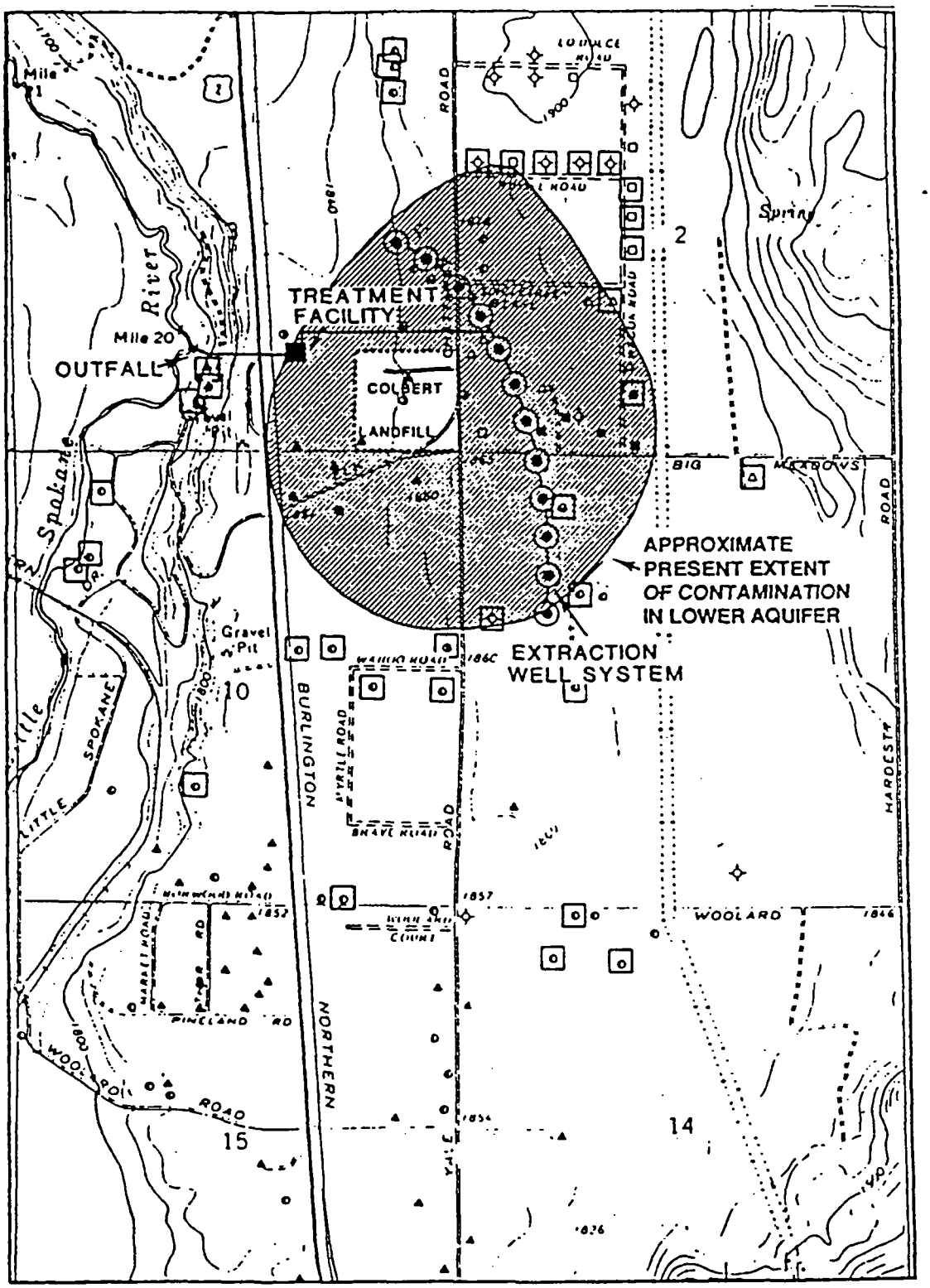
FIGURE 11

incorporate Best Available Control Technology (BACT). Periodic sampling of the effluent water stream will be required to assure adherence to the performance standards, and monitoring of air emissions will verify compliance in that regard.

Discharge of the treated water may be accomplished in any of a number of ways. The treatment alternatives recommended in the Feasibility Study included discharge of clean water to surface water streams, namely Little Deep Creek in the south and the Little Spokane River in the west. Because the treated water is a valuable resource, other options should be considered such as recharge of the aquifers via drainfield which may enhance interception through gradient reversal in the southern area. Release to the public is possible for some other beneficial use, such as irrigation, which would not threaten public health if the treatment system temporarily did not achieve performance standards.

In the plume origin (east) area, extraction will be carried out for the purposes of source control rather than management of migration. A possible configuration of the extraction and monitoring wells is presented in Figure 12 as it was evaluated for Alternatives E-4, E-5, E-6, and E-7 in the Feasibility Study. In this arrangement twelve wells, approximately 180 feet deep and pumping 40 to 50 gpm each, would be used for extraction of the most highly contaminated groundwater in order to reduce the strength of the sources as quickly as possible. In addition, this suggested design shows 32 private wells which would be monitored, most of them already included in the monitoring configuration shown in Figure 11. No new monitoring wells are proposed for the plume origin area in this scenario. Treatment and discharge in this area will be similar and meet the same criteria as described above for the interception systems.

Extraction in the plume origin area will continue until the wells being monitored in that area show that the constituents have been permanently reduced below the health-based performance standard maximum levels. It




0 1000 2000 3000 4000 Feet

- UNKNOWN
- UPPER SAND
- LOWER SAND
- MULTIPLE COMPLETION
- WEATHERD BASALT/LATAH
- LATAH
- GRANITE

- EAST EXTRACTOR WELLS
- PERIODICALLY SAMPLED WELLS

POSSIBLE REMEDIAL IMPLEMENTATION FOR EASTERN AREA (CONCEPTUAL DESIGN)

FIGURE 12

is anticipated that this may require decades of pumpage and treatment before the performance standards are reliably attained throughout the area of contamination. The treatment in the other areas, where further migration of the contaminant plume is being controlled, will also be based on the permanent reduction of contamination levels below the same health-based performance standards. This will probably require a longer period to account for the time of transport from the source areas to the downgradient extent of contamination where the extraction systems are located. In any case, the EPA will reevaluate the implemented system every five years to assure that it is working properly and to propose any modifications that could facilitate the remediation.

Those residents who are deprived of water, either because their well water quality shows demonstrated contamination from the landfill or due to the action of the extraction systems, will be connected to the alternate water supply system. Adequate and appropriate monitoring will be performed to demonstrate water quality is maintained. The present community water system serving the area, the Colbert Extension of the Whitworth Water District No. 2, may be upgraded to assure adequate supplies to all residents who may require alternate water. Enhancements will be designed to meet state public water system standards. Institutional controls will be developed consistent with the final design to assure the effectiveness of the remedial action.

Colbert Landfill will be closed in accordance with the State Minimum Functional Standards (WAC 173-304) for landfill closure, including capping, regrading, groundwater and gas monitoring, and post-closure maintenance. The state landfill closure regulations are consistent with EPA Guidelines for the land disposal of solid waste. The closure of the landfill under the State Minimum Functional Standards will need to be evaluated to ensure consistency with RCRA Hazardous Waste Regulations and will be addressed in the final ROD for this site.

STATUTORY DETERMINATIONS

The selected alternative meets all statutory requirements, particularly those of CERCLA, as amended by SARA. The highest priority in this regard is that the selected remedy (extraction, treatment, and discharge) is protective of human health and the environment; this can be demonstrated according to each of the potential threats. The containment of the contaminant migration to the south and west will be designed to reduce the mobility of the contaminants and prevent additional wells from becoming significantly contaminated, exposing residents in those areas to the contaminants through their drinking water. The containment will also prevent significant contamination from reaching surface water, mainly the Little Spokane River, thereby exposing recreational users of the river as well as fish and other aquatic life. Treating the extracted water will be designed to reduce the toxicity and volume of the contaminants and prevent them from returning to the environment.

The selected remedy will also meet all substantive laws and regulations of other Applicable or Relevant and Appropriate Requirements (ARARs). These are listed and their application is briefly described in Appendix B. The laws and regulations of concern include:

- Resource Conservation and Recovery Act (RCRA, 42 USC 6901); RCRA regulations (40 CFR 261 to 280); Washington State Dangerous Waste Regulations (WAC 173-303); Minimum Functional Standards for Solid Waste Handling (WAC 173-304).

  The selected remedy prevents further spread of groundwater contamination and constitutes a Corrective Action Program as specified in 40 CFR 264.100 and WAC 173-303-645(11). Closure of Colbert Landfill to State Minimum Functional Standards will be evaluated to ensure consistency with RCRA landfill closure standards.

- Safe Drinking Water Act (SDWA, 42 USC 300); Primary Drinking Water Standards (40 CFR 141).

  The selected remedy prevents exposing the public to drinking water which exceeds the Maximum Concentration Levels.

- Clean Water Act (CWA, 33 USC 1251); National Pollution Discharge Elimination System (NPDES, 40 CFR 122); NPDES Permit Program (WAC 173-220).

  The selected remedy treats the extracted water before discharge to surface water. Other, mainly procedural, aspects of the NPDES Permit system will be met during the design phase, although no permit is actually required.

- Rules and Regulations of the State Board of Health Regarding Public Water Systems (WAC 248-54).

  Enhancements to the alternate water supply system, in order to supply all residents who may require these supplies, will be in conformance with these regulations.

EPA review of the remedial design will assure that these, and all other requirements, will be met by the design which is ultimately implemented.

Finally, the selected remedy meets the requirements of cost-effectiveness and use of permanent solutions to the maximum extent practicable. The cost-effectiveness can be demonstrated by the fact that extraction treatment and discharge technologies are available that will meet the performance standards and have a lower cost than merely providing alternate water supply (See Table 6). The total (present worth) cost for the alternate water supply (Alternatives S-2, W-2, and E-2) is estimated to be almost $24 million; the cost of ozone/UV oxidation for all three areas (Alternatives S-6a, W-7a, E-7a) is

estimated to be approximately $16.5 million, not taking into account any cost savings associated with the treatment of two or more areas at a single facility (estimated to be $1.6 million, see Section 6.2.1 of the Feasibility Study). It is possible that an air stripping treatment system, combined with vapor-phase carbon absorption, would be even more cost effective, as it should meet the performance standards at a present worth cost of approximately $12.8 million (see Section 6.2.4 of the Feasibility Study).

The selected remedy meets the SARA preference to permanent solutions to the maximum extent practicable. Resource recovery is, however, not practicable as there is no market for the off-specification solvent mixture which could be recovered from the groundwater. Nevertheless, treatment technologies are used as a principal element of the remedy and they will effectively reduce the toxicity, mobility, and volume of the contaminants permanently.

## VII. REFERENCES


$CH_2M$ Hill. 1983. Remedial Action Master Plan, Colbert Landfill, Colbert, Washington. A report prepared for the U.S. Environmental Protection Agency, Remedial Planning/Field Investigation Team, Zone II (Contract No. 68-01-6692). Washington, D.C. 124 pp.

Cook, T.D. 1985. Applications and Limitations of Earth Resistivity as a Technique for Monitoring Leachate Near the Colbert Landfill, Spokane County, Washington [unpublished masters thesis (Civil Engineering)]. Washington State University, Pullman, Washington.

Ecology (Washington State Department of Ecology). 1984a. Focused Feasibility Study for Initial Remedial Measure at Colbert Landfill. Prepared by C.R. Thompson, Hazardous Waste Remedial Action Section, Remedial Action Division, Olympia, Washington. 26 pp.

Ecology. 1984b. Community Relations Plan for Initial Remedial Measure at Colbert Landfill. Prepared by C.R. Thompson, Hazardous Waste Remedial Action Section, Remedial Action Division, Olympia, Washington. 10 pp.

EPA (U.S. Environmental Protection Agency). 1986. Guidelines for Ground Water Classification Under the EPA Ground Water Protection Strategy. Final Draft. Office of Ground Water Protection. Washington, D.C. December 1986.

EPA. 1985. Guidance on Feasibility Studies Under CERCLA. EPA Hazardous Waste Engineering Research Laboratory, Office of Research and Development. Cincinnati, Ohio. EPA 540/6-85/003. June 1985.

Maddox (George Maddox and Associates, Incorporated). 1981. A Preliminary Report on the Geohydrology of the Colbert Landfill, Spokane County, Washington-Phase I. Prepared for Spokane County Utilities Department, Spokane, Washington. 19 pp.

Maddox. 1982. Geohydrologic Investigations of Colbert Landfill, Phase II. Prepared for Spokane County Utilities Department, Spokane, Washington. 65 pp.

Marrin, D.L. 1986. Shallow Soil Gas Investigation in the Vicinity of the Colbert Landfill, Spokane County, Washington (Draft). Prepared for U.S. EPA Environmental Monitoring Systems Laboratory, Las Vegas, Nevada. December 1986.

Golder (Golder Associates, Inc.). 1984. Data Review and Recommendations for Remedial Investigations at the Colbert Landfill. Prepared for State of Washington, Department of Ecology, Olympia, Washington. 59 pp.

Golder. 1987. Remedial Investigation Report for the Colbert Landfill, Spokane, Washington. Prepared for State of Washington Department of Ecology, Volumes I and II. May 1987.

Golder and Envirosphere. 1987. Feasibility Study Report for the Colbert Landfill, Spokane, Washington. Prepared for State of Washington, Department of Ecology, Olympia, Washington. Volumes I and II. May 1987.

Griggs, A.B. 1973. Geologic Map of the Spokane Quandrangle, Washington, Idaho, and Montana (1:250,000). U.S. Geological Survey Miscellaneous Geologic Investigations, Map I-768.

NOAA (National Oceanic and Atmospheric Administration). 1985. Summary of Day-First Order TD3210, Entire Period of Record Through 1985 for Spokane, Washington. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Environmental Satellite Data and Information Service, National Climatic Data Center, Asheville, North Carolina.

PEC (Pacific Environmental Consultants). 1986. Water System Plan Update Systems 8 and 9 (Preliminary Draft). Prepared for Whitworth Water District No. 2. March 1986.

Spokane County and Key Tronic Corporation. 1986. Results of continued Studies at Colbert Landfill, Colbert, Washington, by George Maddox and Associates. Personal Communications with Bruce Austin (Spokane County and Key Tronic, Incorporated), Spokane, Washington.

Williams, J.R. and H.E. Pearson. 1985. Streamflow Statistics and Drainage Basin Characteristics for the Southwestern and Eastern Regions, Washington: Volume II. Eastern Washington. United States Geologic Survey open file report 84-145-B, Tacoma, Washington.

# APPENDIX A

# RESPONSIVENESS SUMMARY

COLBERT LANDFILL, SPOKANE, WASHINGTON
RESPONSIVENESS SUMMARY

This community relations responsiveness summary is divided into the following sections:

Section 1.0 Overview. This section discusses the U.S. Environmental Protection Agency's (EPA) preferred alternative for corrective action, and likely public reaction to this alternative.

Section 2.0 Background on Community Involvement and Concerns. This section provides a brief history of community interest and concerns raised during remedial planning activities at the Colbert Landfill site.

Section 3.0 Summary of Major Comments Received during the Public Comment Period and EPA's Responses to the Comments. Both written and oral comments are categorized by relevant topics. EPA's responses to these major comments are also provided.

Section 4.0 Remaining Concerns. This section describes remaining community concerns that EPA should take into consideration in conducting the remedial design and remedial action at the Colbert Landfill site.

Community relations activities conducted during remedial response activities at the Colbert Landfill site are listed in an attachment to this appendix.

## 1.0 OVERVIEW

The Washington State Department of Ecology (Ecology), as lead agency under a cooperative agreement with the U.S. Environmental Protection Agency (EPA), carried out the Remedial Investigation and Feasibility Study for the Colbert Landfill site north of Spokane. During the 1970s, the landfill had received industrial solvents and disposed of them in a way that allowed the chemicals to penetrate the underlying aquifer. These chemicals began to show up in nearby drinking water wells at levels high enough to cause public health concerns. The cleanup alternative which was recommended by Ecology's consultants, and in turn by Ecology to EPA, was to intercept the advance of the contaminants by extracting the contaminated water, treating it, and discharging the cleaned water. The cleaned water would meet health-based drinking water standards. This alternative is described in more detail in Chapter 4 of the Feasibility Study and in the Record of Decision.

This Responsiveness Summary describes concerns which the community has expressed in regard to the problems at the site, the recommended cleanup alternative, and the study process itself. The most severely impacted individuals, the nearby residents, have long complained that their welfare has not received proper attention from local and state agencies. These residents hope that the cleanup will be as quick and as thorough as possible and not raise additional problems through its implementation. On the other hand, two of the named responsible parties at the site, Spokane County and Key Tronic Corporation, are concerned that there was insufficient time for public review and that the cleanup would be too expensive. They asked Ecology or EPA to search out other potentially responsible parties to share the cleanup costs; EPA is now doing this.

Because of the scarcity of water and the reliance on ground water supplies in this area, clean water is a particularly important concern. Some citizens desire clean drinking water, but do not feel it is necessary to go to the additional time and expense to clean the aquifer.

Other concerns for some people include potential drying up of wells due to pumping, and possible flooding and erosion from river discharge.

## 2.0 BACKGROUND ON COMMUNITY INVOLVEMENT AND CONCERNS

Community interest in the Colbert Landfill contamination problem dates from 1980 when local residents complained to Ecology and the Spokane County Utilities Department that hazardous materials were being disposed of at the landfill. Community concern and involvement have remained strong since that time. Three key individuals, (b) (6) [redacted], have been especially active in coordinating community meetings, increasing community awareness, and voicing area residents' concerns to the Utilities Department, Ecology, and EPA. They have been successful in getting attention from these agencies as well as in attracting media attention to the site. The major citizen concerns expressed about the Colbert Landfill contamination problems and how agencies have addressed these concerns are described below:

1) In October 1980, a resident near the landfill complained to Ecology and the Utilities Department that hazardous materials were being disposed of at the landfill.

   Actions: Ecology investigations revealed that Key Tronic Corporation had disposed of solvents at the landfill and that several private wells were contaminated. Spokane County also began studying the extent of groundwater contamination, hiring George Maddox and Associates, Inc., to study the hydrogeology of the landfill site.

2) In the winter of 1981, citizens called the Utilities Department with questions on the Colbert site. The citizens had questions and concerns about: what the project status was; how the study was being conducted; how residents could get their water tested; where the contamination plume was heading; what the results were to date; what the study actions would show; what the County Commissioners were going to do; how contaminated water would effect health, children, and property values; whether the water was safe to drink;

whether it was carcinogenic; why there were fluctuations in the tests; how will it be tested for parts per billion; and what everyone else was doing?

Actions: Spokane County organized and implemented a community relations plan in conjunction with the Maddox Study. As part of the plan, the County maintained a record of citizens who called and developed a mailing list from the tax assessor's records. The Utilities Department held seven public meetings, beginning in May, 1981, to explain the intent of the Maddox study and to discuss study progress and the results of the water quality sampling program. The Utilities Department sent each homeowner in the well sampling program a copy of their test results and also posted water sampling results at the Colbert Water District Office.

3) Citizens' concerns from public meetings held by the Utilities Department in 1982 and 1983 included whether their water was safe to use, what the health impacts could be, and how the contamination would impact their property values. Citizens thought that a new water supply was needed immediately.

Actions: In February 1983, the Spokane County Health District advised residents with significantly contaminated wells to use bottled water. Spokane County and Key Tronic began supplying bottled water to some homes.

In March 1983, the Spokane County Tax Assessor discussed reassessing the homes affected by the ground water contamination. The county tax assessor established a plan for estimating the reduced value on homes within the 3/4-mile study area established by George Maddox and Associates, Inc.

4) Homeowners became frustrated by the absence of an immediate plan for an alternative water system and met with several water districts interested in serving the Colbert Landfill area.

Actions: In June 1984 Ecology documented the need for an alternative water supply to residents living near Colbert Landfill. The County approved a new water system and began construction in the fall of 1984. The system was completed in the winter of 1985. This new system, funded by Spokane County, Key Tronic, and state referendum money, served as an alternate water supply and as an Initial Remedial Measure for the Colbert Landfill Site.

5) In August 1985, EPA contractors alarmed three area families by telling one family that their well water was probably unsafe to drink. The family was afraid to use their water, contacted an attorney, and appeared on the evening news. They also boarded their 30 thoroughbred horses elsewhere. This incident caused the three area families to question who was in charge and who they should believe.

Actions: Spokane County and Key Tronic felt that the EPA contractor's mistakes had hampered an already fragile community relations effort. They worked with Ecology to encourage the EPA contractors to apologize to the family, to get an expert opinion, to retract their statements, and to admit that their employees had only rendered an opinion. Key Tronic supplied the family unlimited bottled water, and in September 1985 the family was hooked up to the Whitworth Water District.

6) Because of concerns that the public was not getting adequate information about the site, two area residents organized the Colbert Landfill Contaminate Area Committee in the fall of 1985. This committee was to gather information and make it available to everyone. The committee presented seven recommendations to the Spokane County Commissioners in December 1985.

The recommendations were:

a) Free hookup for any household within the proposed area, the known contaminated area, and any future contaminated area regardless of the level of contamination of the household well at the time.

b) Monthly water fees, maintenance, and any other associated fees to be borne by the known source of contamination, including Spokane County and Key Tronic Corporation, for a period of twenty (20) years.

c) Property values in the area to be re-assessed due to the devaluation of property.

d) Existing wells be utilized for outdoor irrigation with the installation of a stationary frost-proof yard hydrant to be installed free of charge to the property owner.

e) Testing of wells in the area should continue at the existing schedule for a period of twenty (20) years at the expense of Spokane County and Key Tronic Corporation or longer if contamination stays at current levels or increases.

f) Contaminant-related health problems may be pursued on a individual basis for an indefinite time, including future generations of the present residents.

g) Any property owner who has previously accepted settlement and/or monies from Spokane County and Key Tronic Corporation were excluded from this proposal.

Actions: The Commissioners drafted a response in January 1986 that included specific conditions under which water would be supplied to the affected residents. Because of the restrictive conditions, citizen frustration increased.

7) EPA and Ecology released the Remedial Investigation/Feasibility Study report in May 1987, and held a public meeting to obtain comments. Citizens and Key Tronic complained that the three-week comment period was too short.

Actions: EPA extended the comment period by three weeks.

8) A newspaper editorial criticized EPA and Ecology for not using their investigatory and enforcement powers more fully, and for the shortness of the comment period. Key Tronic employees purchased a full-page newspaper ad supporting the editorial. They expressed the concern that Key Tronic was being treated unfairly and that other users of Colbert Landfill should share in the cleanup expenses.

Actions: As previously noted in No. 7 above, EPA extended the comment period. Ecology and EPA have notified Fairchild Air Force Base that it is a potentially responsible party. EPA is now searching for additional parties who may share responsibility.

9) During the public comment period, citizens expressed concern about wells drying up and the Little Spokane River flooding due to pumping and treating contaminated water and discharging the cleaned water. They also expressed concerns about emissions from the air stripping towers.

Actions: Ecology held two public meetings on September 9, 1987, to answer these questions.

## 3.0 SUMMARY OF MAJOR COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD AND AGENCY RESPONSES TO THE COMMENTS

Comments from members of the public, primarily Colbert area residents, regarding the feasibility study report are summarized below. Similar comments are grouped under the following headings: general, public participation process, contamination levels, and cleanup alternatives. Each comment is followed by a response from EPA.

The public comment period originally ran from May 15 to June 5, 1987, but was later extended to June 30, 1987, for a total of over six weeks. Ecology held a public meeting in Colbert on May 28, 1987, to explain the study and the alternatives. The consultants' selected alternative (Extraction-Treatment-Discharge-Expanded Water Supply) recommended air stripping for the treatment option and a river outfall for the discharge option. Many comments focused on this alternative and the various treatment and discharge options.

Detailed comment forms were distributed to all meeting attendees. Ecology received 29 completed forms and six letters by the June 30 deadline, primarily from Colbert area residents.

Meeting attendees were asked to rank the four cleanup alternatives on the comment form. The selected alternative (Extraction-Treatment-Discharge-Expanded Water Supply) was preferred by 26 of the 33 who expressed a preference. Six people preferred Alternate Water Supply. One person proposed a fifth alternative consisting of removal and treatment of the landfill waste.

Among the treatment technologies, air stripping received majority support. However, twelve people supported either carbon adsorption or chemical oxidation, primarily because of the potential air pollution from the air stripping process. The recommended option of discharging

the treated water into the river also received strong support. However, ten respondents favored recharge wells or drainfields because of fears of lowering the water table or flooding.

GENERAL

1) Identification of additional potentially responsible parties was a major concern, both at the public meeting and in subsequent written comments. Key Tronic and its employees were especially concerned about the equity of the company apparently being held largely responsible for the contamination and cleanup; they pointed out that the company has not been associated with all of the identified contaminants.

   Agency Response: EPA and Ecology have identified three potentially responsible parties: the landfill owner (Spokane County) and two major disposers of hazardous substances, Key Tronic Corporation and Fairchild Air Force Base. EPA is searching to identify other potentially responsible parties.

2) The cost of cleanup concerned several residents. Some felt that the proposed program may be too costly. One resident felt that the health risks had been overstated and that the funds could be better spent elsewhere in the county. Others felt that no expense should be spared to clean the aquifer. The most common response, however, was that the most cost-effective alternative be selected. This was mentioned frequently in support of the air stripping treatment option, which is less expensive than the other treatment technologies studied. The public was also concerned about the source and reliability of the cost estimates and who would pay the cost of the cleanup.

Agency Response: The cost information is based on data from equipment suppliers and costs of similar projects. Present knowledge does not indicate how long the contaminated ground water at the site will have to be treated, so 30 years was selected as a reasonable length of time for planning. Costs were estimated based on current pricing and technologies, then totalled over the 30-year period. The Superfund law stipulates that responsible parties pay the bill for cleanup whenever possible. Following the formal selection of the cleanup alternative at the Colbert Landfill site, EPA and Ecology will direct the responsible party or parties to undertake the cleanup as specified. If the responsible parties fail to comply with the request, EPA or Ecology will do the cleanup and sue to recover the cost. The responsible parties will also be requested to pay operations and maintenance costs for the cleanup measures.

The actual costs may be from 30 percent less than the estimates to 50 percent more. More accurate cost estimates will be made when the detailed project design is done.

Federal regulations specify that a less-effective cleanup action cannot be chosen simply because it is cheaper. However, if several alternatives are considered to be equally effective, EPA may select the least costly.

3) Property values have been a continuing issue with residents since contamination was first detected. Potential impacts of cleanup measures such as noise, odor, appearance, and air pollution on property values were a concern to several residents. A major corporate owner of undeveloped property expressed concern about the reduced value of the property if water were not available for future development.

Agency Response: Noise and air pollution generated by the remedial system will be within local, state, and federal regulatory standards. Similar facilities in other communities have operated successfully without problems or complaints related to noise and air pollution. The issues of future development and property values will be resolved consistent with implementation of the remedial action.

4) Immediate availability of clean, low-cost water has also been a continuing concern since the beginning of the project. The residents' highest priority is having an assured, convenient supply of clean drinking water. The citizens' committee has requested that clean water be supplied to everyone in the contaminated area. One resident suggested that, without this, property owners should not have to pay taxes because their land is unsaleable. At the same time, another person was concerned that expanding the Whitworth Water District supply lines to accommodate the long-term growth needs of the district would be unfair. Key Tronic and Spokane County also see it as unfair to charge them for these costs which would have been encountered even without the contamination problem.

Agency Response: The selected alternative requires that everyone affected by the contamination or the cleanup process be assured of a safe and adequate drinking water supply. Maintaining and improving the Whitworth Water District System will provide adequate domestic water supplies for present and future population in the area.

The Whitworth Water District water system may be adequate for in-home water use only. The risk assessment, Appendix A of the Feasibility Study, indicated that there should be no adverse health consequences from use of the contaminated ground water for outside purposes such as irrigation. It should be possible to continue to use existing wells for these high-consumption purposes as long as these lines are adequately isolated from the domestic supply systems.

5) The need for continued long-term monitoring of both drinking water and monitoring wells was emphasized.

Agency Response: The recommended cleanup alternative provides continued monitoring of drinking water and monitoring wells. EPA or Ecology will supervise and manage the monitoring to ensure that it is done properly. Two kinds of monitoring would be conducted. The system monitoring program would frequently assess how well the ground water extraction and treatment system is working. The other monitoring program would track the spread of contaminants in the ground water.

PUBLIC PARTICIPATION PROCESS

1) Residents, particularly those who had been most involved in the process, sought assurance that their involvement would continue through the cleanup design process. A large corporate property owner also expressed the desire to be contacted during the design phase. One meeting participant, not a resident of the affected area, questioned the extent of citizen involvement and review up to this point.

Agency Response: EPA and Ecology have appreciated and encouraged the level of public involvement experienced at Colbert Landfill in the process of selecting a cleanup alternative. The agencies will continue to work with the community and local residents to ensure public participation through the design and cleanup phases. Ecology will revise the Community Relations Plan before the design process begins.

2) Residents and one agency representative asked about regulatory controls or permit requirements relating to the treatment and discharge options. Specifically, they wanted to know if air and water discharges would be subject to state or federal law.

Agency Response: Cleanup actions at Colbert Landfill do not require permits because of the Federal Superfund law. However, the actions must comply with the intent and purpose of any regulations that would normally apply. Such applicable regulations would include National Pollution Discharge Elimination System provisions of the Clean Water Act, local air quality standards, and others. Monitoring of air and water discharges will assure compliance with these standards.

CONTAMINATION LEVELS

1) Several questions were asked to clarify the remedial investigation findings. One person asked if the contamination levels in various parts of the aquifers had changed over time in relation to the EPA standards. Another person asked why the report seemed to indicate that 90 percent of the pollutants disposed of in the landfill had not been accounted for in the ground water.

Agency Response: Some wells have shown constant contamination levels. In other wells, the concentrations have been decreasing. In still others, the levels have fluctuated. The wells that are showing fairly constant concentrations appear to be near "pools" of contamination in the aquifers. These pools have remained at high levels for several years. This suggests that these pools are still in place and still releasing contaminants. It is likely that much of the 90 percent referenced above is in these pools and the other 10 percent lost to evaporation at the time of disposal (see the Remedial Investigation Report, Section 5.4.1, pp. 76-77 for more information). In the upper aquifer, contamination appears to be decreasing.

2) A long-time resident of the area asked if capping the landfill in 1980 would have prevented the spread of the contaminants in the ground water.

Agency Response: By 1980 contaminants had already been documented in wells northeast of the landfill, so capping would have been too late and not particularly useful. Colbert Landfill was operated until late 1986; capping a working landfill would be a difficult task, particularly for a landfill as large and as active as this one. Pure solvents travel through the ground easily; they were dumped into the landfill in such large quantities that it is likely that even with capping they would have reached the ground water on their own accord. From the time they reached the ground water, probably well before 1980, the contaminants have continued to migrate away from the landfill area due to the natural flow in the aquifers.

REMEDIAL ALTERNATIVES

Extraction Options

1) There were major concerns about lowering the ground water levels and possibly drying up existing wells through the extraction of large amounts of ground water for treatment. Many wells in the area already have low water levels during the summer. Water is needed for irrigation even if another water supply is available for domestic use. A related concern was that lowering the water table would increase the flow of contaminants, including iron, into the aquifers.

Agency Response: The wells will be designed to intercept the contaminant plume to remove the contaminated water. The water which is extracted is obviously not available for other uses. Clean water is, however, also being carried along around the edges of the plume. Current information on the upper aquifer, which is more likely to be depleted, indicates that the proposed system

would only reduce water levels by about two feet near the extraction wells. Over 100 feet away, the reduction would be insignificant. Thus, the extraction systems should not violate the existing water rights in the area. The impacts on people who use more than their water rights allow is not known at this time. The design of the wells will be refined through additional testing during the design phase to ensure that adverse impacts are minimized.

The extraction system would not cause high iron concentrations and other problems associated with the deep aquifer to spread to more shallow aquifers because water will not be drawn from these deeper zones.

2) One person suggested that the existing monitoring wells be incorporated into the extraction well system.

Agency Response: Most existing monitoring wells are two inches in diameter, too small to extract the necessary amount of water. In addition, the monitoring wells, with their known history of contamination levels, will be needed to observe the changes that occur during the cleanup process.

Treatment Options

1) The public questioned the effectiveness of the alternatives studied, wanting assurance that the recommended technologies had been used successfully elsewhere. They also wanted the process to clean both aquifers effectively, completely, and in a reasonable time period.

The alternative which has been selected by the EPA, ground water extraction and treatment, has been employed successfully at many sites around the country, using a variety of treatment technologies. Treatment similar to that proposed for the site has

been successfully used at other sites in Washington and sites across the country. EPA fully expects that it will be just as effective at the Colbert Landfill site and will eliminate the hazards posed by the ground water contamination. The spread of contamination will be controlled within two to three months following installation of the system. It may require a longer time to deplete the sources totally. The length of time the complete cleanup will take is still uncertain, but 30 years is being assumed for planning purposes.

2) The consultant-recommended treatment option, air stripping, provoked numerous comments. The greatest concern was about potential air pollution caused by the release of the contaminants taken out of the water. Residents and an agency representative questioned whether any health risk assessment had been done and how consultants knew that the contaminants would present no health risk. There was also concern about its effectiveness, especially in removing methylene chloride. Some respondents suggested that treatment options be combined to take advantage of the strong points of each and minimize the weaknesses. One suggested the use of carbon adsorption as well as air stripping to alleviate the air pollution problem.

Agency Response: EPA has chosen not to specify a treatment technology for its selected cleanup alternative, but rather let the PRPs (or EPA or Ecology, if either does the cleanup) have the widest latitude for designing a treatment system which will meet the cleanup needs of the site. Air pollution issues will be studied throughout in the design process. The option selected will be the best for cleaning the water to drinking water standards and safeguarding air quality. The option eventually selected may be a combination of technologies such as air strippers with carbon filters. In any case, it will meet Air Toxic Guidelines and will use Best Available control Technologies (BACT).

The possibility of combining technologies was evaluated in the Feasibility Study; Alternatives W-6 and E-6 discuss combining carbon adsorption and air stripping. These were found to be less cost-effective in cleaning the water. Using carbon filters in the air stripping towers to clean the air emissions may be considered as a possible design; it is described in Section 6.2.4 of the Feasibility Study. Carbon filters would capture the contaminants so that they can be destroyed as part of their treatment.

Methylene chloride is the most difficult of the contaminants to remove through air stripping. Nevertheless, a treatment system can be specifically designed to remove this and other contaminants to concentrations below drinking water standards.

3) Other concerns were raised that the moisture emitted by air stripping towers could cause ice and heavy fogs on nearby roads.

Agency Response: Similar systems with air strippers have been successfully used throughout the country, including Michigan and Wisconsin which have more severe winter climates than this area. Devices are included in the air strippers to reduce moisture emissions. References do not indicate problems on nearby highways. No matter what treatment system is used, if problems develop, the configuration will be modified to assure that such problems are resolved.

4) Other potential impacts also received comment, including possible noise, odors, and the appearance of air stripping towers.

Agency Response: All of these factors will be considered extensively in designing the project. Noise, odors, and appearance have been considered at other sites and resolved satisfactorily to adjacent residents. Odors, in particular, would not be discernable even directly in the exhaust.

5) Disposal of the contaminated carbon used for the carbon adsorption process was a concern for one person.

Agency Response: The contaminated carbon would be disposed of through incineration at a facility in Yakima. Hazards associated with transporting it there are minor; even in the event of a complete spill of the carbon, few adverse impacts are likely because the contaminants would remain in the carbon itself.

6) One resident asked how bacteria growth in the treatment equipment would be controlled to maintain water quality.

Agency Response: Bacterial growth has been successfully controlled at similar facilities. We are presently envisioning the occasional use of chlorination to control bacterial growth.

Discharge Options

1) One of the concerns expressed most frequently was that discharging large quantities of water into the Little Spokane River would cause flooding and erosion. One resident requested that a contingency plan be discussed in the event that flooding and low well water levels do occur. It was urged that the river outfall be constructed to eliminate hazards to both humans and animals, since the river is heavily used for swimming.

Agency Response: The discharge from the recommended alternative is only about 4 cubic feet per second (cfs), which is 31 gallons per second. This is only about 2 percent of the mean flow in the Little Spokane River which is 236 cfs. Such a small addition is not likely to be discernible in its flooding potential. The ground water extracted, treated, and discharged to the Little Spokane River would have been discharged to it naturally anyway. Thus, the difference in flows in the river will be small over the long run.

Higher flows will occur for a few months when the treated water is first introduced and while the natural recharge is still occurring. Even during this transition time, the impact will be small.

It is possible to safely shut down the treatment system temporarily to avoid increasing the flood flows at all. Both this and the Little Deep Creek outfall will be dealt with in more detail during the design phase of the project.

The river outfall will be constructed to eliminate hazards to people (especially children) and animals. Normally the flows will be relatively constant, so the chance of anyone being caught unaware by a sudden increase in flow is unlikely.

2) The public wanted assurance that the water discharged into surface streams would be effectively treated so it would be safe for humans, fish, and animals. They also requested safeguards to prevent accidental discharge of contaminated water in case of treatment equipment failure.

   Agency Response: The discharge water will be analyzed frequently to assure that the water is suitably clean. Detection systems may be included to shut down the equipment in the event of a failure. Even if a failure occurred, the effect would be temporary and would not have environmental or public health effects.

3) Other potential uses for the cleaned water provoked considerable comment. Some residents considered the discharge into the river to be a waste of a resource. They suggested such options as using it for irrigation, for the Whitworth Water District, or for a new recreational reservoir.

Agency Response: No alternate uses of the discharge water were discussed in the Feasibility Study because no other use is likely to be able to absorb all the water that must be discharged, especially during the winter months. Ecology studied the option of the Whitworth Water District using the water. However, the system would produce more than the District could handle. It is possible that alternate uses could be developed when the design is prepared. One important point of contention remaining is who should pay for any additional facilities required.

4) One of the other discharge options studied, discharge into a drainfield, also provoked several comments. One was that it would cause a build-up of water, resulting in swamps, ice, and pests. Another person was concerned that this option would cause water to carry more contaminants down to the aquifer. However, several people favored recharge wells or drainfields to maintain the level of the aquifer and prevent drying up of existing wells.

Agency Response: Given the very permeable soils in the area, it is unlikely that swamps could develop. Instead, the water would seep very readily into the upper aquifer. It is unlikely that these flows could carry contaminants into the aquifers unless the treatment system breaks down. A potential advantage of the drainfield option is that the water would be directly returned to the aquifer and be available for additional use downstream. However, this would involve some of the water being treated again and result in higher treatment costs. These issues will be considered in project design.

5) One resident questioned whether the private ownership of the bed of the Little Spokane River had been considered in the planning phase. She also asked what action would be taken if owners refused to grant easements for discharge facilities.

Agency Response: EPA recognizes the private ownership of the riverbed. The water within the Little Spokane River belongs to the state, but the bedlands of the river are in private ownership. EPA believes that the likelihood of contaminating the river bed is low.

EPA will work with landowners to make arrangements for putting in towers or excavating to put in pipes or river outfalls. However, if arrangements cannot be made, EPA will pursue other means to obtain easements. The government has a responsibility to maintain the public health and safety of its citizens.

## 4.0 REMAINING CONCERNS

Several issues have been discussed extensively, but have not yet been totally resolved. These issues include:

- Will alternative uses of the cleaned water be identified?
- How will the issue of property values be addressed?
- How will the extent and cost of improvements to the Whitworth District be determined?
- How will Colbert residents who have not declared legal rights to the irrigation water they are currently using be affected by the potentially decreased water levels?

ATTACHMENT

COMMUNITY RELATIONS ACTIVITIES CONDUCTED
AT THE COLBERT LANDFILL SITE

Community relations activities conducted at the Colbert Landfill site to date include:

- Spokane County developed a community relations plan for the Colbert Landfill site (April 1981).

- Spokane County held a public meeting to discuss the monitoring and water quality sampling program (May 1981).

- A press release was issued by Spokane County to announce public meetings scheduled for December 1 and 3 (November 1981).

- Spokane County held two public meetings to discuss the results of the first phase of the study (December 1981).

- Spokane County had a public meeting to discuss the intent of the second phase of the study (February 1982).

- Spokane County held a public meeting to discuss study activity (October 1982).

- Spokane County established an information repository at the Colbert Water District Building (1982).

- Spokane County Health District met with residents to discuss further results of the study (February 1983).

- Fact sheets on the well sample test results were sent to the well owners (1983).

- Affected residents began receiving bottled water from Key Tronic Corporation and Spokane County (March 1983).

- Spokane County held a public meeting to present the intent of the third phase of the study (March 1983).

- Remedial Action Master Plan (RAMP) was published (August 1983).

- EPA designated Colbert Landfill a National Priorities List (NPL) site (August 1983).

- A press release was issued by Spokane County on the alternative water system selected (November 1983).

- A letter on the chosen water system alternative was sent by Spokane County to concerned citizens (November 1983).

- Public comments on the alternative water supply were addressed by Spokane County at public meetings (May - November 1983).

- Ecology prepared a Focused Feasibility Study for Initial Remedial Measures (June 1984).

- An alternate water supply was constructed as an initial remedial measure (1984-1985).

- EPA authorized soil, gas, and earth resistivity tests (August 1985).

- Ecology met frequently with citizens, County officials, and Key Tronic Corporation representatives (1985-1987).

- Ecology held a public meeting to discuss the results of the Remedial Investigation and plans for the Feasibility Study (May 1986).

- Ecology released the Feasibility Study (FS) for public review and comment and held a public meeting (May 1987).

- Public comments on the FS were accepted (May 18 - June 30, 1987).

- Public meetings were held (September 9, 1987) to discuss citizen concerns.

- Responsiveness Summary finalized (September 1987).

- Record of Decision written (September 1987).

# APPENDIX B

## APPLICABLE, OR RELEVANT AND APPROPRIATE REQUIREMENTS

# APPENDIX B

## Applicable, or Relevant and Appropriate Requirements

### Federal Laws and Regulations

- o Resource Conservation and Recovery Act (RCRA) (42 USC 6901), Subtitle C:
  - protection of groundwater (40 CFR 264, Subpart F)
  - closure and post-closure of landfills (40 CFR 264, Subpart G)

    [Note: These are administered by Ecology under Dangerous Waste Regulations, WAC 173-303.]

- o Safe Drinking Water Act (SDWA) (42 USC 300):
  - Drinking Water Standards (40 CFR 141), including both enforceable maximum contaminant levels (MCLs) and recommended maximum contaminant levels (RMCLs).

| Contaminant | RMCL (μg/l) | MCL (μg/l) |
|---|---|---|
| 1,1,1-Trichloroethane (TCA) | 200 | 200 |
| Trichloroethylene (TCE) | 0 | 5 |
| 1,1-Dichloroethylene (DCE) | 7 | 7 |

  - Underground Injection Control (UIC) standards (40 CFR 146)

    [Note: UIC standards are administered by Ecology under WAC 173-218.]

- Clean Water Act (CWA) (33 USC 1251):
  - National Pollutant Discharge Elimination System (NPDES) (40 CFR 122)
    [Note: NPDES program is administered by Ecology under WAC 173-220.]

- Clean Air Act (CAA) (72 USC 7401):
  - National Emission Standards for Hazardous Air Pollutants (NESHAPS)
    [Note: NESHAPS Program is administered by Ecology and Spokane County Air Pollution Control Agency under WAC 173-403.]

Washington State Laws and Regulations

- Dangerous Waste Regulations, WAC 173-303. Applicable for handling contaminated groundwater which could be considered a dangerous waste.

- Minimum Functional Standards for Solid Waste Handling, WAC 173-304. Requirements for closure of solid waster disposal facilities such as Colbert Landfill.

- Washington Department of Ecology Final Cleanup Policy. Used for guidance in establishing cleanup levels.

- Water Quality Standards for Waters of the State of Washington, WAC 173-201. Applicable in determining acceptable contaminant levels in Little Spokane River or Little Deep Creek if treated water is discharged into them.

- Submission of Plans and Reports for Construction of Wastewater Facilities, WAC 173-240. Applies to the treatment system designed to meet performance standards.

- National Pollutant Discharge Elimination System Permit Program, WAC 173-220. Applicable if treated water is discharged through an outfall into surface waters.

- Underground Injection Control Program, WAC 173-218. Applicable if treated water is reinjected into the ground for contaminant migration control.

- State Waste Discharge Permit Program, WAC 173-216. A permit is required for the disposal of treated water via drainfields.

- Washington Clear Air Act, RCW 70.94. Applicable for discharging pollutants into the atmosphere from a new source.

- General Regulations for Air Pollution Sources, WAC 173-400.

- Implementation of Regulations for Air Contaminant Sources, WAC 173-403.

- Emission Standards and Controls for Sources Emitting Volatile Organic Compounds (VOC), WAC 173-490.

- Water Code, RCW 90.03 and Water Rights, RCW 90.14. Establishes water rights permits necessary for water withdrawals, including groundwater extraction.

- Protection of Withdrawal Facilities associated with Ground Water Rights, WAC 173-150. Restricts activities which would impair senior groundwater rights, including water level lowering and water quality degradation.

- Protection of Upper Aquifer Zones, WAC 173-154. Also restricts activities which would impair senior groundwater rights, including water level lowering and water quality degradation.

- Minimum Standards for Construction and Maintenance of Water Wells, WAC173-160. Governs design of extraction and recharge wells.

- Water Well Construction Act, RCW 18.104.

- State Environmental Policy Act (SEPA), WAC 197-11.

- Water Pollution Control Act, RCW 90.48. Authorizes the use of water quality regulations at hazardous waste sites.

- Washington Water Quality Standards, WAC 173-201.

ANDREA BEATTY RINIKER
Director

STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

*Mail Stop PV-11 • Olympia, Washington 98504-8711 • (206) 459-6000*

September 23, 1987

Mr. Robie G. Russell
Regional Administrator
U.S. Environmental Protection Agency
Region 10
1200 Sixth Avenue
Seattle, Washington 98101

Dear Mr. Russell:

Interim Final Record of Decision (ROD) for
Colbert Landfill Site, Colbert, Washington

The Washington Department of Ecology has reviewed the Interim Final ROD for the Colbert Landfill site and concurs with the selected performance-based remedies as the final remedial action. We agree that in this situation prescribing performance standards for a pump and treat system is better than dictating a specific technology. There are several suitable technologies which will remediate the groundwater contamination associated with the Colbert Landfill. The alternate water supply system is also an important component of the remedial action.

We look forward to the upcoming consent decree negotiation sessions with the potential responsible parties. The outlook for a satisfactory settlement, especially with our unified effort, is very promising.

Sincerely,

Andrea Beatty Riniker
Director

ABR:MB:md

TO ADMINISTRATIVE RECORD OF COLBERT LANDFILL

| File | Type/Description | Date | # Pages | Author/Organization | Addressee/Organization |
|---|---|---|---|---|---|
| )01. Preliminary assessment | Potential hazardous waste site-identification and preliminary assessment | 4/80 | 4 | Neil Thompson, EPA | Unknown |
| )02. Preliminary assessment | Enforcement review | 6/30/80 | 1 | D. Stefani | Unknown |
| )03. Preliminary assessment | Colbert landfill, general description and background info. Time estimates for site cleanup | no date | 5 | Unknown | Unknown |
| 004. Site investigation report | Enforcement review/potential hazardous waste site - site inspection report/memo re same | 6/30/80 | 11 | | |
| 005. Site investigation report | Sample and analysis review | 5/19/80 | 1 | C. Wilson, EPA | Unknown |
| 006. Site investigation report | Potential hazardous waste site - site inspection report | 8/23/82 | 10 | Hussein Aldis, EPA | Unknown |
| 007. State cooperative agreements | Cover letter/cooperative agreements between WDOE and U.S. EPA | 2/29/84 | 39 | Donald Moos, WDOE | Ernesta Barnes, EPA |
| 008. State cooperative agreements | Cover letter/EPA assistance agreement - amendment | 4/13/84 | 7 | Donald Moos WDOE | Frederick Meadows, EPA |
| )009. State cooperative agreements | Cover letter/IRM cooperative agreement-amendment between Washington WDOE and U.S. EPA | 7/24/84 | 34 | Donald Moos, WDOE | Ernesta Barnes, EPA |
| )010. State cooperative agreements | Cover letter/EPA assistance agreement-amendment | 8/30/84 | 5 | EPA | WDOE |
| )011. State cooperative agreements | Cover memo/memo re deviation memo for Colbert | 9/11/84 | 2 | Cristina Griffin, EPA | Phil Millam, EPA |
| )012. State cooperative agreements | Memo re Amendment of Superfund cooperative agreement No. V-000282-02-1 | 3/10/85 | 2 | Neil Thompson, EPA | Oddvar Aurdal, EPA |
| )013. State cooperative agreements | Memo/completed cooperative agreement application re RI/FS | 12/19/85 | 12 | John Littler, WDOE | Ernesta Barnes, EPA |
| 0014. State cooperative agreements Colbert RI/FS | EPA assistance agreement-amendment re | 3/13/86 | 4 | Charles Findley, EPA | Phillip Johnson, WDOE |

| File | Type/Description | Date | # Pages | Author/Organization | Addressee/Organization |
|---|---|---|---|---|---|
| 15. State cooperative agreements | Memo/letter re Extension of cooperative agreement | 8/13/86 | 2 | Neil Thompson, EPA | Oddvar Aurdal, EPA |
| 16. State cooperative agreements | Letter re project and budget extension for Colbert | 8/15/86 | 1 | Oddvar Aurdal, EPA | John Littler, WDOE |
| 17. State cooperative agreements | Memo re Extension of project and budget periods for Colbert cooperative agreement | 12/31/86 | 1 | Neil Thompson, EPA | Oddvar Aurdal, EPA |
| 18. State cooperative agreements | Letter re time extension for feasibility study re Colbert | 12/29/86 | 1 | Fred Gardner, WDOE | Kathy Davidson, EPA |
| 019. State cooperative agreements | Letter re project and budget extension for Colbert | 2/27/87 | 1 | Oddvar Aurdal, EPA | Phillip Johnson, WDOE |
| 020. State cooperative agreements | Memo re extension of ending date for Colbert cooperative agreement | 2/26/87 | 1 | Neil Thompson, EPA | Oddvar Aurdal, EPA |
| 021. State cooperative agreements | Assistance amendment to extend project and budget period for Colbert | 1/6/87 | 1 | Oddval Aurdal, EPA | Phillip Johnson, WDOE |
| 022. County-EPA cooperative agreements | Memo re proposed cooperative agreement with Spokane County for Colbert | 9/24/81 | 9 | Sam Morekas, EPA | Fred Meadows, EPA |
| 023. County-EPA cooperative agreements | Colbert landfill cooperative agreement-proposal. Attachments: Federal Assistance Application, A-95 Review Letter, statement of work, community relations plan | 9/15/81 | 28 | William Dobratz, Spokane County | EPA |
| 024. County-EPA cooperative agreements | Notification of assistance award action-nonconstruction re Colbert RI/FS | 9/24/81 | 1 | EPA | Spokane County |
| 025. County-EPA cooperative agreements | Letter/assistance agreement-amendment | 10/19/81 | 5 | William Dobratz, Spokane County | Neil Thompson, EPA |
| 026. County-EPA cooperative agreements | Commitment notice/grant funding order | 9/24/81 | 2 | Barbara Barras, EPA | Spokane County |
| 027. County-EPA cooperative agreements | Letter re extension of project completion date for Colbert grant | 2/2/82 | 1 | Neil Thompson, EPA | William Dobratz, Spokane County |
| 028. County-EPA cooperative agreements | Assistance amendment re extension of budget and project | 3/29/82 | 1 | Frederick Meadows, EPA | William Dobratz, Spokane County |

| File | Type/Description | Date | # Pages | Author/Organization | Addressee/Organization |
|---|---|---|---|---|---|
| )29. County-EPA cooperative agreements | Letter re extension of project completion date | 5/27/82 | 1 | William Dobratz, Spokane County | Neil Thompson, EPA |
| )30. County-EPA cooperative agreements | Assistance agreement-amendment re Colbert disposal site | 9/24/81 | 4 | Frederick Meadows, EPA | Spokane County |
| )31. State cooperative agreements | Letter re extension of date of Colbert cooperative agreement | 10/7/86 | 1 | Fred Gardner, WDOE | Kathy Davidson, EPA |
| )32. Work plans | Memo re Colbert landfill transfer agreement; transfer agreement | 7/18/84 | 4 | Don Dubois, WDOE | Lynda Brothers |
| 033. Work plans | Site management plan for Colbert landfill | 10/1/84 | 3 | Unknown | Unknown |
| 034. Work plans | Memo/attachments re work plan for geophysical bore hole logging, cost estimate, QA/QC plan, statement re conflict of interest | 1/9/85 | 7 | Bruce Auld, Geo/Resource Consultants | Douglas Morrell |
| 035. Work plans | Work plans for remedial investigation of Colbert landfill | 1/29/85 | 49 | Golder Assoc. | WDOE |
| )036. Work plans | Work plan for feasibility study at Colbert landfill site | 2/86 | 38 | Golder Assoc. and Envirosphere | WDOE |
| )037. Work plans | Work plan Colbert landfill site | No date | 4 | Unknown | Unknown |
| )038. Groundwater investigation and report | Letter/request for proposals re hydro-geological report and monitoring wells for Spokane County operated landfills | 2/6/81 | 8 | William Dobratz | WDOE |
| )039. Groundwater investigation and report | Letter/agency response forms re hydro-geological and monitoring wells project | 2/26/81 | 12 | Martha, Shannon, Spokane Regional Planning Conf. | Damon Tamm, Spokane County |
| )040. Groundwater investigation and report | A description of tasks and subtasks used for estimating the cost of Phase I | 4/10/81 | 3 | Unknown | Tech.Operations Section |
| 0041. Groundwater investigation and report | Agreement between owner/client and George Maddox & Associates, for professional services | 4/21/81 | 37 | George Maddox & Assoc. | Spokane County |
| )0042. Groundwater investigation and report | Letter/attachments re proposed budget for Phase II of Colbert/Hica landfill investigation | 8/31/81 | 11 | George Maddox & Assoc. | Damon Tamm, Spokane County |

| File | Type/Description | Date | # Pages | Author/Organization | Addressee/Organization |
|---|---|---|---|---|---|
| 043. Groundwater investigation and report | Resolution No. 81 1046 of Spokane County Board of Commissioners re hydrogeologic report including well installation and monitoring at Colbert and Mica/attachments | 9/17/81 | 3 | Spokane County Board of Commissioners | Unknown |
| 044. Groundwater investigation and report | Preliminary report on a geohydrology of the Colbert landfill--Spokane County, WA. Phase I (document located at WDOE) | 11/9/81 | | George Maddox & Assocs, James Montgomery, Consulting Engrs. | Spokane County Utilities Dept. |
| 045. Groundwater investigation and report | Letter/Phase II progress report | 2/26/82 | 5 | Damon Tamm, Spokane County | Neil Thompson, EPA |
| 046. Groundwater investigation and report | Letter/Phase II progress report re geohydrologic study of Colbert and Mica landfill sites | 5/24/82 | 14 | George Maddox, George Maddox & Assocs. | William Dobratz, Spokane County |
| 047. Groundwater investigation and report | Letter/attachments re technical, property, financial status and summary reports re grant CA 809772-01 | 12/15/82 | 6 | Damon Tamm, Spokane County | Betty Gordon, EPA |
| 048. Groundwater investigation and report | Letter/attachments re resistivity data collection, proposed budget, graphs | 7/7/83 | 8 | Tim Cook, George Maddox Assocs. | Damon Tamm, Spokane County Utilities Dept. |
| 049. Groundwater investigation and report | Cover letter/final report re Colbert landfill groundwater monitoring program | 3/23/84 | 119 | George Maddox, George Maddox & Assocs. | William Dobratz, Spokane County |
| 050. Groundwater investigation and report | Report: Geophysical Borehole Logging--Colbert landfill (Document located at WDOE) | 2/86 | | Geo/Resource Consultants | Golder Assocs. |
| 051. Groundwater investigation and report | Colbert landfill background information, progress report Phase I, work plan info and budget for Phase II | Unknown | 19 | Unknown | Unknown |
| 052. Groundwater investigation and report | Report: Geohydrologic Investigations of Colbert landfill - Phase II | Unknown | 205 | George Maddox & Assocs., James Montgomery Consulting Engrs. | Spokane County Utilities Dept. |
| 053. Groundwater investigation and report | Request for proposals re hydrogeologic report and monitoring wells for Spokane County operated landfills | 2/3/81 | 7 | Unknown | Unknown |

| File | Type/Description | Date | # Pages | Author/Organization | Addressee/Organization |
|---|---|---|---|---|---|
| 54. Remedial action management plan (RAMP) | Memo re review of Colbert landfill draft RAMP | 8/29/83 | 2 | Rene Fuentes, EPA | Neil Thompson, EPA |
| 55. RAMP | Letter re review of Colbert landfill draft RAMP | 8/29/83 | 2 | John Anicetti, Spokane County Health Dept. | Neil Thompson, EPA |
| 56. RAMP | Draft RAMP for Colbert landfill | 7/29/83 | 124 | Unknown | EPA |
| 57. Initial Remedial Measure (IRM) | Letter/summary report re Colbert landfill water supply and interlocal cooperation agreement between Spokane County and Whitworth Water District No. 2 | 3/23/84 | 22 | James Legat, Spokane County | Bob Goodman, WDOE |
| 58. IRM | Report: Focused Feasibility Study for IRM at Colbert Landfill | 6/84 | 78 | Carol Thompson, WDOE | Unknown |
| 59. IRM | Record of decision re IRM alternative selection for Colbert Landfill/Summary of Interim Remedial Alternatives Selection | 8/24/84 | 18 | Ernesta Barnes | Unknown |
| 060. IRM | Decision memo re IRM for Colbert landfill | 8/24/84 | 3 | Charles Findley, EPA | Ernesta Barnes, EPA |
| 061. IRM | Memo re Colbert landfill advance match provisions/Assistance Funding Order | 8/29/84 | 2 | Russell Wyer, EPA | Chuck Findley, EPA |
| 062. IRM | Briefing for the regional administrator, record of decision, Colbert landfill | Unknown | 1 | Unknown | Unknown |
| 063. IRM | Report: Responsiveness Summary for IRM at Colbert Landfill | Unknown | 15 | Carol Thompson, WDOE | Unknown |
| 064. Remedial Investigation (RI) Report | Potential hazardous waste site log | 2/26/80 | 1 | J. W. Fey | Unknown |
| 065. RI Report | Report: Evaluation of a Temporary Groundwater Extraction Measure for Colbert Landfill | 9/25/85 | 17 | Golder Assoc. | Unknown |
| 066. RI Report | Report: Remedial Investigation Report for the Colbert Landfill, Spokane, WA, Vol. 1 | 5/87 | 122 | Golder Assoc. | WDOE |

| File | Type/Description | Date | # Pages | Author/Organization | Addressee/Organization |
|---|---|---|---|---|---|
| 7. RI Report | Report: Remedial Investigation Report for the Colbert Landfill, Spokane, WA, Vol. 2 | 5/87 | 259 | Golder Assoc. | WDOE |
| 8. Feasibility Study (FS) | Report: Feasibility Study, Colbert Landfill, Spokane, WA Vol. 1 | 5/87 | 360 | Golder Assoc. | WDOE |
| 9. Feasibility Study (FS) | Report: Feasibility Study, Colbert Landfill, Spokane, WA, Vol. 2 | 5/87 | 226 | Golder Assoc. | WDOE |
| 70. Correspondence, RI/FS | Letter re work plan for County-EPA cooperative agreement | 8/26/81 | 1 | Joanne Fujita Asaba, EPA | Damon Tann, Spokane County Utilities |
| 71. Correspondence, RI/FS | Memo re summary report of Colbert alternatives | 4/5/84 | 2 | Bob Goodman, WDOE | James Legatt, Spokane County Utilities |
| 73. Correspondence, RI/FS | Letter re State cooperative agreement for RI/FS at Colbert landfill | 6/15/84 | 1 | Charles Findley, EPA | Lynda Brothers, WDOE |
| 74. Correspondence RI/FS | Letter with attachment re proposed field investigation at Colbert landfill | 4/2/85 | 5 | Jeff VanEe, EPA | Carol Kraege, WDOE |
| 75. Correspondence RI/FS | Letter re increased costs of RI/FS | 1/14/86 | 2 | Carol Kraege, WDOE | Neil Thompson, EPA |
| 76. Correspondence RI/FS | Letter re amendment to State cooperative agreement for performance of RI/FS tasks at Colbert landfill | 3/15/86 | 1 | Charles Findley, EPA | John Littler, WDOE |
| 77. Correspondence RI/FS | Letter re commencement of RI and requesting deferral of commencement date of RI study phase | 4/16/86 | 2 | Spokane County Board of Commissioners | Carol Kraege, WDOE |
| 78. Correspondence RI/FS | Letter re review of RI and delay of start of FS | 4/17/86 | 2 | Lewis G. Zirkle, Key Tronic | Carol Kraege, WDOE |
| 79. Correspondence RI/FS | Letter re request for delay of FS | 5/5/86 | 2 | Carol Kraege, WDOE | Spokane County Board of Commissioners |
| 80. Correspondence RI/FS | Letter re Key Tronic's wish to assume responsibility for investigation and remedial action at Colbert landfill | 7/16/86 | 2 | Gary Haight, Key Tronic | Fred Gardner, WDOE |
| 81. Correspondence RI/FS | Letter re response to Haight's letter of 7/16/87 | 8/27/86 | 4 | Fred Gardner, WDOE | Gary Haight, Key Tronics |

| File | Type/Description | Date | # Pages | Author/Organization | Addressee/Organization |
|---|---|---|---|---|---|
| 82. Correspondence RI/FS | Letter re projected schedules for Colbert and Northside | 8/25/86 | 1 | Neil Thompson, EPA | Fred Gardner, WDOE |
| 84. Correspondence RI/FS | Letter re Pounder's Excavation's availability for services re decontaminate Colbert landfill | 2/10/87 | 2 | Bill Mann, Pounder's Excav. | EPA |
| 185. Correspondence RI/FS | Letter re time extension for FS | 2/18/87 | 2 | Fred Gardner, WDOE | Kathy Davidson, EPA |
| 186. Correspondence RI/FS | Letter re effects of SARA on Spokane County | 3/12/87 | 4 | Fred Gardner, WDOE | Jerry Neal, Lukins & Annis |
| 187. Correspondence RI/FS | Memo re selection of final remedial measure for Colbert landfill | 3/16/87 | 2 | Carol Kraege, WDOE | Colbert Landfill file |
| 188. Correspondence RI/FS | Letter re response to letter of 2/10/87 suggesting Pounder's availability of services re decontamination of Colbert landfill | 4/20/87 | 1 | Neil Thompson, EPA | Bill Mann, Pounder's Excavation |
| 189. Correspondence RI/FS | Letter re Colbert landfill RI/FS information requests | 5/20/87 | 2 | Paul Agid, Dames & Moore | Doug Morell, Golder Assoc. |
| 090. Correspondence RI/FS | Letter re Colbert landfill extraction/ treatment system | 5/27/87 | 2 | Leo Hutchins, Whitworth Water District No. 2 | Fred Gardner, WDOE |
| 091. Correspondence RI/FS | Letter re response to questions on Colbert landfill RI/FS | 6/10/87 | 7 | Anthony Burges, Golder Assoc. | Fred Gardner, WDOE |
| 092. Correspondence RI/FS | Letter re response to questions on Colbert landfill RI/FS | 6/17/87 | 2 | Golder Assoc. | Fred Gardner, WDOE |
| 093. Correspondence RI/FS | Letter re extension of public comments for Colbert landfill FS | 6/19/87 | 1 | Robie Russell, EPA | A. Pardini, Spokane Office of Sen. Dan Evans |
| 094. Correspondence RI/FS | Letter re Colbert landfill FS and southern area of Whitworth Water District water system | 6/25/87 | 3 | Leo Hutchins, Whitworth Water District No. 2 | Pat Mumey, John McBride, Keith Shepard |
| 095. Correspondence RI/FS | Letter re Colbert landfill-RI/FS reports and attached resolution of Whitworth Water District No. 2 re drilling of wells | 6/26/87 | 4 | Leo Hutchins, Whitworth Water District No. 2 | Fred Gardner, WDOE |

| File | Type/Description | Date | # Pages | Author/Organization | Addressee/Organization |
|---|---|---|---|---|---|
| )96. Memos RI/FS | Memo/attachments re information on Caron Chemical and Colbert Landfill sites | 12/29/80 | 9 | Don Dubois, EPA | Michael Cook, EPA |
| )97. Memos RI/FS | Memo re Superfund engineering feasibility design funds | 5/22/81 | 2 | Charles Findley, EPA | Michael Cook, EPA |
| )98. Memos RI/FS | Letter re Superfund Cooperative Agreement Guidance | 8/26/81 | 1 | Joanne Fujita Asaba, EPA | Tom Cook, WDOE |
| )99. Memos RI/FS | Memo re Superfund Cooperative Agreement for Colbert landfill | 8/28/81 | 1 | Joanne Fujita Asaba, EPA | Ed Coate, Alex Smith, Chuck Findley, Ken Feigner, John Barich, Neil Thompson, Lloyd Reed, Clark Gaulding, Gary O'Neal, Cheryl Koshuta |
| )100. Memos RI/FS | Decision memo re Colbert Landfill Cooperative Agreement Proposal | 9/18/81 | 2 | John Spencer, EPA | Michael Cook, EPA |
| )101. Memos RI/FS | Memo re Colbert Landfill Cooperative Agreement Fact Sheet | 9/25/81 | 3 | Joanne Fujita Asaba, EPA | Mary Neilson, EPA<br>Bob Jacobson, EPA |
| )102. Memos RI/FS | Memo re Colbert Landfill Cooperative Agreement | 10/1/81 | 2 | Charles Findley, EPA | John Spencer, EPA |
| )103. Memos RI/FS | Memo re Colbert landfill contamination-substituting for versus cleaning up an unusable aquifer | 11/3/83 | 5 | Michael Ruef, WDOE | Linda Brother, WDOE<br>Earl Tower, EPA |
| 0104. Memos RI/FS | Memo re Colbert landfill groundwater contamination, review corrective proposals by CH2MHill, Maddox Associates and other alternatives | 12/15/83 | 8 | Michael Ruef, WDOE | John Littler, WDOE |
| )0105. Correspondence | Letter re additional EPA funding under current RAP | 12/29/83 | 1 | John Littler, WDOE | Phil Millam, EPA |

| File | Type/Description | Date | # Pages | Author/Organization | Addressee/Organization |
|---|---|---|---|---|---|
| 06. Correspondence | Letter re advance match funds at Colbert site | 2/15/84 | 2 | Phil Millam, EPA | John Littler, WDOE |
| 07. Quality Assurance Project Plans (QAPP) | Report: Quality Assurance Project Plan for Remedial Investigations at the Colbert Landfill (document located at Washington WDOE) | 1/85 | Unknown | Golder Assoc. | WDOE |
| 08. QAPP | Letter review evaluation of final version of Colbert landfill QAPP | 5/9/85 | 1 | Barry Towns, EPA | Doug Morell, Golder Assocs. |

| File | | Type/Description | Date | # Pages | Author/Organization | Addressee/Organization |
|---|---|---|---|---|---|---|
| 09. | Public Comment Responsiveness Summary | Letter re: activities at the Colbert Landfill | 12/8/86 | 2 | Andrea Beatty Riniker, WDOE | Members of Colbert Landfill Contaminate Area Committee |
| 10. | Public Comment Responsiveness Summary | Letter regarding earlier letter dated 4/17/87 to "Concerned Citizens" | 4/24/87 | 3 | (b) (6) , Resident | Andrea B.T. Riniker, WDOE |
| 11. | Public Comment Responsiveness Summary | Letters on Colbert Landfill; feasibility study report and comment period | 5/21/87 | 71 | Key Tronic employees, Key Tronic supporters, County commissioner, legislator, citizens of Colbert area & other areas | Andrea Beatty Riniker, WDOE |
| 112. | Public Comment Responsiveness Summary | Letter re: extension of public comment period | 6/17/87 | 1 | Robbie Russell, EPA | Andrea Beatty Riniker, WDOE |
| 113. | Public Comment Responsiveness Summary | Letter regarding Colbert Landfill feasibility study comments | 6/29/87 | 3 | Key Tronic Corp. | Fred Gardner, WDOE |
| 114. | Public Comment Responsiveness Summary | Letter re Colbert Landfill remedial investigation and feasibility study | 6/29/87 | 2 | (b) (6) , Colbert Landfill Contaminate Area Committee | Fred Gardner, WDOE |
| 115. | Public Comment Responsiveness Summary | Letter regarding Colbert Landfill feasibility study comment | 6/29/87 | 3 | Patricia A. Mumey, John R. McBride, Board of Commissioners of Spokane County | Fred Gardner, WDOE |
| 116. | Public Comment Responsiveness Summary | Letter re feasibility study | 6/29/87 | 1 | Rhys A. Sterling, Spokane County Health District | Fred Gardner, WDOE |
| 117. | Public Comment Responsiveness Summary | Letter regarding Spokane County Air Pollution Control Authority review of Colbert Landfill feasibility study | 6/30/87 | 2 | Christopher McEnnay, Spokane County Air Pollution Control Authority | Fred Gardner, WDOE |

| File | | Type/Description | Date | # Pages | Author/Organization | Addressee/Organization |
|---|---|---|---|---|---|---|
| 118. | Public Comment Responsiveness Summary | Colbert Landfill remedial investigation/ feasibility study comments for submission to WDOE | 6/30/87 | 22 | Dames & Moore, Key Tronic Corp. | WDOE |
| 119. | Permits and/or applications-- state/Federal | Industrial/commercial waste discharge permit application form | 4/12/78 | 3 | Key Tronic Corp. | WDOE |
| 120. | Permit and/or applications- state/Federal | Hazardous waste permit application; Notification of Hazardous Waste activity | 6/1/69 | 7 | Lewis G. Zirkle, Key Tronic Corp. | EPA |
| 121. | Reference materials or listing of guidance documents used | Guidances for administrative record (Actual guidances located at EPA Regional Office) | | 2 | Neil Thompson, EPA | |
| 122. | Community Relations & News Releases | Cover letter with attachments regarding cooperative agreement for EPA grant on Colbert disposal site; revised work statement; community relations plan | 11/12/81 | 28 | William R. Dobratz, Damon Taam, Spokane County Office of County Utilities | Neil Thompson, EPA |
| 123. | Community Relations & News Releases | News release re Federal grant for groundwater contamination at Colbert | 10/21/81 | 1 | EPA | |
| 124. | Community Relations & News Releases | Memo regarding immediate news release | 11/24/81 | 1 | Unknown | |
| 125. | Community Relations & News Releases | Phase II Community Relations scheduling | 11/24/81 | 2 | Unknown. | |
| 126. | Community Relations & News Releases | Letter re agenda of informal public meeting | 11/25/81 | 1 | William R. Dobratz, Spokane County | |
| 128. | Community Relations & News Releases | Community relations plan for remedial investigation of feasibility study with appendices | No date | 20 | Carol Rushin Thompson, WDOE | |
| 129. | Community Relations & News Releases | Colbert Landfill Community Meeting Notice with attachments | 2/20/85 | 8 | Unknown | |
| 130. | Community Relations & News Releases | Colbert Landfill update | 7/85 | 1 | WDOE | |

| File | | Type/Description | Date | # Pages | Author/Organization | Addressee/Organization |
|---|---|---|---|---|---|---|
| .31. | Community Relations & News Releases | Colbert Landfill update | 8/85 | 1 | WDOE | |
| 132. | Community Relations & News Releases | News release re clean water for Spokane families with polluted wells | 7/2/85 | 1 | WDOE | |
| 133. | Community Relations & News Releases | News release: Colbert Landfill meeting announced | 10/23/85 | 1 | WDOE | |
| 134. | Community Relations & News Releases | Colbert Landfill update | 10/85 | 1 | WDOE | |
| 135. | Community Relations & News Releases | Memo & minutes of county commissioners' meeting held January 8, 1986; Colbert Landfill Contaminate Area Citizens Proposals | 1/10/86 | 4 | Robin Swanson | |
| 136. | Community Relations & News Releases | Notice of public meeting re RI | 4/22/86 | 1 | WDOE | |
| )137. | Community Relations & News Releases | Memo re progress of Colbert Landfill Contaminate Area Committee | 7/27/86 | 1 | Colbert Landfill Contaminate Area Committee | Residents of Colbert |
| )138. | Community Relations & News Releases | Letter re: current and future cleanup activities | 8/5/86 | 3 | Fred Gardner, WDOE | Residents |
| )139. | Community Relations & News Releases | Memo with attached Colbert mailing list | 8/26/86 | 24 | Janet Rhodes, DOE | Neil Thompson, EPA |
| )140. | Community Relations & News Releases | Newsletter--Colbert property owners' update | 8/86 | 1 | Spokane County--Key Tronic Corp. | |
| 0141. | Community Relations & News Releases | Public meeting notification and affidavit of publication | 5/14/87 | 3 | Jerry Jewell, WDOE | |
| 0142. | Community Relations & News Releases | Fact sheet re: proposed Colbert landfill cleanup | 5/14/87 | 8 | WDOE | |
| 0143. | Community Relations & News Releases | For Immediate Release: Ground-water cleanup views sought (News Release) | 5/21/87 | 2 | WDOE | |
| )0144. | Community Relations & News Releases | Agenda for Colbert Landfill meeting | 5/22/87 | 1 | WDOE | |

| File | | Type/Description | Date | # Pages | Author/Organization | Addressee/Organization |
|---|---|---|---|---|---|---|
| .45. | Community Relations & News Releases | Letter re extension of public comment period | 5/28/87 | 1 | Andrea Beatty Riniker, WDOE | Robie Russell, EPA |
| 146. | Community Relations & News Releases | Colbert Landfill public meeting transcript | 6/9/87 | 118 | Jeanne Bullis, Reiter & Assocs. | |
| 147. | Community Relations & News Releases | Air water pollution report Around The States | 6/15/87 | 1 | Unknown | |
| 148. | Community Relations & News Releases | Cleaning up the Colbert Landfill (general information) | | 4 | Unknown | |
| 149. | Newspaper articles | Chemical Cleanup money may go to Colbert Landfill | 1/09/81 | 1 | Jeff Sher, Spokesman-Review | |
| 150. | Newspaper articles | County is expecting report early in '82 on aquifer's quality | 12/11/81 | 1 | Kim Crompton, Spokane WA Weekly Chronicle | |
| )151. | Newspaper articles | Households near landfill demand end to pollution | 11/17/82 | 1 | Kim Crompton, Chronicle | |
| )152. | Newspaper articles | 13 Waste sites proposed for cleanup priority list | 11/18/82 | 1 | Creg Darby, Spokesman-Review | |
| )153. | Newspaper articles | 2 years later water near landfill troubling | 11/18/82 | 1 | Creg Darby, Spokesman-Review | |
| )154. | Newspaper articles | Contaminated Colbert Landfill gets second nomination to EPA's cleanup list | 11/24/82 | 1 | Tri-County Tribune | |
| )155. | Newspaper articles | Water woes need curing | 3/3/83 | 1 | Spokane Chronicle | |
| 0156. | Newspaper articles | County officials get ready for second landfill session | 3/19/83 | 1 | John Craig, Spokane Chronicle | |
| 0157. | Newspaper articles | County, company appeal pollution award | 4/8/83 | 1 | Ken Sanda, Spokane Chronicle | |
| 0158. | Newspaper articles | Family of seven quitting polluted water area home | 4/23/83 | 1 | Tim Hanson, Spokane Chronicle | |
| )0159. | Newspaper articles | Incident brings tighter county landfill controls | 7/12/83 | 1 | Ken Sanda, Spokane Chronicle | |
| )0160. | Newspaper articles | Hazardous waste barrels buried at landfill | 7/13/83 | 1 | Ken Sanda, Spokesman Review | |

| | File | Type/Description | Date | # Pages | Author/Organization | Addressee/Organization |
|---|---|---|---|---|---|---|
| 1. | Newspaper articles | Two more residents sue over polluted wells | 7/27/83 | 1 | Richard Wagoner, Spokesman Review | |
| 2. | Newspaper articles | Colbert water decision promised within two weeks | 7/30/83 | 1 | Ken Sands, Spokesman Review | |
| 3. | Newspaper articles | Contracts place Colbert closer to water system | 1/4/84 | 1 | Ken Sands, Spokane Chronicle | |
| 4. | Newspaper articles | Feasibility of cleaning up Colbert Site to be studies | 4/27/85 | 1 | Ken Sands, Spokesman Review | |
| 5. | Newspaper articles | Pollution spreading in aquifers | 11/8/85 | 1 | Jeff Sher, Spokesman-Review | |
| 6. | Newspaper articles | Key Tronic adds firms to lawsuit | 5/30/86 | 1 | Kim Crompton, Spokane Daily Chronicle | |
| 7. | Newspaper articles | Key Tronic wants others to share dumping blame | 5/30/86 | 1 | Kim Crompton, Spokesman-Review | |
| 8. | Newspaper articles | Colbert area well ban asked | 6/25/86 | 1 | Tri-County Tribune | |
| 9. | Newspaper articles | Key Tronic, County liable for pollution | 6/28/86 | 1 | Kim Crompton, Spokesman-Review | |
| 70. | Newspaper articles | Landfill decision left intact | 8/8/86 | 1 | Kim Crompton, Spokesman-Review | |
| 71. | Newspaper articles | Key Tronic, county still liable for dumping | 8/9/86 | 1 | Kim Crompton, Spokesman-Review | |
| 72. | Newspaper articles | Well water woes worth $42,360 | 10/21/86 | 1 | Kim Crompton, Spokesman-Review | |
| 173. | Newspaper articles | Key Tronic layoffs 'may backfire' | 11/22/86 | 2 | Bill Sallquist, Spokesman-Review | |
| 174. | Newspaper articles | Colbert cleanup costs could climb to $17.5 million | 1/20/87 | 1 | Jeff Sher, Spokesman-Review | |
| 175. | Newspaper articles | Troubles blamed on water district | 1/30/87 | 1 | Kim Crompton, Spokesman-Review | |
| 176. | Newspaper articles | Developer wins Colbert lawsuit for $1.8 million | 2/11/87 | 1 | Kim Crompton, Spokesman-Review | |
| 177. | Newspaper articles | Key Tronic reduces its work force | 2/13/87 | 1 | Bill Sallquist, Spokesman-Review | |
| 178. | Newspaper articles | Work won't lower wells, experts say | 6/1/87 | 1 | Jim Camden, Spokesman-Review | |

| File | | Type/Description | Date | # Pages | Author/Organization | Addressee/Organization |
|---|---|---|---|---|---|---|
| 179. | Newspaper articles | More comment time wanted on Colbert plan | 5/24/87 | 1 | Jeff Sher, Spokesman-Review Spokane Chronicle | |
| 182. | Newspaper articles | Work won't lower wells, experts say | 5/29/87 | 2 | Jim Camden, Spokesman-Review | |
| 183. | Newspaper articles | Colbert cleanup plan has hasty approach | 5/31/87 | 1 | Spokesman-Review | |
| 185. | Newspaper articles | The issue is fairness; Colbert cleanup | 6/7/87 | 2 | Key Tronic, The Spokesman-Review Spokane Chronicle | |
| 186. | Newspaper articles | *Around the States - Washington* | 6/15/87 | 1 | Air/water Pollution Report | |
| 188. | Newspaper articles | Colbert residents file suits | 3/13/86 | 1 | Kim Crompton, Spokane Daily Chronicle | |
| 189. | Newspaper articles | County to run landfill cleanup | No date | 1 | Jeff Sher, Spokesman-Review | |
| 190. | Lab reports/raw data | Memo/attachments re organic analysis of aqueous samples/water well records/ water quality reports | 1/14/80 | 13 | Alexandra Smith, EPA | Gary O'Neal, EPA |
| 191. | Lab reports/raw data | Table re water quality at selected wells near Colbert Landfill | 2/10-11/81 | 1 | EPA | |
| 192. | Lab reports/raw data | Memo w/attachments re well water samplings/maps | 4/24/81 | 7 | Ben Eusebio, EPA | Chuck Findley, EPA |
| 193. | Lab reports/raw data | Letter re Colbert Landfill data analysis | 6/19/81 | 5 | James Malm, WDOE | Carolyn Wilson, EPA |
| 194. | Lab reports/raw data | Letter w/attachments re water quality tests at Colbert | 8/31/81 | 4 | William Dobratz, Spokane County Utilities | Joanne Fujita Asaba, EPA |
| 195. | Lab reports/raw data | Well water sampling results | 1/28/82 | 5 | Unknown | |
| 196. | Lab reports/raw data | Field sample data sheet | 8/4/82 | 1 | Tim Cook, George Maddock & Assocs. | R. R. Jones |
| 197. | Lab reports/raw data | Metal data-AA-11GA 2100 (Water), Santora well | 8/4/82 | 14 | EPA | Roy Jones |
| 198. | Lab reports/raw data | Base/neutral compounds | 3/25/82 | 8 | Jim Blasethick, EPA | |
| 199. | Lab reports/raw data | Inspection report and memo with sample results | 6/7/86 | 8 | Schlender, WDOE | Carol Kraege, Fred Gardner, WDOE |

| File | | Type/Description | Date | # Pages | Author/Organization | Addressee/Organization |
|---|---|---|---|---|---|---|
| 00. | Lab reports/raw data | Memo re continued sampling of Colbert monitoring wells | 11/19/86 | 1 | Carol Kraege, WDOE | Fred Gardner, WDOE |
| 01. | Lab reports/raw data | Sampling results | 2/27/87 | 1 | Unknown | |
| 02. | Lab reports/raw data | Shallow Soil Gas Investigation in the Vicinity of the Colbert Landfill/Field Data | 12/86 | 50 | Don Elmeren, Tracer Research Corp. | EPA |
| 03. | Lab reports/raw data | Sample results, Lab No. 2895-87 | 4/8/87 | 5 | ABC Labs, Inc. | Key Tronic Corp. |
| 04. | Lab reports/raw data | Colbert Testing Results (Appendix A updated through April, 1987). (Document located at WDOE file.) | 1980-2/87 | | Key Tronic-Spokane County | |
| 05. | Lab reports/raw data | April 27, 1987, testing/sampling results, Lab. No. 2981-87 | 5/10/87 | 1 | Unknown | |
| 06. | Lab reports/raw data | Sampling results, Lab No. 30191-87 | 5/26/87 | 1 | Unknown | |
| 07. | Lab reports/raw data | Table 1 re water well records reviewed to develop conceptual model of the geohydrology | No date | 7 | Unknown | |
| 208. | Correspondence | Letter re proposed sampling plan | 2/4/81 | | James L. Malm, WDOE | Carolyn B. Wilson, EPA |
| 209. | Correspondence | Letter regarding WA future solid waste grant #266310104 | 5/14/81 | 1 | Peter R. Haskins, WDOE | William R. Dobratz, Spokane County Utilities Dept. |
| 210. | Correspondence | Letter regarding postponing of drilling at Hica Landfill site | 3/30/82 | 2 | George E. Maddox, George E. Maddox & Assocs. | Damon Taam, Spokane County Utilities Dept. |
| 211. | Correspondence | Letter re potential health impact of volatile organics | 10/23/85 | 1 | Carl Sagerser, Dept. of Social & Health Services | Carol Kraege, WDOE |
| 212. | Correspondence | Letter re potential health impact of volatile organics | 10/14/85 | | Carol Kraege, WDOE | Bill Lichte, Dept. of Social & Health Services |
| 213. | Correspondence | Letter re announcement of site manager and formation of action committee | 3/4/87 | 2 | Lewis G. Kirkle, Key tronic | Fred Gardner, WDOE |
| 214. | Correspondence | Letter re extension of public comment period with attached news article | 5/29/87 | 2 | A. J. "Bud" Pardini, U.S. Senate | Robbie Russell, EPA |
| 215. | Correspondence | Letter regarding Superfund proposal cleanup of Colbert Landfill | 6/17/87 | 2 | (b) (6), resident | Fred Gardner, WDOE |

| File | | Type/Description | Date | # Pages | Author/Organization | Addressee/Organization |
|---|---|---|---|---|---|---|
| )216. | Correspondence | Memo re request for technical assistance | No date | 2 | Bob Courson, EPA | Jeff VanEe, EMSL |
| )217. | Memoranda, Misc. | Memo re revision of work request ESD-82-025 | 2/25/82 | 1 | Neil Thompson, EPA | Bill Schmidt, EPA |
| )218. | Memoranda, Misc. | Memo (handwritten) re observation of electrical resistivity field work | 5/1/85 | 3 | Mike Gallagher, WDOE | Carol Kraege, WDOE |
| )219. | Notices | Notice re Colbert Landfill comment period | 6/2/87 | 3 | WDOE | |
| )220. | Notices | Notice of public review period for the focus feasibility study for the initial remedial measure at Colbert Landfill. | 7/17/84 | 1 | WDOE | |
| )221. | State Cooperative Agreement | Memo re deviation from 40CFR.30.308 for the Colbert Landfill site, Washington (CV000282) | 8/29/84 | 2 | Sam Morekas, EPA | Harvey G. Pippin, IPA |
| 0223. | Maps | Exhibit 12 (Alternatives). (Map at EPA Regional (Site) file.) | No date | 1 | Unknown | |
| )224. | Maps | Exhibit 13 (Gleneden Plan). (Map at EPA Regional (Site) file.) | No date | 1 | Unknown | |
| 0225. | Maps | Duplicate of Document # 00000223 (above: Exhibit 12) | | | | |
| 0226. | Maps | Colbert Landfill, Aquifer | 12/86 | 1 | Golder Associates | |
| 0227. | Maps | Preliminary General Geologic map. (Map at EPA Regional (Site) file) | No date | 1 | Allen Griggs Map 1-464, USGS, M.M. Maddox Assocs./ Montgomery Engineers | |
| 0228. | Maps | Preliminary locations map of proposed Phase II drilling and water sampling points. (Map at EPA Regional (Site) file.) | No date | 1 | Spokane County Utilities Department | |
| )0229. | Maps | Preliminary cell map. (Map at EPA Regional (Site) file.) | No date | 1 | Spokane County Utilities Department | |
| )0230. | Maps | Preliminary relation of hydraulic gradient and width of unit square areas | No date | 1 | M.M. Maddox Assocs./ Montgomery Engineers | |

| File | | Type/Description | Date | # Pages | Author/Organization | Addressee/Organization |
|---|---|---|---|---|---|---|
| 231. | Maps | Preliminary relations of water level, elevation and unit square areas | No date | 1 | M.M. Maddox Assocs./ Montgomery Engineers | |
| 232. | Maps | Groundwater flow net, middle sand aquifer. (Map located at EPA Regional file.) | No date | 1 | M.M. Maddox Assocs./ Montgomery Engineers | |
| 233. | Maps | Preliminary detailed potentiometric surface map, Middle Sand Aquifer. (Map at EPA Regional (Site) file.) | No date | 1 | Spokane County Utilities Department | |
| 234. | Maps | Preliminary general potentiometric surface map, Middle Sand Aquifer. (Map at EPA Regional (Site) file.) | No date | 1 | Spokane County Utilities Department | |
| 1235. | Maps | Preliminary detailed potentiometric surface map, Middle Sand Aquifer. (Map at EPA Regional (Site) file.) | No date | 1 | Spokane County Utilities Department | |
| 1236. | Maps | Preliminary detailed Isopach map, Upper Clay Unit. (Map at EPA Regional (site) file.) | No date | 1 | Spokane County Utilities Department | |
| 1237. | Maps | Preliminary general potentiometric surface map, Upper Sand Aquifer (map at EPA regional (site) file). | No date | 1 | Spokane County Utilities Department | |
| 0238. | Maps | Preliminary general isopach map, Upper Clay Unit. (Map at EPA regional (site) file.) | No date | 1 | Spokane County Utilities Department | |
| 0239. | Maps | Preliminary Detailed Structure Contour map, top of Upper Clay. (Map at EPA regional (site) file.) | No date | 1 | Spokane County Utilities Department | |
| 0240. | Maps | Preliminary General Structure Contour map, top of Middle Sand. (Map at EPA regional (site) file.) | No date | 1 | Spokane County Utilities Department | |
| 0241. | Maps | Preliminary Detailed Structure Contour map, top of Middle Sand. (Map at EPA regional (site) file.) | No date | 1 | Spokane County Utilities Department | |
| 0242. | Maps | Preliminary General Structure Contour map, top of Upper Clay Unit. (Map at EPA regional (site) file.) | No date | 1 | Spokane County Utilities Department | |

| | File | Type/Description | Date | # Pages | Author/Organization | Addressee/Organization |
|---|---|---|---|---|---|---|
| 243. | Maps | Geologic Cross Section C-C. (Map at EPA regional (site) file.) | No date | 1 | Spokane County Utilities Department. M. M. Maddox Assocs./Montgomery Engineers | |
| 244. | Maps | Geologic Cross Section B-B. (Map at EPA regional (site) file.) | No date | 1 | Spokane County Utilities Department. M. M. Maddox Assocs./Montgomery Engineers | |
| 245. | Maps | Geologic Cross Section A-A. (Map at EPA regional (site) file.) | No date | 1 | Spokane County Utilities Department. M. M. Maddox Assocs./Montgomery Engineers | |
| 246. | Maps | Preliminary Location map, existing water wells. (Map at EPA regional (site) file.) | No date | 1 | Spokane County Utilities Department. | |
| 247. | Maps | Location map of proposed drilling and water sampling site. (Map at EPA regional (site) file.) | 7/30/81 | 1 | George Maddox & Assocs., Inc. | |
| 248. | NPL Listing & Comments | Federal Register, Vol 47., No. 251, pp. 58470-84, NPL proposed rules | 12/3/82 | 9 | EPA | |
| 249. | NPL Listing & Comments | Federal Register, Vol. 48, No. 175, pp. 40658-40673. Final Rule, National Priorities List | 9/8/83 | 17 | EPA | |

| oc# | File | Type/Description | Date | # Pages | Author/Organization | Addressee/Organization |
|---|---|---|---|---|---|---|

OCUMENTS DELETED FROM COLBERT LANDFILL ADMINISTRATIVE RECORD

| OC. NO. | TITLE/DESCRIPTION | REASON REMOVED |
|---|---|---|
| 0000127. | Community Relations Plan for RI/FS | Duplicate of Doc. No. 00000128 |
| 00000180. | Newspaper article, Spokane Chronicle, 5/24/87 | Duplicate of Doc. No. 00000179 |
| 00000181. | Newspaper article, Spokane Chronicle, 5/29/87 | Duplicate of Doc. No. 00000182 |
| 00000184. | Newspaper article, Spokesman Review, 6/1/87 | Duplicate of Doc. No. 00000183 |
| 00000187. | Newspaper article, Spokesman Review | Duplicate of Doc. No. 00000182 |

# APPENDIX B

# CONSENT DECREE

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF WASHINGTON

| | |
|---|---|
| THE STATE OF WASHINGTON, DEPARTMENT OF ECOLOGY AND THE UNITED STATES OF AMERICA ON BEHALF OF THE U.S. ENVIRONMENTAL PROTECTION AGENCY,<br><br>Plaintiffs,<br><br>v.<br><br>COUNTY OF SPOKANE AND KEY TRONIC CORPORATION,<br><br>Defendants. | NO.<br><br>PROPOSED CONSENT DECREE |

TABLE OF CONTENTS


I. AGREEMENT OF PARTIES . . . . . 2
II. JURISDICTION AND VENUE . . . . . 4
III. STATEMENT OF FACTS . . . . . 5
IV. DEFINITIONS. . . . . 10
V. PARTIES BOUND. . . . . 13
VI. GENERAL PRINCIPLES . . . . . 14
VII. THE REMEDIAL ACTION. . . . . 14
VIII. OBLIGATIONS OF CONSENTING PARTIES. . . . . 17
IX. INDEMNIFICATION. . . . . 18
X. DATA REPORTING/AVAILABILITY, SAMPLING. . . . . 19
XI. PROGRESS REPORTS . . . . . 20
XII. OTHER REPORTS, PLANS AND OTHER ITEMS . . . . . 22
XIII. RETENTION OF RECORDS . . . . . 23
XIV. DESIGNATED PROJECT MANAGERS. . . . . 23
XV. IMPLEMENTATION OF REMEDIAL ACTION. . . . . 24
XVI. FINANCIAL ASSURANCES . . . . . 26
XVII. PAYMENT OF COSTS . . . . . 26
XVIII. TRUST FUND . . . . . 31
XIX. RESERVATION OF RIGHTS. . . . . 31
XX. OTHER CLAIMS . . . . . 34
XXI. COMPLIANCE WITH LAWS . . . . . 34
XXII. SITE ACCESS. . . . . 35
XXIII. ENDANGERMENT . . . . . 36



OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
PB 71
Olympia, WA 98504-8071

XXIV. EXTENSIONS OF SCHEDULE . . . . . 39
XXV. AMENDMENT OF CONSENT DECREE. . . . . 40
XXVI. STIPULATED PENALTIES . . . . . 42
XXVII. DISPUTE RESOLUTION . . . . . 44
XXVIII. TRANSFER OF INTEREST IN PROPERTY . . . . . 46
XXIX. COMMUNITY RELATIONS. . . . . 47
XXX. COVENANT NOT TO SUE. . . . . 48
XXXI. EFFECTIVE AND TERMINATION DATES. . . . . 56
XXXII. RETENTION OF JURISDICTION. . . . . 57
XXXIII. NOTICES. . . . . 57
XXXIV. LODGING OF DECREE WITH THE COURT AND PUBLIC COMMENT 58

## I. AGREEMENT OF PARTIES

The parties agree that:

A. The State of Washington and the United States of America are filing the complaint in this action simultaneously with the Consent Decree. The Plaintiffs in the complaint seek (1) an injunction requiring the Defendants to abate the release or threat of release of hazardous substances from the Site ("Site"), as hereafter defined, and to remedy hazardous conditions presented to the public health, welfare and the environment by the Site, and (2) reimbursement of response costs incurred or to be incurred by the United States or the state in connection with the Site as reduced by the the mixed funding to be provided by the Government as provided in Section XVII;

B. The relief sought against the Defendants would require remedial actions as provided for in the Record of Decision ("ROD") signed on September 29, 1987 by the Regional


OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
PB 71
Olympia, WA 98504-8071

Administration, Region 10, the United States Environmental Protection Agency;

C. The Defendants deny any legal or equitable liability under any statute regulation, ordinance or common law for damages caused by the generation, handling, storage, treatment, transportation, or disposal of hazardous substances at the Site;

D. This Consent Decree, the entry hereof, and compliance herewith shall not be admissible in any judicial or administrative proceeding and shall not be an admission of any fact dealt with herein or an admission of liability for any purpose; the Consenting Parties retain the right to controvert in any subsequent proceeding, other than in proceedings to enforce this Consent Decree, the validity of or the responsibility for any of the factual or legal determinations made herein;

E. To accomplish the objectives set forth in this Consent Decree the parties have agreed that it is in the public interest and in the interest of the parties for this case to be resolved without litigation, before the taking of any testimony and without the admission of any issue of fact or law;

F. The obligations of Key Tronic Corporation under this Consent Decree and with respect to remedial action at the Colbert Landfill Site are limited to tender of the payments



OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
PB 71
Olympia, WA 98504-8071

specified under Paragraph A of Section VIII consistent with Sections XIX, XXV, and XXX. The obligations of the United States Air Force are dealt with pursuant to a separate consent agreement with the Government Plaintiffs.

G. As provided in Section 113(f) of CERCLA, 42 U.S.C. § 9613(f) and RCW 70.105B.070(6), Key Tronic and the County shall not be liable for claims for contribution regarding matters addressed in this Consent Decree;

H. By entering into this Consent Decree, the parties do not intend to discharge nonsettling persons from any liability they may have with respect to matters alleged in the complaint; and

I. Plaintiffs and Defendants, by their representatives, have agreed to this Consent Decree;

NOW, THEREFORE, it is ORDERED as follows:

## II. JURISDICTION AND VENUE

A. This Court has subject matter jurisdiction over this matter pursuant to 28 U.S.C. §§ 1331 and 1345, 42 U.S.C. §§ 6901 *et seq.*, 42 U.S.C. §§ 9601 *et seq.*, ch. 70.105 RCW, ch. 90.48 RCW, and ch. 70.105B RCW and personal jurisdiction over the signatories consenting hereto. Each signatory submits itself to the jurisdiction of the Court for all matters relating to this Consent Decree.


OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
PB 71
Olympia, WA 98504-8071

B. The parties stipulate that venue in this court is proper pursuant to 42 U.S.C. § 9613(b) and request that a single judge be assigned to decide all issues arising out of this Consent Decree.

C. The parties further stipulate that, by agreeing to the exercise of pendent jurisdiction over issues arising under state law, no rights or claims which may be available to the County and Key Tronic under the Hazardous Waste Cleanup Act are waived and such rights may be adjudicated by this Court or, if this Court declines jurisdiction, the appropriate state court.

## III. STATEMENT OF FACTS

The Colbert Landfill is a Spokane County-owned sanitary landfill that was operated from 1968 through 1986. The Colbert area is in northeastern Washington, in Spokane County, approximately 15 miles north-northeast of Spokane, Washington. The landfill covers 40 acres and is located about 2.5 miles north of the Town of Colbert and a half mile east of U.S. Highway 2 (Newport Highway) in the northwestern quadrant of the intersection of Elk-Chattaroy, Yale, and Big Meadows Roads. It is situated in the southeast corner of Section 3, Township 27 North, Range 43 East, W.M., see Appendix A. The landfill received both municipal and commercial wastes up to 1986. It is now filled to capacity, and is no longer receiving waste.



OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
PB 71
Olympia, WA 98504-8071

The remedial action site, the area of potential impact surrounding and including the landfill, extends north of the landfill about a half mile, west about a mile to the Little Spokane River, east a similar distance, and south approximately five miles to Peone (or Deadman) Creek. The total area is approximately 6,800 acres which includes parts of Sections 2, 3, 10, 11, 14, 15, 16, 21, 22, 23, 26, 27, 28, 33, 34, and 35 of the same township and range. The site is entirely within the drainage basin of the Little Spokane River, mainly on a plateau bounded by bluffs down to the river on the west and knobby granite and basalt hills to the east.

Colbert Landfill had been operated as a sanitary landfill by the Spokane County Utilities Department since it was opened in September 1968 to its cessation of operations in October 1986. During the five years from 1975 to 1980, a local electronics manufacturing company, Key Tronic Corporation, used the Colbert landfill to dispose of spent organic solvents, mainly methylene chloride (MC) and 1,1,1-trichloroethane (TCA). Hazardous substances detected in ground water at the Site were also disposed of by a variety of other persons, including Alumax Irrigation Products, A&M Manufacturing and United Paint, Inc. During the same period a nearby military facility, Fairchild Air Force Base, also disposed of various solvent wastes at the site. A variety of other chemicals (such as


OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
PB 71
Olympia, WA 98504-8071

pesticides and refinery tar residues) from other sources were also disposed at the site but have not, to date, been detected in the groundwater at the site.

In 1980 nearby residents complained to the Eastern Regional Office of the Washington Department of Ecology (Ecology) about these disposal practices. State and county officials, under the lead of the Spokane County Utilities Department, initiated an investigation into complaints of groundwater contamination in the area by sampling nearby private wells of which some were found to be contaminated with TCA. Subsequently, the County and Key Tronic instituted and continued a well sampling plan to protect the interests of local residents.

In the following years, a number of studies have been directed toward the contamination problem at the Colbert Landfill. The original investigation, which was initiated in response to citizen complaints, was conducted by George Maddox and Associates.

The United States Environmental Protection Agency ("EPA"), pursuant to Section 105 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 ("CERCLA"), 42 U.S.C. § 9605, placed the Colbert Landfill Site in August, 1983 (the "Site" as specifically defined in Section IV of this Consent Decree) on the National Priorities List, which is set


OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
PB 71
Olympia, WA 98504-8071

forth at 40 C.F.R. Part 300, Appendix by publication in the Federal Register on August 8, 1983, 47 Fed. Reg. 58470-58484 (1983);

In response to a release or a substantial threat of a release of a hazardous substance at or from the Site, the Ecology and EPA in August, 1984, commenced a Remedial Investigation and Feasibility Study ("RI/FS") pursuant to 40 C.F.R. 300.68 for the Site;

The Remedial Investigation ("RI") Report was completed in May, 1987, and the Feasibility Study ("FS") Report was also completed in May, 1987. The FS Report contains a proposed plan for remedial action at the Site;

Six volatile organic chemicals, all chlorinated aliphatic hydrocarbons, were the main contaminants detected in the groundwater at the Colbert Landfill Site during the Remedial Investigation (Golder 1987). These contaminants, identified in this Decree as "constituents of concern" are: 1,1,1-Trichloroethane (TCA); 1,1-Dichloroethylene (DCE); 1,1-Dichloroethane (DCA); Trichloroethylene (TCE); Tetrachlroethylene (PCE); and Methylene Chloride (MC). Constituents of concern were detected at levels requiring remedial action in both upper and lower aquifers.

On January 8, 1988, EPA, pursuant to Section 122 of CERCLA, 42 U.S.C. § 9622, notified the County and Key Tronic


OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
PB 71
Olympia, WA 98504-8071

that the EPA determined each party to be a potentially responsible party ("PRP") regarding the proposed remedial action at the Site;

EPA's decision on the final remedial action plan is embodied in a document called a Record of Decision ("ROD"), issued September 29, 1987;

Pursuant to Section 121(d)(1), EPA, the state, Spokane County and Key Tronic ("the parties") have determined that the remedial action plan embodied in this Consent Decree will attain a degree of cleanup of hazardous substances, pollutants and contaminants released into the environment and of control of further release which at a minimum assures protection of human health and the environment at the Site;

The parties have determined that the remedial action plan embodied by this Consent Decree will provide standards of control for such hazardous substances, pollutants, or contaminants which at least attains legally applicable or relevant and appropriate standards, requirements, criteria, or limitations under Federal environmental law or state environmental or facility siting law in accordance with Section 121(d)(2) of CERCLA, 42 U.S.C. § 9621(d)(2); and will attain a degree of cleanup as provided in RCW 70.105B.060; and the remedial action plan is in accordance with Section 121 of


OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
PB 71
Olympia, WA 98504-8071

CERCLA, 42 U.S.C. § 6921, and with the National Contingency Plan ("NCP"), 40 C.F.R. Part 300;

The County agrees to implement the final remedial action plan as set forth in Appendix B to this Consent Decree, and the Government Plaintiffs have determined that the work required under the Consent Decree will be done properly by the County, and that the County is qualified to implement the remedial action; and

The parties recognize, and intend to further hereby, the public interest in the expedition of the cleanup of the Facility and avoiding prolonged and complicated litigation between the parties.

NOW, THEREFORE, it is hereby Ordered, Adjudged and Decreed:

## IV. DEFINITIONS

The following definitions shall apply to this Consent Decree, including the scope of work set forth in Appendix B:

A. ARAR means a federal or state standard, requirement, criterion, or limitation that is legally applicable or relevant and appropriate to cleanup of the Site as of the date of entry of this Consent Decree within the meaning of 42 U.S.C. § 9621(d).



OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
PB 71
Olympia, WA 98504-8071

B. CERCLA means the Comprehensive Environmental Response Compensation and Liability Act, 42 U.S.C. § 9601 et seq., as amended, also known as "Superfund."

C. Colbert Landfill Site ("Site") means the Site located in Spokane County, and described in the September 29, 1987 ROD. See also Appendix A. The Site includes (1) the approximately 40-acre landfill operated from 1968 to 1986; (2) any portions of other properties that contain hazardous substances as a result of landfill operations at the landfill.

D. Constituents of Concern means such hazardous substances as are identified as major contaminants in the ROD; specifically, 1,1,1-Trichloroethane (TCA); 1,1-Dichloroethylene (DCE); 1,1-Dichloroethane (DCA); Trichlorethylene (TCE); Tetrachloroethylene (PCE); and Methylene Chloride (MC).

E. County or Spokane County means the County of Spokane, Washington.

F. Department of Ecology ("Ecology" or "state") means the State of Washington, Department of Ecology.

G. EPA means the United States Environmental Protection Agency.

H. Government Plaintiffs means the State of Washington on behalf of the Department of Ecology and the United States of America on behalf of EPA, acting alone or together.



OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
PB 71
Olympia, WA 98504-8071

I. Hazardous Substance means any hazardous substance as defined by CERCLA and dangerous waste, extremely hazardous waste and hazardous substances as defined by state law.

J. Hazardous Waste Cleanup Act means Washington Laws of 1987, Chapter 2, 3rd Ex. Session (S.B. 6085), as codified in ch. 70.105B RCW and elsewhere.

K. Key Tronic means Key Tronic Corporation.

L. National Contingency Plan ("NCP") means the plan promulgated pursuant to CERCLA and codified at 40 CFR Part 300 et seq., as amended.

M. Parties means all parties who are signatories to the Consent Decree.

N. Remedial Action means all activities and work within the meaning of 42 U.S.C. § 9601(24) and specifically identified in this Consent Decree, including Appendix B, and all attachments thereto and plans and schedules thereunder, and all amendments to any of the above made in accordance with this Consent Decree. The Remedial Action includes, without limitation the following items described more fully in Appendix B: the pilot studies, further site characterization, and initiation of cleanup activities to be conducted in Phase I; the evaluation of Phase I results; the design of a final remedial action program to meet the Performance Standards as defined in Appendix B and implementation of such remedial



OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
PB 71
Olympia, WA 98504-8071

action program to be conducted in Phase II; any modification to the Remedial Action as a result of information developed in Phase I, including data relating to the extent of contamination, site hydrogeology, initial field pilot testing, technical feasibility, or implementability of the remedial options originally chosen, as provided on page I-3 of Appendix B; if identified to be necessary as provided in Appendix B, air stripping tower emissions abatement; closure of Colbert Landfill; domestic well monitoring; provision of alternative water supply; implementation of institutional controls; and, if the preferred remedy identified in the ROD is in whole or in part no longer feasible or cost-effective, design and implementation of any new alternative proposed by Spokane County as provided in Appendix B.

O. RCRA means the Resource Conservation and Recovery Act, 42 U.S.C. §§ 6901 et seq.

P. Settlors means

All terms not specifically defined herein shall have the meaning as provided by CERCLA, 42 U.S.C. § 9601 et seq.

## V. PARTIES BOUND

This Consent Decree shall apply to and be binding upon the signatories, their successors and assigns. The undersigned representative of each party certifies that he or she is fully authorized to enter into the terms and conditions of this



OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
PB 71
Olympia, WA 98504-0271

Consent Decree and to execute and legally bind such party to this document. The County shall provide a copy of this Consent Decree to each contractor or subcontractor retained to perform work contemplated by this Consent Decree and shall condition any contract for such work on compliance with this Consent Decree.

## VI. GENERAL PRINCIPLES

A. The Appendices to this Consent Decree and their Attachments are a part of this Decree, and the plans and schedules prepared as required in Appendix B and attachments thereto shall, upon their approval by the Government Plaintiffs, be incorporated in the Decree.

B. Except as provided in Section XXVII (Dispute Resolution) and Section XXX (Covenant Not to Sue) nothing in this Consent Decree shall be deemed to limit the response authority of the Government Plaintiffs under Section 104 of CERCLA, 42 U.S.C. § 9604 under Section 106 of CERCLA, 42 U.S.C. § 9606, under the Hazardous Waste Cleanup Act.

## VII. THE REMEDIAL ACTION

A. The County and Key Tronic shall finance and the County shall perform the Remedial Action in accordance with this Consent Decree. It is the intent of the parties that all work to be performed be embodied in Appendix B. The remedial


OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
PB 71

action must meet the performance standards set forth in Appendix B.

B. The Scope of Work to be performed by the County at and about the Site is attached to this Consent Decree as Appendix B and is herein incorporated by reference in its entirety. The Scope of Work requires that the County submit plans for approval by the Government Plaintiffs and implement such plans after receiving Governmental approval. All such approved plans shall become a part of this Decree, and this Decree shall be so amended upon and by the filing of approved plans with the Court. The Scope of Work to be performed at the Site includes further site characterization, installation of pilot extraction wells and initial remediation as well as full and final remediation measures.

As specified more completely in Appendix B, the Remedial Action includes, inter alia,

1. Provision of an alternate drinking water supply to each residence whose domestic water supply is affected by Constituents of Concern or by the Remedial Action;

2. Additional monitor wells installed and sampled to define plume(s) boundaries;

3. Preliminary selection of types of treatment system to be constructed;



OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
PB 71
Olympia, WA 98504-8071

4. Treatability studies for the contaminated water based on the selected treatment method, if necessary;

5. Preliminary design;

6. Final design (plans and specifications);

7. Construction of the extraction wells, treatment system, and discharge structure(s);

8. Operation and maintenance manual, (draft and final);

9. Operation and maintenance of the system;

10. System Performance monitoring program for test wells;

11. Monitoring program for domestic supply wells;

12. Pump tests for extraction wells;

13. Development and implementation of institutional controls to the degree authorized by law.

C. The Government Plaintiffs shall have such rights of review and approval of the Remedial Action as are provided herein. The Remedial Action shall be designed, implemented and completed in accordance with the National Contingency Plan (NCP) in effect on the effective date of this Consent Decree and with the standards, specifications, and schedule of completion set forth in Appendix B and Attachments and the plans and schedules developed in accordance therewith. The level of cleanup or treatment required by the Remedial Action



OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
PB 71
Olympia, WA 98504-8071

with respect to constituents of concern shall not be in excess of the Performance Standards set forth in Appendix B, unless those standards are modified under the five-year review authorized under CERCLA § 121(c), and discussed in Section XXV, B.

D. The Government Plaintiffs, Key Tronic and Spokane County agree that the Remedial Action, as set forth in Appendix B; or as modified in accordance with Section XXIII (Extension of Schedules) or the Court, is consistent with the NCP and the Hazardous Waste Cleanup Act and that the amounts paid by Key Tronic and Spokane County to perform the work are necessary costs of response.

## VIII. OBLIGATIONS OF CONSENTING PARTIES

A. Obligation of Key Tronic

The obligation of Key Tronic shall be limited solely to payment into the Trust Fund established under this Consent Decree of only the following amounts according to the following schedule:

| Date | Amount |
|---|---|
| September 30, 1988 | 650,000 |
| September 30, 1989 | 650,000 |
| September 30, 1990 | 950,000 |
| September 30, 1991 | 950,000 |
| September 30, 1992 | 1,000,000 |

Nothing herein shall preclude Key Tronic from paying prior to the date contained in this schedule.



OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
PB 71
Olympia, WA 98504-8071

B. Obligation of Spokane County

Spokane County shall comply with the relevant terms and conditions of this Consent Decree and implement the Remedial Action as specified in Appendix B. It is the intent of the parties, that, consistent with Sections XIX, XXV, and XXX, any changes or modifications to the Scope of Work embodied in Appendix B ~~will be implemented by Spokane County~~ are not the responsibility of Key Tronic.

## IX. INDEMNIFICATION

Spokane County agrees to indemnify and save and hold the Government Plaintiffs, their agents and employees 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 the County, its officers, employees, agents, or contractors in entering into and implementing this Decree; provided, however, that the County shall not indemnify the Government Plaintiffs nor save nor hold its employees and agents harmless from any claims or causes of action arising out of the negligent or intentional acts or omissions of the Government Plaintiffs, or the employees and agents of the Governments in implementing the activities pursuant to this Decree. Nothing contained herein shall prevent the County from naming or joining EPA or Ecology for their own acts of negligence or intentionally tortious conduct,



OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
Olympia, WA 98504-8071
(206) 753-6200

as provided by law. The Government Plaintiffs retain all rights and defenses with respect to such claims.

X. DATA REPORTING/AVAILABILITY, SAMPLING

The Government Plaintiffs and the County shall make the results of all sampling, laboratory reports, and/or test results generated by or on behalf of such party with respect to the implementation of this Consent Decree available to the other. The County shall submit these results in progress reports submitted in accordance with Section XI (Progress Reports) herein. The Government Plaintiffs shall submit their results in writing to the County within 30 days of receipt of a written request.

At the request of the Government Plaintiffs, the County shall allow split or duplicate samples to be taken by the Government Plaintiffs and/or its authorized representatives of any samples collected by Spokane County pursuant to the implementation of this Consent Decree. Spokane County shall use best efforts to notify the Government Plaintiffs at least five (5) working days in advance of any sample collection activity. The Government Plaintiffs shall allow split or duplicate samples to be taken by the County or its authorized representatives of any samples collected by the Governments pursuant to the implementation of this Consent Decree. The Government Plaintiffs shall use best efforts to notify the



OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
Olympia, WA 98504-8071
(206) 753-6200

County at least five (5) working days prior to any sample collection activity.

Both the County and the Government Plaintiffs shall conduct all sampling and analysis in a manner consistent with the Quality Assurance/Quality Control Plan established for the Site.

## XI. PROGRESS REPORTS

A. Spokane County shall provide or cause their contractors or agents to provide written reports to the Government Plaintiffs on a monthly basis during periods of construction as provided by Appendix B and quarterly thereafter until all the requirements of this Consent Decree have been implemented, or on such other basis as may be mutually agreed to by the County and the Government Plaintiffs without formal amendment of this Consent Decree. These progress reports shall describe the actions that have been taken toward achieving compliance with this Consent Decree, including a general description of Remedial Action activities commenced or completed during the reporting period, Remedial Action activities projected to be commenced or completed during the next reporting period, and any problems that have been encountered or are anticipated by the County in commencing or completing the activities. The monthly progress reports are to be submitted to the Government Plaintiffs by the 10th of each month



OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
Olympia, WA 98504-8071
(206) 753-6200

for work done the preceding month and planned for the current month. Quarterly progress reports are to be submitted to the Government Plaintiffs by the 10th of each month following the end of the preceding quarter.

B. If a progress report is incomplete or otherwise deficient, the Government Plaintiffs shall notify the County within twelve (12) work days of receipt of such progress report by the Government Plaintiffs. In the event that a longer review period is required, the Government Plaintiffs shall notify the County within seven (7) days of receipt of such document. The notice shall include a description of the deficiencies. Notwithstanding this schedule, unless the County invokes the procedures of Section XXVII (Dispute Resolution), the County or its contractors or agents shall make the necessary changes and resubmit the progress report or submit a response to the notice of disapproval with the next progress report to the Government Plaintiffs. Nothing in this paragraph shall be construed to negate these Government Plaintiffs' rights of review and approval.

C. If the Government Plaintiffs determine that a resubmittal progress report is deficient or disagree with the County's response to a notice of disapproval, the County may invoke the Dispute Resolution procedures of Section XXVII.



OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
Olympia, WA 98504-8071
(206) 753-6200

## XII. OTHER REPORTS, PLANS AND OTHER ITEMS

A. Spokane County shall provide ten copies to EPA and five copies to Ecology of any item described as "deliverables" in the work plans and Scope of Work according to the schedule set forth therein.

B. If the Government Plaintiffs disapprove any plans, reports (other than monthly progress reports covered by Section XI, above) or other items required to be submitted to the Government Plaintiffs for approval pursuant to this Consent Decree, then the County shall have thirty (30) days from the receipt of such disapproval to correct any deficiencies and resubmit the plan, report or item for Governmental approval.

C. Any disapproval by the Government Plaintiffs shall be in writing and include an explanation of why the plan, report or item is being disapproved. In the event that a longer review period than specified in Appendix B is required, the Government Plaintiffs shall notify the County of that fact within 20 days of receipt of such document. Nothing in this paragraph shall be construed to negate these Government Plaintiffs' rights of review and approval.

D. The County must address each of the Government Plaintiffs' comments and resubmit to the Government Plaintiffs the previously disapproved plan, report or item with the required changes within the deadline set in Paragraph B, above.



OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
Olympia, WA 98504-8071
(206) 753-6200

E. If any plan, report, or item cannot be approved by the Government Plaintiffs after one resubmission, the County may invoke the Dispute Resolution procedures of Section XXVII.

## XIII. RETENTION OF RECORDS

Spokane County shall preserve, during the pendency of this Consent Decree and for ten (10) years from the date of termination of this Consent Decree, all records, reports, documents, and underlying data in their possession, or in the possession of their employees, agents, relevant to the implementation of this Consent Decree, unless otherwise ordered by the Court. The County shall also require all such records in the possession of contractors to be provided to them and shall retain copies of all such records which are nonduplicative. Any party to this Consent Decree may have access to such documents. Notwithstanding any other provision of this Consent Decree, the Government Plaintiffs and the County retain any rights they may otherwise have including but not limited to privilege within the meaning of Rule 26(b) of the Federal Rules of Civil Procedure or Washington Civil Rule 26(b), governing the production of such records and documents.

## XIV. DESIGNATED PROJECT MANAGERS

A. Ecology's initial project manager is Mike Blum. EPA's initial project manager is Neil Thompson. Spokane County



OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
Olympia, WA 98504-8071
(206) 753-6200

shall designate an initial project manager within thirty days of entry of the Decree. Each project manager shall be responsible for overseeing the implementation of this Consent Decree. The Government Plaintiffs' project managers will be the Government Plaintiffs' designated representatives at the Site. To the maximum extent possible, communications between the County and the Government Plaintiffs, and all documents, including reports, approvals, and other correspondence concerning the activities performed pursuant to the terms and conditions of this Consent Decree, shall be directed through the project managers.

Any party may change its respective project manager by notifying the other party, in writing, at least ten (10) calendar days prior to the change.

B. The Government Plaintiffs' project managers will observe and monitor the progress of the Remedial Action being performed pursuant to this Consent Decree. The project managers shall have the authority vested by 40 CFR § 300 et seq., and other applicable federal laws and regulations. The project managers do not have the authority to modify in any way the terms of this Consent Decree.

## XV. IMPLEMENTATION OF REMEDIAL ACTION

In the event that the Government Plaintiffs determines that the County has failed ~~without good cause~~ to implement the



OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
Olympia, WA 98504-8071
(206) 753-6200

Remedial Action, the Government Plaintiffs may, after notice to the County and consistent with the Dispute Resolution procedures of Section XXV, perform any or all portions of the Remedial Action that remain incomplete. If the Government Plaintiffs perform all or portions of the Remedial Action because of the County's failure without good cause to comply with their obligations under this Consent Decree, the County shall reimburse the Government Plaintiffs for the costs of doing such work within thirty (30) days of receipt of demand for payment of such costs, provided that the County is not obligated under this section to reimburse the Government Plaintiffs for costs incurred for work inconsistent with or beyond the scope of the Remedial Action unless it is work carried out under the five-year review provided for by CERCLA _121(c), which is referenced in Section XXIV. B. The Government Plaintiffs reserve the right to seek reimbursement for any other necessary costs of remedial action. In any proceeding for costs under this section, the County shall have the burden of proving that costs claimed by the Government Plaintiffs were for work inconsistent with or beyond the scope of the Remedial Action, work that is inconsistent with the NCP, or work that was unnecessarily duplicative.



OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
Olympia, WA 98504-8071
(206) 753-6200

## XVI. FINANCIAL ASSURANCES

The Government Plaintiffs have reviewed the financial capabilities of Key Tronic and Spokane County and have concluded that the availability of financial resources is not an impediment to implementation of the Remedial Action.

## XVII. PAYMENT OF COSTS

### A. State Costs

Spokane County agrees to reimburse the appropriate account of the Treasury of the State of Washington, as identified by Ecology, for Ecology's reasonable and appropriate costs as shown by an itemized statement of such costs compiled and presented in conformance with state Office of Financial Management standards and procedures associated with Ecology's oversight of the Remedial Action that are consistent with the NCP or ch. 70.105B RCW and not unnecessarily duplicative which have been conducted during the implementation of this Consent Decree. Within ninety (90) days of the end of each fiscal quarter, Ecology will submit to the County an itemized statement of Ecology's expenses for the previous quarter. Following receipt of the itemized statement, the County shall pay, within ninety (90) days, into the appropriate account of the Treasury of the State of Washington, as identified by Ecology, the required sum.



OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
Olympia, WA 98504-8071
(206) 753-6200

B. Federal Costs

[To be provided by EPA]

C. Mixed Funding

1. State of Washington

Pursuant to RCW 70.105B.070(7) the Director has determined that funding from the state toxics control account is appropriate to help defray the costs of conducting the remedial action required under this Consent Decree. Such funding will ~~expedite~~ promote prompt settlement and implementation without burdensome litigation and enhance cleanup operations and will achieve greater fairness with respect to the payment of remedial action costs by providing for the shares of ~~nonparticipating~~ potentially liable persons who have not entered into a settlement agreement with Ecology.

As provided for by RCW 70.105B.070(7) Ecology may seek to recover funds provided under this Decree from non-settling potentially liable persons. Ecology further reserves the right to seek reimbursement for such funds from any party ~~who~~ which has not fulfilled its obligations set forth in this Consent Decree.

To achieve the goals and purposes of RCW 70.105B.070(7), the Director has determined that funds shall be made available in the following specified amounts:



OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
Olympia, WA 98504-8071
(206) 753-6200

a. Past Costs. The parties agree that Key Tronic and Spokane County and other PLPs are liable for $285,000 plus interest, for remedial action costs incurred by Ecology to date. As part of its share of mixed funding, Ecology agrees to waive collection of these costs from the County and Key Tronic.

b. Future Costs. The parties agree that Key Tronic and Spokane County and other PLPs are liable for Ecology's reasonable and appropriate oversight costs as provided above. As part of its share of mixed funding, Ecology agrees to waive collection of $100,000 of such future oversight costs from Key Tronic and Spokane County. Spokane County ~~shall be liable for~~ agrees to pay such oversight costs in excess of said amount.

c. Ecology agrees to preauthorize claims against the state toxics control account for up to $75,000 to be used in providing an alternate water supply as required by Appendix B.

d. Ecology agrees to preauthorize claims against the state toxics control account for up to $100,000 to be used for installation of an outfall pipe from the south extraction system to the Little Spokane River as required by Appendix B.

e. Ecology agrees to preauthorize claims against the state toxics control account for up to $100,000 to be used for construction of barrier wells in the south and west treatment systems as required by Appendix B.



OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
Olympia, WA 98504-8071
(206) 753-6200

All claims against the state toxics control account shall be contingent upon and subject to legislative appropriation.

2. United States. Claims Against the Fund.

a. In accordance with the preauthorization decision document (Exhibit 4 to the Consent Decree), Spokane County may submit a claim for reimbursement to the Hazardous Substance Superfund (the "Superfund") for up to 1.4 million dollars ($1,400,000.00), the costs incurred in completing the remedial action. In no event shall the claims against the Fund exceed the sum of $1.4 million, unless the amount preauthorized is modified pursuant to Paragraph B. The claims against the Fund shall cover only Spokane County's costs of the remedial action. The claims shall not include any of the United States' oversight costs, or investigatory costs or past Response Costs that were incurred prior to the lodging of this Decree, which costs Spokane County is to pay to the Fund a portion thereof, pursuant to this section. Reimbursement from the Fund of the amount claimed by Spokane County shall be subject to the applicable claims and audit procedures specified in Exhibit 4, and shall be made in accordance with the procedures outlined in Exhibit 4. Spokane County may not submit Contractor Claims for reimbursement from the Fund. Any claim which has been presented to any known responsible party and which has not been satisfied within sixty days, may be presented against the Fund.



OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
Olympia, WA 98504-8071
(206) 753-6200

If the agency denies a claim in whole or in part, it shall notify the claimant of the reason for such denial. If the claimant is dissatisfied with EPA's decision, or if EPA fails to act on a claim within 90 days of its submission, the claimant may demand an administrative hearing before an administrative law judge as provided in Section 121(b) of CERCLA, 42 U.S.C. § 9621(b).

b. If it is subsequently determined that it is necessary to modify the actions that EPA preauthorized, or if it becomes apparent that the project's costs will exceed the approved costs as set out in Exhibit 4, Spokane County may submit to EPA a revised application for preauthorization. Further, Spokane County may submit a revised application for preauthorization upon EPA's determination of the requirements for final closure of the Site. EPA will consider requests for preauthorization from Spokane County in a timely manner and will revise the preauthorization to cover ten percent (10%) of reasonable and necessary costs to implement the approved remedy.

D. Grant Funding

Upon entry of this Consent Decree, Spokane County shall be eligible to apply for grant funds from Ecology as provided by RCW 70.105B.220(4) and WAC 173-309-050.



OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
PB 71
Olympia WA 98504-8071

## XVIII. TRUST FUND

Key Tronic shall, subsequent to the effective date of this Consent Decree, deposit into the trust established by the trust agreement, which is attached hereto as Appendix C and is hereby incorporated by reference, the amount of four million two hundred thousand dollars and no cents ($4,200,000.00). Key Tronic shall pay funds into the trust fund under the schedule contained in Paragraph A of Section VIII of this Consent Decree. Said sum shall be held in trust pursuant to the terms of ~~a trust agreement~~ Appendix C. Ecology and EPA shall jointly be designated as having the power of appointment under the trust (hereinafter "Trust Fund"). The Trust Fund shall be for the exclusive purposes of financing the Remedial Action required and set forth under the terms of this Consent Decree.

## XIX. RESERVATION OF RIGHTS

A. Key Tronic

Notwithstanding compliance with its obligation under this Consent Decree to make the payments required under Paragraph A of Section VII, and consistent with Sections XXV and XXX, Key Tronic is not released from liability, if any, resulting from its use of Colbert Landfill for costs of any removal or remedial action outside the terms of this Consent Decree taken by the Government Plaintiffs with respect to: (1) conditions at the Site, previously unknown to the Government Plaintiffs,



OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
PB 71
Olympia, WA 98504-8071

which are discovered after the entry of this Consent Decree and which indicate that the Remedial Action is not protective of human health and the environment; (2) new information which is received after entry of this Consent Decree and which reveals a significant quantity of a hazardous substance originating from the Site not identified in the ROD or this Consent Decree or a condition not previously identified in the ROD or this Consent Decree as being present at the Site, in area of the Site other than as described in the ROD or this Consent Decree, or in quantities significantly greater than as described in the ROD or this Consent Decree; or (3) contamination originating other than from the Site. The Government Plaintiffs reserve the right to take any such action outside the terms of this Consent Decree pursuant to CERCLA or the Hazardous Waste Cleanup Act. In addition, the Government Plaintiffs reserve the right to seek damages in exoneration/reimbursement from Key Tronic for such costs incurred by the Government Plaintiffs.

B. Spokane County

Notwithstanding compliance with the terms of this Consent Decree, including completion of the Remedial Action, the County is not released from liability, if any, for costs of any removal or remedial actions outside the terms of this Consent Decree taken by the Government Plaintiffs with respect to: (1) conditions of the Site, previously unknown to the Government


OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
PB 71
Olympia, WA 98504-8071

Plaintiffs, which are discovered after the entry of this Consent Decree, when these previously unknown conditions indicate that the Remedial Action is not protective of human health and the environment; (2) new information which is received after entry of this Consent decree and which reveals a significant quantity of a hazardous substance originating from the Site not identified in the ROD or this Consent Decree or a condition not previously identified in the ROD or this Consent Decree as being present at the Site, in area of the Site other than as described in the ROD or this Consent Decree, or in quantities significantly greater than as described in the ROD or this Consent Decree; or (3) contamination originating other than from the Site. The Government Plaintiffs reserve the right to take any such action outside the terms of this Consent Decree pursuant to CERCLA or the Hazardous Waste Cleanup Act. In the event that the County fails or refuses to perform any tasks in accordance with the standards, specifications, and schedules specified in the work plans or Scope of Work, the Government Plaintiffs may undertake such tasks. In addition, the Government Plaintiffs reserve the right to seek damages in exoneration/reimbursement from the County for such costs incurred by the Government Plaintiffs.



OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
PB 71
Olympia, WA 98504-8071

## XX. OTHER CLAIMS

Nothing in this Consent Decree shall constitute or be construed as a release from any claim, cause of action or demand in law or equity against any person, firm partnership, corporation, or state or local governmental entity not a signatory to this Consent Decree for any liability it may have arising out of or relating in any way to the generation, storage, treatment, handling, transportation, release, or disposal of any hazardous substances, hazardous wastes, pollutants, or contaminants found at, taken to, or taken from the Site. Except as provided in paragraph C and D of Section XVII, regarding mixed or grant funding to be provided by the Government Plaintiffs, this Consent Decree does not preauthorize or constitute any decision or preauthorization of funds under 42 U.S.C. § 9611(a)(2) or the Hazardous Waste Cleanup Act. Key Tronic and Spokane County waive any claims they may otherwise have against the Superfund or state or local toxics control accounts, with respect to liability for which they have been relieved under this Consent Decree.

## XXI. COMPLIANCE WITH LAWS

A. Subject to the limitations of paragraph B of this section, all actions carried out by the County pursuant to the Consent Decree shall be done in accordance with all applicable federal, state statutes, rules, regulations and ordinances.



OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
PB 71
Olympia, WA 98504-8071

B. As provided in Section 121(e) of CERCLA, 42 U.S.C. § 9621(e), no federal, state, or local permit shall be required for the portions of the Remedial Action to be conducted entirely on the Site, although the County must comply with the substantive requirements of all applicable federal laws. As provided in Section 25 of the Hazardous Waste Cleanup Act, RCW 70.105B.250, the Remedial Action is exempt from the procedural and substantive requirements of state and local laws that would otherwise apply to the Remedial Action.

C. To the extent that, notwithstanding paragraph B of this Section, the County must obtain any permits in connection with the Remedial Action, the Government Plaintiffs ~~shall~~ may assist the County in obtaining any such permits after diligent efforts by the County.

## XXII. SITE ACCESS

The Government Plaintiffs or any authorized representative of the Government Plaintiffs shall have the authority to enter and freely move about all property at the Site at all reasonable times for the purposes of, inter alia: inspecting records, operation logs, and contracts related to the Site; reviewing the progress in carrying out the terms of this Consent Decree; conducting such tests or collecting samples as the Government Plaintiffs or the project managers may deem necessary; using a camera, sound recording, or other



OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
PB 71
Olympia, WA 98504-8071

documentary type equipment to record work done pursuant to this Consent Decree; and verifying the data submitted to the Government Plaintiffs by the County. The Government Plaintiffs shall split any samples taken during an inspection unless the County fails to make available a representative for the purpose of splitting samples. The County shall allow such persons to inspect and copy all records, files, photographs, documents, and other writings including all sampling and monitoring data, in any way pertaining to work undertaken pursuant to this Consent Decree that is not otherwise privileged within the meaning of Rule 26(b) of the Federal Rules of Civil Procedure or Washington Civil Rule 26(b). All parties with access to the Site pursuant to this section shall comply with approved health and safety plans. To the extent practicable, the Government Plaintiffs shall endeavor to notify the County prior to entering and moving about the Site.

If, after diligent efforts, the County is unable to achieve access, the Government Plaintiffs ~~will~~ may assist in securing access pursuant to existing law, including RCW 70.105B.030 and 70.105B.110.

## XXIII. ENDANGERMENT

In the event the Government Plaintiffs determine or concur in a determination by another local, state, or federal agency


OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
PB 71
Olympia, WA 98504-8071

that activities implementing or in noncompliance with this Consent Decree, or any other circumstances or activities, are creating or have the potential to create an imminent and substantial endangerment to the public health or welfare or the environment, the Government Plaintiffs may order the County to stop further implementation of this Consent Decree for such period of time as needed to abate the danger. During any stoppage of work under this section, the County's obligations with respect to the work ordered to be stopped shall be suspended and the time periods for performance of that work, as well as the time period for any other work dependent upon the work which stopped, shall be extended, pursuant to Section XXIV (Extension of Schedules) of this Consent Decree, for such period of time as the Government Plaintiffs determine is reasonable under the circumstances, in no event less than the time of the stoppage. If the Government Plaintiffs unreasonably stopped work and thereby increased costs to the County to perform the Remedial Action, the County reserves its rights to seek reimbursement from the Government Plaintiffs. <u>The County shall bear the burden of proof regarding the reasonableness of stoppages by the Government Plaintiffs.</u>

B. In the event the County determines that activities undertaken in furtherance of this Consent Decree or any other circumstances or activities are creating or have the potential



OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
PB 71
Olympia, WA 98504-8071

to create an imminent and substantial endangerment to the people on the Site or in the surrounding area or to the environment, the County may stop implementation of this Consent Decree for such periods of time necessary for the Government Plaintiffs to evaluate the situation and determine whether the County should proceed with implementation of the Consent Decree or whether the work stoppage should be continued until the danger is abated. The County shall notify the Government Plaintiffs' project managers as soon as is possible, but no later than twenty-four (24) hours if the stoppage occurs on a weekday, and forty-eight (48) hours if the stoppage occurs on a weekend or holiday, after such stoppage of work, and provide the Government Plaintiffs with documentation of its analysis in reaching this determination. If the Government Plaintiffs disagree with the County's determination, it may order the County to resume implementation of this Consent Decree. During any stoppage of work under this paragraph, the County's obligations shall be suspended and the time periods for performance of that work, as well as the time period for any other work dependent upon the work which was stopped, shall be extended, pursuant to Section XXIV (Extension of Schedules) of this Consent Decree, for such period of time as the Government Plaintiffs determine is reasonable under the circumstances in no event less than the time of the stoppage.


OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
PB 71
Olympia, WA 98504-8071

C. Any disagreements pursuant to this clause shall be resolved through the dispute resolution procedures.

XXIV. EXTENSIONS OF SCHEDULES

A. An extension shall be granted only when a request for an extension is submitted in a timely fashion 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. An extension shall only be granted for such period of time as the Government Plaintiffs determine is reasonable under the circumstances. The Government Plaintiffs shall act upon all written requests in a timely fashion. It shall not be necessary to formally amend this decree pursuant to Section XXV when a schedule extension is granted; however, following any schedule extension, the County shall prepare a revised schedule which they shall provide to the Government Plaintiffs and file with the Court.

B. The burden shall be on the County to demonstrate that the request for the extension has been submitted in a timely fashion and that good cause exists for granting the extension and due diligence has been exercised. Good cause may include, but not be limited to, the following:

(1) Circumstances beyond the reasonable control and despite the due diligence of the County (including delays caused by unrelated third parties);



OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
PB 71
Olympia, WA 98504-8071

(2) Delays not caused by Spokane County in the issuance of a necessary permit which was timely applied for;

(3) Other circumstances deemed exceptional or extraordinary.

(4) Changes in work plans;

(5) Unanticipated access, drilling, or logistics problems; Good cause shall include the following:

(1) Government Plaintiffs' review periods in excess of prescribed times.

(2) Acts of God, fire, flood, blizzard, extreme temperatures that interfere with work performance, or other unavoidable casualty;

(3) Judicial Stay; and

(4) Work Stoppage due to endangerment as provided in Section XXI.

Neither increased costs of performance of the terms of this Decree nor changed economic circumstances may be considered circumstances beyond the reasonable control of the County.

## XXV. AMENDMENT OF CONSENT DECREE

This Consent Decree may only be amended by written stipulation between the Government Plaintiffs and the affected party (parties). All affected parties shall be given prompt written notice of such amendments. Such amendment shall become


OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
PB 71
Olympia, WA 98504-8071

effective upon entry by the Court. Agreement to amend shall not be unreasonably withheld by any party to the Consent Decree.

The County shall submit any request for modifications to the remedial program or project schedule to the Government Plaintiffs for approval. The Government Plaintiffs shall indicate their approval or disapproval of these in a timely manner after the request for modification is received. Reasons for the disapproval shall be stated in writing. If the Government Plaintiffs do not agree to any proposed modification, the disagreement may be addressed through the dispute resolution procedures described in Section XXVII of this Consent Decree.

B. In accordance with CERCLA, the design and operation of the Remedial Action will be reviewed and, if appropriate, adjusted at intervals not to exceed five years.

C. No guidance, suggestions, or comments by the Government Plaintiffs will be construed as relieving the County of its obligation to obtain formal approval as may be required by this Consent Decree. No verbal communication by the Government Plaintiffs shall relieve the County of the obligations specified herein.

The Government Plaintiffs shall notify the County in writing of any Government Plaintiff proposal for modifications



OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
PB 71
Olympia, WA 98504-0071

of the remedial program or project schedule and the basis for such proposal. The County shall thereafter comply with such modifications, or if it does not agree with those modifications, the disagreement shall be addressed through the dispute resolution procedures described in Section XXVII of this Consent Decree.

## XXVI. STIPULATED PENALTIES

A. Spokane County shall pay stipulated penalties of $100 per day for the submission of a deficient resubmittal progress report as called for in Section XI.

B. Except for the stipulated penalties specified in paragraph A, the County or Key Tronic shall pay the following stipulated penalties for each failure to comply with their respective requirements of this Decree, including but not limited to all financial commitments, implementation schedules and performance and submission dates:

| Period of Failure to Comply | Penalty Per Violation Per Day |
|---|---|
| 1st through 14th day | $500 |
| 15th through 44th day | $750 |
| 45th day and beyond | $1,000 |

Whether or not a violation has occurred shall be a matter for resolution under Section XXVII (Dispute Resolution).



OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
PB 71
Olympia, WA 98504-8071

C. Penalties shall accrue from the date performance is due or a violation occurs and continue until the final day of correction of the noncompliance. Nothing herein shall prevent the simultaneous accrual of separate stipulated penalties for separate violations of this Consent Decree ~~unless the Court invalidates the basis~~. One-half of penalties due under this Section shall be payable to U.S. EPA and one-half shall be payable to Ecology, into accounts designated by the respective Government Plaintiffs.

D. Penalties shall accrue but need not be paid during the dispute resolution period. If the District Court becomes involved in the resolution of the dispute the period of dispute shall end upon the rendering of a decision by the District Court regardless of whether any party appeals such decision. If the County <u>or Key Tronic</u> does not prevail upon resolution, the Government Plaintiffs have the right to collect all penalties which accrue prior to and during the period of dispute. If the County <u>or Key Tronic</u> prevails upon resolution, no penalties shall be payable.

E. <u>If the County or Key Tronic fails to pay stipulated penalties, the Government Plaintiffs may institute proceedings to collect the penalties. Notwithstanding the stipulated penalties provisions of this Paragraph, U.S. EPA may elect to assess civil penalties and/or bring an action in U.S. District</u>



OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
PB 71
Olympia, WA 98504-8071

Court pursuant to Section 109 of CERCLA, as amended by SARA, to enforce the provisions of this Consent Decree provided that County's or Key Tronic's total penalty exposure to EPA for violations shall be limited to $25,000 per day per violation of this Consent Decree. Payment of stipulated penalties shall not preclude U.S. EPA or the state from electing to pursue any other remedy or sanction to enforce this Consent Decree, and nothing shall preclude U.S. EPA or the state from seeking statutory penalties against the County or Key Tronic for violations of statutory or regulatory requirements.

## XXVII. DISPUTE RESOLUTION

A. Except as otherwise specifically provided for in this Consent Decree, these dispute resolution procedures shall apply to all disputes between the County and the Government Plaintiffs with respect to the interpretation, application or decisions of the Government Plaintiffs implementing this Consent Decree. Except as otherwise specifically provided for in this Consent Decree, any dispute which arises with respect to the interpretation, application or a decision of the Government Plaintiffs implementing this Consent Decree shall in the first instance be the subject of informal negotiations between the County and the Government Plaintiffs. The period for informal negotiations shall be thirty (30) days from the date of receipt of a written statement of the issue in dispute,


OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
PB 71
Olympia, WA 98504-8071

unless otherwise extended or shortened by mutual written agreement of the parties to the dispute. If the dispute is not resolved during the informal negotiation period, either party may petition the Court with notice to all parties, setting forth the matter in dispute, within fourteen (14) calendar days after the end of the informal negotiation period. In an emergency, any party to the dispute may file a petition prior to the expiration of the informal negotiations period. Unless otherwise ordered by the Court, the filing of a petition shall not operate to stay the Work which is the subject of dispute, nor extend or postpone the County's obligations under this Consent Decree with respect to the disputed issue.

The standard of judicial review shall be the arbitrary and capricious standard for all disputes involving the selection <u>and implementation</u> of the remedy. Otherwise, the standard of review for dispute resolution shall be determined by the Court. With respect to disputes involving the selection of the remedy, the County shall bear the burden of proof for demonstrating that an action of the Government Plaintiffs is arbitrary and capricious. In all other disputes, the moving party shall bear the burden of proof on all disputes, whatever the applicable standard.

B. The Court's determination shall bind the County and the Government Plaintiffs. Each party shall bear its own


OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
PB 71
Olympia, WA 98504-8071

attorney's fees, expert witness fees or legal costs resulting from utilization of the judicial review provisions of these dispute resolution procedures.

C. In no event will the performance standards contained in the Scope of Work (Appendix B) be subject to dispute resolution.

D. Delay caused by formal dispute resolution requested by the County in which the Government Plaintiffs prevail shall not constitute an excuse from payment of stipulated penalties, unless otherwise ordered by the Court.

E. Key Tronic may dispute the timeliness of payments made pursuant to Section III in the event that Stipulated Penalties are assessed pursuant to Section XXVI.

XXVII. TRANSFER OF INTEREST IN PROPERTY

No conveyance of title, easement, or other interest in any portion of the Site owned by the County shall be consummated without provision for continued operation and maintenance of any containment system, treatment system, and monitoring system installed or implementation of that pursuant to this Consent Decree.

Prior to transfer of any legal or equitable interest in all or any portion of property owned by the County, the County shall serve a copy of this Consent Decree upon any prospective purchaser, lessee, transferee, assignee, or other successor in



OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
PB 71
Olympia, WA 98504-8071

interest of the property and, at least thirty (30) days prior to any transfer, shall notify the Government of said contemplated transfer.

Within thirty (30) days after entry of the Consent Decree the County shall cause to be recorded in the appropriate registry of deeds a notice and a copy of this Consent Decree with the deeds for its property at the Site, and shall verify to the Government Plaintiffs that such recording has been completed.

## XXIX. COMMUNITY RELATIONS

The Government Plaintiffs shall be the lead for community relations, and the County shall be responsible for helping to coordinate and implement community relations for the Site. The Government Plaintiffs shall consult with the County in the preparation and finalization of fact sheets, press releases, and public notices.

The governments shall accommodate where possible the County's concerns prior to release of such information. The County shall assist in:

1. Distribution of the fact sheets referred to above;
2. Coordination of public meetings;
3. In supplying appropriate documents and information for the information repositories.



OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
PB 71
Olympia, WA 98504-8071

In the event of the disagreement over the contents of any document prepared for purposes of community relations, or any other decision related to community relations, or any other decision related to community relations, the governments' determination shall be final.

Nothing provided in this section shall prevent the County from developing or conducting their own Community Relations Program, consistent with this Decree.

## XXX. COVENANTS NOT TO SUE

A. State of Washington. Except as specifically provided in Paragraph A.2 of this Section, the State of Washington covenants not to sue Key Tronic and the County for Covered Matters. Covered Matters shall include any and all civil liability to the state for causes of action arising under the Hazardous Waste Cleanup Act, ch. 70.105 RCW, or ch. 90.48 regarding contamination from hazardous substances originating from the Site, identified herein as constituents of concern. This Consent Decree is entered into to provide for Remedial Action at the Colbert Landfill site. The Director finds that issuance of a covenant not to sue is appropriate and within the public interest as defined by RCW 70.105B.080(2). The Remedial Action to be implemented will achieve cleanup levels that prevent actual or potential harm to human health and the environment as required by RCW 70.105B.060.



OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
PB 71
Olympia, WA 98504-8071

1. Except as specifically provided otherwise in Paragraph A.2, this covenant not to sue shall take effect as to Key Tronic upon tender of all payments required under Paragraph A of Section XVII and as to the County upon certification by the State of Washington of the completion of the Remedial Action. Upon receipt of all payments from Key Tronic as provided in Paragraph A of Section VIII, the Government Plaintiffs shall issue a Certification of Completion to Key Tronic. Key Tronic may apply for such a certification upon tender of its final payment. The Government Plaintiffs shall issue the Certification of Completion according to the terms of RCW 70.105B.090. The County will request the State of Washington to make a final inspection upon completion of the work as described in Appendix B. The State of Washington shall promptly provide public notice as required by RCW 70.105B.090(1), and inspect the work to determine if such work has been completed in accordance with the plans. The inspection shall occur within thirty (30) days of the request unless the parties agree to a later date. The State of Washington shall notify the County in writing within thirty (30) days of the initial inspection that the work has been satisfactorily completed or shall specify any corrective work it believes to be needed. The County shall notify the State of Washington of the completion of any necessary corrective work.



OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
PB 71
Olympia, WA 98504-8071

The State of Washington shall reinspect if it deems necessary within ten (10) days of the notification from the County. This procedure shall be utilized in combination with the Dispute Resolution procedures of Section XXVI if necessary, until it has been determined that the work has been satisfactorily completed. Within ten (10) days of determining the work has been satisfactorily completed, the State of Washington shall issue a certificate of completion to the County, according to the terms of RCW 70.105B.090.

2. Notwithstanding any other provision in this Consent Decree, the State of Washington reserves the right to institute proceedings in this action or in a new action (a) seeking to compel the County or Key Tronic perform or finance further response actions at the Site in addition to or other than the Remedial Action or (b) seeking reimbursement of the Government Plaintiffs' response costs, if:

(i) for proceedings before certification of completion, (A) new information reveals conditions at the Site, previously unknown to the Government Plaintiffs, are discovered after the entry of this Consent Decree and which indicates that the Remedial Action is not protective of human health and the environment; or (B) new information is received after entry of this Consent Decree and the new information reveals a significant quantity of a hazardous substance originating from



OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
PB 71
Olympia, WA 98504-8071

the Site or condition not identified in the ROD or this Consent Decree as being present at the Site, in an area of the Site other than as described in the ROD or this Consent Decree, or in quantities significantly greater than in this ROD or this Consent Decree;

(ii) for proceedings after certification of completion, (A) conditions at the Site, previously unknown to the State of Washington are discovered after certification of completion or information is received, in whole or in part, after certification of completion, and these previously unknown conditions or this information indicate that the Remedial Action is not protective of human health and the environment, or (B) after certification of completion, the State of Washington discovers the release or threatened release from the Site of hazardous substances not identified in the ROD as originating from the Site.

3. The State of Washington's right to institute proceedings in this action or in a new action seeking to compel Key Tronic or the County to perform response actions in addition to or other than the Remedial Action regarding contamination originating from the Site, or seeking reimbursement from Key Tronic or the County for the costs of such response actions, may only be exercised where the conditions in Paragraph A.2 are met.



OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
PB 71
Olympia, WA 98504-8071

4. Notwithstanding any other provision of this Consent Decree, the covenants not to sue under this Section shall not relieve Key Tronic and the County of their obligation to meet and maintain compliance with the requirements set forth in this Consent Decree, including the requirement of Key Tronic to make the payments as provided herein and the requirement of the County to implement the Remedial Action.

B. United States.

1. Except as specifically provided hereafter in Paragraph XIV(B) and (C), upon compliance by Spokane County and Key Tronic with Paragraph IV(C) and V(C) hereof, EPA, Spokane County and Key Tronic hereby covenant not to sue each other as to all matters alleged or all matters which could have been alleged in the Complaint with regard to the Site, except claims against the EPA-Hazardous Substance Superfund as provided herein in Section XVII. With respect to future liability, this covenant shall take effect upon certification by the United States that the remedial action (the Work), has been successfully completed. This paragraph shall not be construed as a covenant not to sue the Settling Party if it does not make all payments required by this Consent Decree or any other person or entity not a party to this Consent Decree. This covenant not to sue applies only to Spokane County and Key Tronic, including its respective divisions, officials,



OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
PB 71
Olympia, WA 98504-8071

officers, directors, principals, agents, servants, employees, successors, and assigns, and not to any parent corporation, subsidiaries and affiliates of the Settling Party.

2. This Covenant Not to Sue shall not apply to the following:

a. criminal liability;

b. failure to perform the Work in accordance with law or failure to meet the requirements of this Consent Decree or the Plan; or

c. liability arising from the transportation of Hazardous Substances recovered from the Site and redisposal thereof of Waste Materials taken from the Colbert Landfill Site; or

d. any costs incurred by the United States as a result of a response action undertaken under Section 104 of CERCLA, 42 U.S.C. § 9604, or any costs incurred by the state as a result of the exercise of its response authority under ch. 70.105 or 70.105B RCW, due to a release or threat of a release at or from the Colbert Landfill Site as a result of the failure of Spokane County to perform the Work or meet the requirements of Section VI or the Scope of Work (Appendix B), whenever Spokane County has failed to so respond after reasonable notice. In the event Spokane County fails to implement the provisions of Section VII in a timely manner, either the



OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
PB 71
Olympia, WA 98504-8071

Government Plaintiffs may perform such portions of the Work as may be necessary, at the cost of Spokane County, subject to Section XV hereof;

e. any costs incurred by either Government Plaintiffs as a result of any release or threat of release of hazardous substances at or from the Colbert Landfill Site which results from failure(s) of the Settling Party to perform the Work or meet the requirements of this Consent Decree or the Plan; or

f. liability for damage to natural resources, as defined in Section 101(16) of CERCLA, 42 U.S.C. § 9601(16).

3. Notwithstanding any other provisions of this Consent Decree, the United States reserves the right to institute proceedings in this action or in a new action seeking to compel Spokane County or Key Tronic to perform additional response work at Colbert Landfill Site or to reimburse the United States for Response Costs, other than Response Costs incurred prior to the effective date of this Consent Decree, if:

a. For proceedings prior to certification of completion of the remedial action (the Work) by the United States,

(i) conditions at the Colbert Landfill previously unknown to or undetected by the United States are discovered after the



OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
PB 71
Olympia, WA 98504-8071

lodging of this Consent Decree and these conditions indicate that a hazardous substance has been, or is being, released or that there is a substantial threat of such a release into the environment; or

(ii) the United States determines, based on information received, in whole or in part, after the lodging of this Consent Decree, that the remedial action (the Work) taken at the Colbert Landfill Site, is not protective of human health and the environment.

b. For proceedings subsequent to certification of completion of the remedial action (the Work), by the United States,

(i) conditions at the Colbert Landfill Site previously unknown to or undetected by the United States are discovered after the certification of completion and these conditions indicate that a hazardous substance has been, or is being, released or that there is a substantial threat of such a release into the environment; or



OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
PB 71
Olympia, WA 98504-8071

(ii) the United States determines, based on information received, in whole or in part, after the certification of completion, that the remedial action (the Work) taken at the Colbert Landfill, is not protective of human health and the environment.

4. Notwithstanding any other provision in this Consent Decree, the covenant not to sue in Paragraph XIV(A) shall be subject to the satisfactory performance by Spokane County and Key Tronic of its obligations under this Consent Decree and the covenant not to sue shall not relieve Spokane County or Key Tronic of its obligation to meet and maintain compliance with the requirements set forth in this Consent Decree.

5. Spokane County or Key Tronic's claims against any other party in this or any other proceeding for contribution or indemnification of all or a portion of the cost of its settlement herein, shall be secondary to the United States' claim against such other party for the response actions or other costs incurred by the Government Plaintiffs for actions taken at the Site.

## XXXI. EFFECTIVE AND TERMINATION DATES

A. This Consent Decree shall be effective upon the date of its entry by the Court.



OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
PB 71
Olympia, WA 98504-0071

B. Termination of this Consent Decree may only be effected upon completion of all Remedial Action activities including operation and maintenance activities, reimbursement of Government Plaintiffs costs and resolution of any outstanding disputes pursuant to this Decree. Termination of this Consent Decree shall not affect the Covenant Not to Sue, Section XXIX, which shall remain in effect as an agreement between the parties.

C. This Consent Decree shall remain in effect and the Remedial Action described herein shall be maintained and continued until both Key Tronic and the County receive written Certification of Completion from the Government Plaintiffs. The Certifications of Completion shall be issued according to the terms of RCW 70.105B.090.

## XXXII. RETENTION OF JURISDICTION

This Court shall retain jurisdiction over this matter for the purposes of interpreting, implementing, modifying, enforcing or terminating the terms of this Consent Decree, and of adjudicating disputes between the parties under this Consent Decree.

## XXXIII. NOTICES

Whenever, under the terms of this Consent Decree, written notice is required to be given or a report or other document is



OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
PB 71
Olympia, WA 98504-8071

required to be given or a report or other document is required to be forwarded by one party to another it shall be directed to the individuals specified below unless those individuals or their successors give notice in writing to the other parties.

As to the Governments:

Colbert Site Manager
Department of Ecology
Hazardous Waste Cleanup Program
Mail Stop PV-11
Olympia, WA 98504-8711

Colbert Site Manager
EPA Region 10
Superfund Group - HW-113
1200 Sixth Avenue
Seattle, WA 98101

As to the Defendants:

David Powers
Key Tronic Corporation
P. O. Box 14687
Spokane, WA 99214

Bill Dobratz
Director of Public Utilities
N. 811 Jefferson
Spokane, WA 99260

XXXIV. LODGING OF DECREE WITH THE COURT AND PUBLIC COMMENT

This Consent Decree shall be lodged with the Court for a period of 30 days for public comment pursuant to the provisions of 28 CFR § 50.7, § 122 of CERCLA, 42 U.S.C. § 9622, RCW 70.105B.070(5), and WAC 173-340-040(7) and it shall not be submitted to the Court for execution until the expiration of that period. The parties reserve the right to withdraw or withhold its consent to a judgment based on this Consent Decree if the comments, views and allegations concerning the Consent Decree disclose facts or considerations which indicate that the Consent Decree is inappropriate, improper or inadequate.



OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
PB 71
Olympia, WA 98504-8071

this Consent Decree subject to the public notice requirements found at 28 CFR § 50.2, RCW 70.105B.070(5) and WAC 173-340-040(7).

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

By: _____

_____

Its: _____

Date: _____

UNITED STATES OF AMERICA
on behalf of the
ENVIRONMENTAL PROTECTION AGENCY

By: _____

_____

Its: _____

Date: _____

SPOKANE COUNTY

By: _____

_____

Its: _____

Date: _____

KEY TRONIC CORPORATION

By: _____

_____

Its: _____

Date: _____

DATED this ___ day of _____, 1988.

_____
JUDGE



OFFICE OF THE ATTORNEY GENERAL
7th Floor, Highways-Licenses Building
PB 71
Olympia, WA 98504-8071

# APPENDIX C

## CONSENT DECREE SCOPE OF WORK

# DRAFT

SCOPE OF WORK

FOR

REMEDIAL ACTION TO ADDRESS GROUND WATER CONTAMINATION

EMANATING FROM COLBERT LANDFILL

SPOKANE COUNTY, WASHINGTON

7 JULY 1988

TABLE OF CONTENTS


| | | Page |
|---|---|---|
| I. | INTRODUCTION | I-1 |
| II. | OBJECTIVES | II-1 |
| III. | GENERAL REQUIREMENTS | III-1 |
| IV. | PHASE I | IV-1 |
| | A. South System | IV-1 |
| | 1. Introduction | IV-1 |
| | 2. Site Investigations | IV-1 |
| | 3. Pilot Extraction Well | IV-4 |
| | 4. Treatment System | IV-5 |
| | 5. Treatment System Water Discharge | IV-5 |
| | 6. Study Analysis & Feasibility Evaluation | IV-5 |
| | B. East System | IV-6 |
| | 1. Introduction | IV-6 |
| | 2. Site Investigations | IV-6 |
| | 3. Pilot Extraction Wells | IV-9 |
| | 4. Treatment System | IV-9 |
| | 5. Treatment System Water Discharge | IV-10 |
| | 6. Study Analysis & Feasibility Evaluation | IV-10 |
| | C. West System | IV-11 |
| | 1. Introduction | IV-11 |
| | 2. Site Investigations | IV-11 |
| | 3. Pilot Extraction Well | IV-14 |
| | 4. Treatment/Discharge System | IV-14 |
| | 5. Study Analysis & Feasibility Evaluation | IV-15 |

## TABLE OF CONTENTS (CONTINUED)


| | | Page |
|---|---|---|
| V. | PHASE II | V-1 |
| | A. Extraction, Water Treatment, and Discharge - South System | V-1 |
| | 1. Bases for Design | V-1 |
| | 2. Design Components and Bases for Decision | V-2 |
| | B. Extraction, Water Treatment, and Discharge - East System | V-9 |
| | 1. Bases for Design | V-9 |
| | 2. Design Components and Bases for Decision | V-9 |
| | C. Extraction, Water Treatment, and Discharge - West System | V-12 |
| | 1. Bases for Design | V-12 |
| | 2. Design Components and Bases for Decision | V-12 |
| | D. Air Emissions Abatement | V-18 |
| VI. | LANDFILL CLOSURE | VI-1 |
| VII. | WATER SUPPLY WELL MONITORING | VII-1 |
| VIII. | ALTERNATIVE WATER SUPPLY | VIII-1 |
| IX. | INSTITUTIONAL CONTROLS | IX-1 |
| X. | PERFORMANCE CRITERIA | X-1 |
| XI. | SCHEDULE | XI-1 |


## LIST OF FIGURES


| Figure | | Page |
|---|---|---|
| IV-1 | Phase I - South System | IV-2 |
| IV-2 | Phase I - East System | IV-7 |
| IV-3 | Phase I - West System | IV-12 |


## LIST OF TABLES


| Table | | Page |
|---|---|---|
| I-1 | Performance Standards | I-2 |
| IV-1 | Evaluation Criteria | IV-4 |
| V-1 | Operational and Adjustment Control Criteria | V-3 |

# I

## INTRODUCTION

This Scope of Work sets forth the technical activities associated with remediation of "contamination" emanating from the Colbert Solid Waste Landfill in Spokane County near the town of Colbert, Washington. It shall be the responsibility of the County to prepare, submit for approval, and fully implement work plans incorporating each element of this Scope of Work, and to verify that Performance Standards set forth in this Scope of Work are met.

For the purposes of the Consent Decree, including this Scope of Work, the terms "contaminants" and "contamination" shall be understood to mean the six compounds or Constituents of Concern identified in Table 1 of the Colbert Landfill Record of Decision (ROD) and Table I-1 of this Scope of Work. These tables also specify the Performance Standards (Health Protection Levels), which are not to be exceeded during operational life of remedial action, in effluents from ground water treatment systems. Permanent reduction of contaminant concentrations below these levels throughout the site will indicate completion of the Remedial Action.

The ROD for Remedial Action at the Colbert Landfill identifies three separate systems, each designed to pump and treat contaminated ground water. These systems have been designated as the south, west, and east systems. Both the south and west systems are intended to intercept contaminated ground water to minimize degradation of downgradient resources. The south system will be designed to pump and treat ground water from the upper sand and gravel aquifer, while the west system will pump and treat water from the lower sand and gravel aquifer. In contrast to the south and west systems, the east system is intended for source control. This system will be designed to remove contamination close to the source, to reduce its potential for migration from the source area. The east system will be designed to pump water from the lower sand and gravel aquifer, and potentially the weathered basalt/Latah and Latah aquifers, which are beneath the lower sand and gravel.

The ROD provides for a performance-based design. The performance-based nature of the ROD allows considerable latitude in the design of the Remedial Action. However, the relatively sparse data available to characterize the hydrogeology and extent of contamination make it impractical to design a system at this time. To supplement the data base, a phased project approach will be implemented. Phase I will combine the pilot studies with further site characterization and the initiation of cleanup activities. Phase II will provide for evaluation of the Phase I results and design of the final Remedial Action program.

TABLE I-1*

PERFORMANCE STANDARDS
MAXIMUM ALLOWABLE CONTAMINANT CONCENTRATIONS

| Health Protection Levels[a] | | |
|---|---|---|
| Compound | Maximum Concentration (PPB) | Basis[b] |
| 1,1,1-Trichloroethane | 200 | MCL[c] |
| 1,1-Dichloroethylene | 7 | MCL[c] |
| 1,1-Dichloroethane | 4,050 | MAC[d] |
| Trichloroethylene | 5 | MCL[c] |
| Tetrachloroethylene | 0.7 | MAC[e] |
| Methylene Chloride | 2.5 | MAC[e] |

(a) Health Protection Levels are not to be exceeded, during operational life of remedial action, in effluents from ground water treatment systems. Permanent reduction of contaminant concentrations below these levels throughout the site will indicate completion of the remedial action.
(b) Based on MCL and MAC values in effect as of the date of entry of this Consent Decree.
(c) Federal Drinking Water Maximum Contaminant Levels (MCL).
(d) Maximum Acceptable Concentration presented in ROD, Table 5, pg. 31.
(e) Maximum Acceptable Concentration based on EPA Cancer Assessment Group evaluation ($10^{-6}$ Cancer Risk).

* Source: Table 1, Record of Decision, Colbert Landfill Site, USEPA, September 1987.

In order to comply with the ROD, the work defined in this document must first be completed. It is recognized that information developed during implementation of Phase I of this Scope of Work (Section IV) may alter previous conclusions and indicate that amendment to the Scope of Work, or other portions of the Consent Decree, as it relates to Phase II, is appropriate. Such information may include data relating to the extent of contamination, site hydrogeology, initial field pilot testing, technical feasibility or implementability of the remedial options originally chosen, or refinement of the relative costs of available options. Remedial Actions designed to meet the objectives of Section II of this Scope of Work will be accomplished during Phase II (Section V).

## II

## OBJECTIVES

The objectives of the Remedial Action at the Colbert Landfill Site are to:

A. Prevent ingestion of contaminated ground water;

B. Provide alternative drinking water supplies to those residents whose domestic water supply well(s), in use prior to the date of entry of this Consent Decree, are now contaminated or become contaminated at levels exceeding those described in Section VIII of this Scope of Work, or where the productivity of their existing supply well(s) is adversely impacted by remedial activities;

C. Prevent the further spread of contaminated ground water and remove contamination related to the site from the ground water aquifers;

D. Protect surface waters from ground water discharges potentially harmful to aquatic organisms;

E. Establish institutional controls as authorized by law to promote and support remedial actions; and

F. Prevent transfer of Constituents of Concern from water to air at levels above health protection criteria.

These objectives are met by the actions to be taken in accordance with this Scope of Work.

# III

## GENERAL REQUIREMENTS

The general requirements of this Scope of Work are as follows:

A. All actions performed at and around the site pursuant to this Scope of Work shall be accomplished in accordance with work plans, which shall be prepared by the County and submitted for review and approval by the Government Plaintiffs. Work plans for each element of the Remedial Action program shall include relevant designs; construction sequences and schedules; and maintenance, operating and monitoring requirements. In addition to these basic requirements, the ground water extraction and treatment plans shall include all design assumptions and other engineering support materials as appropriate.

B. All work shall be performed under an appropriate health and safety plan for the protection of workers and the surrounding community. The County shall submit this plan to the Government Plaintiffs for review and approval.

C. The County shall require their contractors to be responsible for observing safe practices with respect to all active local utilities within the site.

D. The County shall submit to the Government Plaintiffs, for review and approval, a sampling and analysis protocol for all ground water monitoring before any such activity is undertaken. This sampling and analysis protocol shall include a description of field sampling procedures and specify procedures for Quality Assurance/Quality Control. All procedures shall conform with appropriate EPA guidance documents. Detection limits attainable using standard procedures specified for the EPA Contract Laboratory Program as of the date of entry of the Consent Decree shall be used. The County shall provide the Government Plaintiffs with quality-assured data as they become available.

E. Each ground water extraction and treatment system shall remain operable until the performance criteria identified in this Scope of Work (Section X) are met. Discharges of air and water from these systems shall be in compliance with applicable regulations.

F. Definitions set forth in Section IV of the main body of the Consent Decree shall apply throughout this Scope of Work.

# IV

## PHASE I

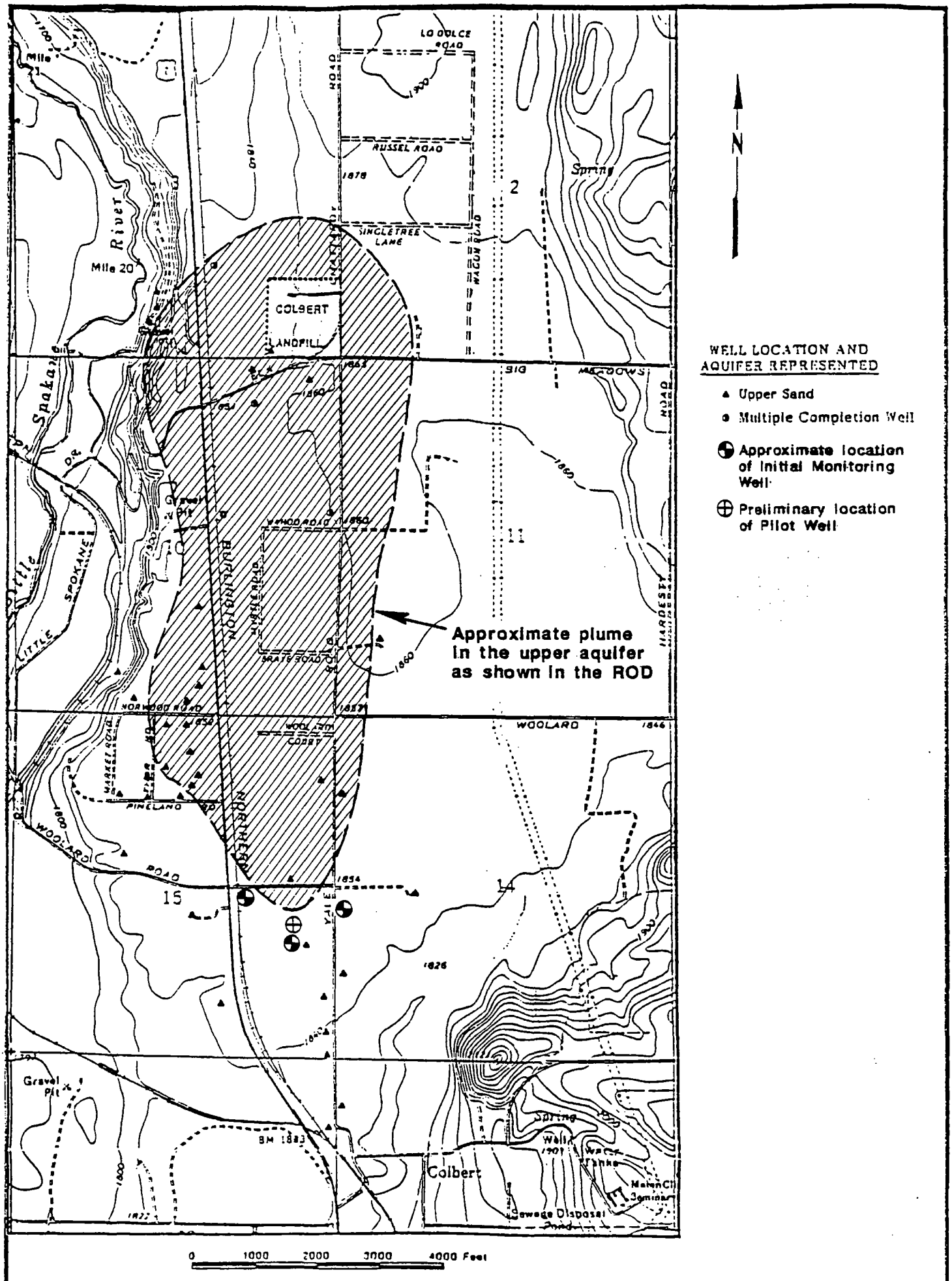
### A. South System

1. **Introduction** -- Previous studies of contamination emanating from the Colbert Landfill have identified a contaminant plume moving to the south in the upper aquifer. The location of the plume is based on limited data obtained in late 1985. These data are insufficient to adequately define the extent of the contaminant plume and project the rate or direction of future contaminant migration. The purpose of Phase I for the upper aquifer south of the landfill is to develop specific design requirements for a Phase II - South ground water interception and treatment system, and to initiate cleanup in this area. Activities described in this section relate to the upper aquifer south of the landfill and include: installation of a pilot ground water extraction and treatment system, installation of a ground water monitoring system to identify the location of the contaminant plume and assess the performance of the pilot system, assessment of treated water discharge management options, and definition of the Phase II - South ground water interception and treatment system.

2. **Site Investigations** --

a. Installation of Monitoring Wells -- A series of three to five monitoring wells will be installed to provide data needed to assess the contaminant distribution in, and hydrogeologic properties of, the upper aquifer near the probable location for a system of ground water extraction wells. These monitoring wells will be installed in phases, first to identify the preferred location of the pilot extraction well and later to assess pilot interception system performance.

Initially, three monitoring wells will be installed at the approximate locations shown on Figure IV-1. The actual locations of these monitoring wells will depend on plume contaminant levels and site access, and may vary from the locations shown. These wells will provide data related to contaminant concentration levels, saturated thickness of the aquifer, and hydraulic gradient, from which the location and design characteristics of the pilot extraction well will be determined. If the County determines that the location of the pilot extraction well will not be close to one of the initial monitoring well locations, up to two additional monitoring wells will be installed near the selected pilot extraction well site. These wells will be used to confirm the final site selection for, and to assess the performance of, the pilot extraction well after it is installed. Monitoring wells will be constructed of 2-inch Schedule 80 PVC and screened within the upper aquifer up to a maximum 20 foot length.




Source: Golder Associates, Inc., May 1987.

Phase I - South System



Figure IV-1

b. Monitoring Well Sampling and Analysis -- Chemical analysis of water samples from the monitoring wells will be used to evaluate contaminant characteristics and other critical water quality parameters. Water level measurements will be used to evaluate the horizontal hydraulic gradient and the saturated thickness of the aquifer. This information will be used for design, placement, and performance evaluation of the pilot extraction well and in the design of the Phase II - South treatment and discharge system.

Chemical analyses will focus on the six compounds identified in Table I-1 and will be performed by EPA Method 8010 (SW-846, USEPA, 1986) or equivalent. These compounds are:

1,1,1-trichloroethane (1,1,1-TCA)
1,1-dichloroethylene (1,1-DCE)
1,1-dichloroethane (1,1-DCA)
trichloroethylene (TCE)
tetrachloroethylene (PCE)
methylene chloride (MC)

Other parameters, including temperature, pH, conductivity, hardness, iron, and manganese will be determined for use during treatment system design activities.

Due to difficulties anticipated in accurately quantifying methylene chloride and tetrachloroethylene at their Performance Standard concentrations, alternative evaluation criteria have been developed for these constituents. These criteria are presented in Table IV-1, along with the Performance Standards for the other constituents of concern. Table IV-1 evaluation criteria will be applied to the interception, treatment, and discharge of ground water containing constituents of concern. If the levels to which these compounds can be accurately quantified (using EPA Method 8010) change during the course of this project, Table IV-1 will be adjusted accordingly. However, evaluation criteria will not be adjusted to concentrations lower than the Table I-1 Performance Standards.

The three initial monitoring wells will be sampled after development. Analysis of samples from this effort may be sufficient to identify the final location of the pilot extraction well. In the event of anomalies in data from this initial sampling, the County may, at its discretion, conduct follow-up sampling at bi-weekly intervals for verification purposes.

Monitoring wells at up to two additional locations will be installed in the vicinity of the proposed pilot well site and sampled after development. Data obtained from these wells will be used to assess performance of the pilot well. As above, in the event of anomalies in these data, the County may, at its discretion, conduct follow-up bi-weekly sampling and analysis for verification purposes.

TABLE IV-1

EVALUATION CRITERIA

| Compound | Evaluation Criteria (ppb) |
|---|---|
| 1,1,1-Trichloroethane | 200 |
| 1,1-Dichloroethylene | 7 |
| 1-1,Dichloroethane | 4,050 |
| Trichloroethylene | 5 |
| Tetrachloroethylene | 7 |
| Methylene Chloride | 25 |

* * * * * * * *

During the first month after pumping of the pilot extraction well begins, samples for chemical analysis will be obtained at least weekly from the pilot extraction well and at least the two closest monitoring wells. After this initial 4-week period, the pilot extraction well and the monitoring wells will be sampled and analyzed at least quarterly during operation of the pilot system.

c. Water Level Monitoring -- Water level monitoring will be conducted in at least the two monitoring wells closest to the pilot extraction well. Data from this effort will be used to assess pilot extraction well performance and further define the hydrogeology of the site. Monitoring will begin before startup of the pilot pumping system and will continue until water level conditions stabilize or until it is demonstrated that continuous pumping is not possible. Private supply wells may, at the County's discretion, be included in this study.

3. **Pilot Extraction Well** -- Information obtained from the pilot extraction well is intended to aid in the design of the Phase II - South interception, treatment, and discharge system.

a. Location of the Pilot Extraction Well -- Ideally, the pilot extraction well would be installed at a location where contaminant concentrations are approximately equal to the Performance Standards. The preliminary location, based on available data, is shown on Figure IV-1.

b. Construction of the Pilot Extraction Well -- Construction details for the pilot extraction well will be influenced by information obtained from the initial monitoring wells. It is anticipated that the pilot well will be constructed using 6- or 8-inch diameter steel casing and a stainless steel screen. The screen length will be approximately one-half to two-thirds of the saturated thickness of the aquifer. The bottom of the screen will be placed at the base of the aquifer near the contact with the lacustrine deposit.

c. Pumping of the Pilot Extraction Well -- The pilot extraction well will be equipped with a submersible pump. A well at this location should be capable of providing at least 20 to 50 gallons per minute (gpm). The pumping rate may, at the County's discretion, be increased to 100 gpm if the aquifer is capable of sustained production at that rate.

d. Duration of Pilot Testing -- It is intended that the pilot extraction well operate for at least a 30-day period, and possibly until implementation of the complete Phase II - South system. If appropriate, it will be incorporated into the Phase II - South system.

e. Chemical Analysis of Pilot Well Samples -- Analysis of samples from the pilot extraction well will be as described above in Section IV.A.2b.

4. **Treatment System** -- The treatment system ultimately constructed as part of the Phase II - South system must utilize cost-effective and reliable technology. Cost effectiveness is to be based on long-term operating and maintenance costs as well as the initial installation cost.

A pilot air stripping system will be included as part of the Phase I activities. This system will be capable of handling variable flow rates of up to 100 gpm and discharging water at concentrations that comply with the Table IV-1 evaluation criteria. Samples will be collected at least weekly from the discharge pipe to verify compliance with the evaluation criteria. Final design of this system will be dependent on input water quality characterized by the initial monitoring wells. This temporary system will not include off-gas treatment or air monitoring.

5. **Treatment System Water Discharge** -- Discharge will be to Deep Creek or the Little Spokane River or subsurface infiltration. If discharge is to the Little Spokane River, sizing of the discharge line may reflect Phase II - South system discharge rates if these can be adequately defined prior to operation and evaluation of the pilot system.

6. **Study Analysis and Feasibility Evaluation** -- In the event that the preferred remedy identified in the ROD is no longer feasible or cost effective, the County will propose a new alternative.

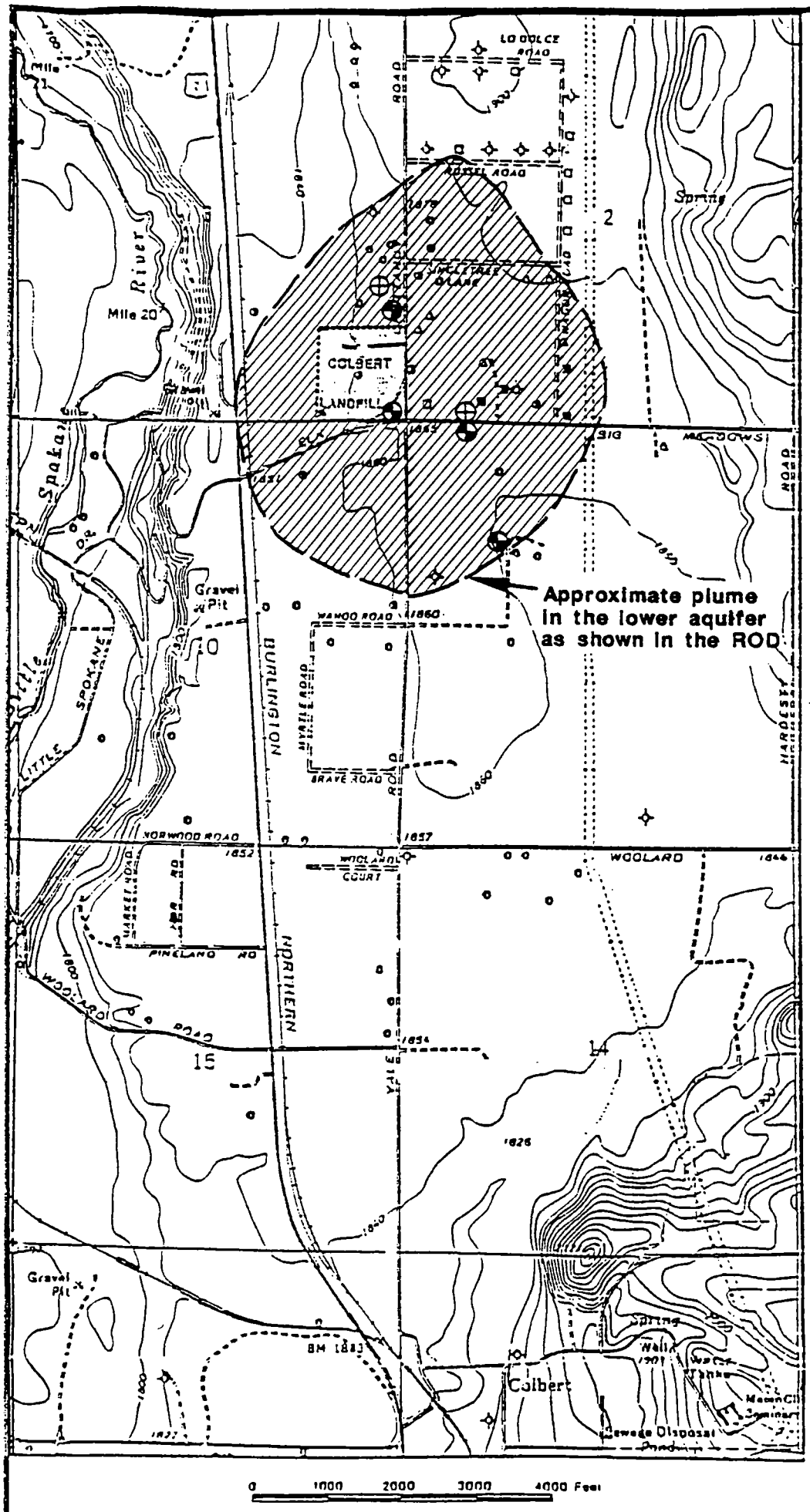
B. East System

1. **Introduction** -- Previous studies have identified elevated concentrations of contaminants in the vicinity of the Colbert Landfill within the lower aquifer(s). ("Lower aquifer(s)" include the lower sand and gravel, weathered basalt/ Latah, and Latah aquifers). However, data from these studies are insufficient to adequately characterize the nature and define the extent of the contaminant plume. The purpose of Phase I for the lower aquifer(s) north and east of the landfill is to focus on specific design requirements for a Phase II - East ground water extraction and treatment system, and to initiate cleanup in this area. Activities described in this section relate to the lower aquifer(s) immediately to the north and east of the landfill and include: installation of two pilot ground water extraction wells and a common treatment system, installation of a ground water monitoring system to improve definition of the location of the contaminant plume and assess the performance of the pilot systems, assessment of treated water discharge management options, and definition of the Phase II - East ground water extraction and treatment system.

2. **Site Investigations** --

a. Installation of Monitoring Wells -- A series of nested monitoring wells at four to eight locations will be installed to provide data needed to assess the contaminant distribution in, and hydrogeologic properties of, the lower aquifer(s) for the source control (east) extraction system. These monitoring wells will be installed in phases, first to identify the preferred location of the two pilot extraction wells and later to assess performance of the pilot extraction systems.

Initially, nested monitoring wells will be installed at four locations. The approximate locations are shown on Figure IV-2. The actual locations of the monitoring wells will depend on site access and may vary from the locations shown. Up to three wells will be installed at each monitoring location. These wells will be screened within the following aquifers, if present: the upper sand and gravel aquifer, the lower sand and gravel aquifer, and the weathered basalt/Latah aquifer or the Latah aquifer. These wells will provide data related to contaminant concentration levels, saturated thickness of the aquifer(s), and horizontal and vertical hydraulic gradients, from which the locations and design characteristics of the pilot extraction wells will be determined. If the locations of the pilot extraction wells are found not to be close to one of the initial monitoring wells, a total of up to two additional nests of monitoring wells will be installed near each of the selected pilot extraction well locations. These wells will be used to confirm the final site selections for, and to assess the performance of, the pilot extraction wells after they are installed. Monitoring wells will be constructed of 2-inch Schedule 80 PVC and screened up to a maximum 20 foot length.




WELL LOCATION AND AQUIFER REPRESENTED

- Unknown
- Lower Sand
- Multiple Completion Well
- Weathered Basalt/Latah
- Latah
- Granite
- Approximate location of Initial Monitoring Well
- Preliminary location of Pilot Well

Source: Golder Associates, Inc., May 1987.

Phase I - East System



Figure IV-2

b. Monitoring Well Sampling and Analysis -- Chemical analysis of water samples from the monitoring wells will be used to evaluate contaminant characteristics and other important water quality parameters. Water level measurements will be used to evaluate saturated thickness and vertical and horizontal hydraulic gradients. This information will be used for design, placement, and performance evaluation of the pilot extraction wells and in the design of the Phase II - East treatment and discharge system.

Chemical analyses will focus on the six compounds identified in Table I-1 and will be performed by EPA Method 8010 (SW-846, USEPA, 1986) or equivalent. These compounds are:

1,1,1-trichloroethane (1,1,1-TCA)
1,1-dichloroethylene (1,1-DCE)
1,1-dichloroethane (1,1-DCA)
trichloroethylene (TCE)
tetrachloroethylene (PCE)
methylene chloride (MC)

Other parameters, including, but not limited to, temperature, pH, conductivity, hardness, iron, and manganese may be determined for use during treatment system design activities.

The initial monitoring wells will be sampled after development. Analysis of samples from this effort may be sufficient to identify the final locations of the pilot extraction wells. In the event of anomalies in data from this initial sampling, the County may, at its discretion, conduct follow-up sampling at bi-weekly intervals for verification purposes.

If additional wells are required in the vicinity of the proposed pilot well locations, they will also be sampled after development. Data obtained from these wells will be used to assess performance of the pilot wells. As above, in the event of anomalies in these data, the County may, at its discretion, conduct follow-up bi-weekly sampling and analysis for verification purposes.

During the first month after pumping of the pilot extraction wells begins, samples for chemical analysis will be obtained at least weekly from the pilot extraction wells and at least the two closest monitoring wells. After this initial 4-week period, the pilot extraction wells and the monitoring wells will be sampled and analyzed at least quarterly during operation of the pilot systems.

c. Water Level Monitoring -- Water level monitoring will be conducted in at least the two monitoring wells closest to each of the pilot extraction wells. Data from this effort will be used to assess performance of the pilot extraction wells and further define the hydrogeology of the site. Monitoring will begin before startup of the pilot pumping systems and will

continue until water level conditions stabilize or until it is demonstrated that continuous pumping is not possible. At the County's discretion, private supply wells may be included in this study.

3. **Pilot Extraction Wells** -- Information obtained from the pilot extraction wells is intended for use in the design of a Phase II - East extraction, treatment, and discharge system.

a. Location of the Pilot Extraction Wells -- Pilot extraction wells will be installed to the north and to the east of the landfill. The ground water data from the initial monitoring wells will be used to select the final locations of the pilot wells. The preliminary locations, based on available data, are shown on Figure IV-2.

b. Construction of the Pilot Extraction Wells -- Construction details for the pilot extraction wells will be influenced by information from the initial monitoring wells. It is anticipated that these wells will be constructed using 6- or 8-inch diameter steel casing and stainless steel screen.

c. Pumping of the Pilot Extraction Wells -- The pilot extraction wells will be equipped with a submersible pump. It is anticipated that the well located to the north of the landfill will be capable of providing at least 50 gpm. At the County's discretion, the pumping rate may be increased to 150 gpm if the aquifer is capable of sustained production at that rate. The well located to the east of the landfill may be capable of providing 10 to 50 gpm. The design will be based on a maximum flow of 50 gpm.

d. Duration of Pilot Testing -- It is intended that the pilot extraction wells will operate for at least a 30-day period, and possibly until implementation of the complete Phase II - East system. If appropriate, they will be incorporated into the Phase II - East system.

e. Chemical Analysis of Pilot Well Samples -- Analysis of samples from the pilot extraction wells will be as described in Section IV.B.2b.

4. **Treatment System** -- The treatment system ultimately constructed as part of the Phase II - East system must utilize cost-effective and reliable technology. Cost effectiveness is to be based on long-term operating and maintenance costs as well as the initial installation cost.

A pilot air stripping system will be included as part of the Phase I activities. This system will be capable of handling variable flow rates of up to 200 gpm and discharging water at concentrations that comply with the Table IV-1 evaluation criteria. Samples will be collected at least weekly from the discharge pipe to verify compliance with the Table IV-1 evaluation criteria. This temporary system will not include off-gas

treatment, but will include air monitoring. Final design of this system will be dependent on input water quality characterized by the initial monitoring wells.

5. **Treatment System Water Discharge** -- Discharge will be piped to the Little Spokane River or recharged to the ground water system at the landfill site. Subject to the approval of the Government Plaintiffs, recharge of treated water may be utilized as a mechanism for accelerating cleanup of source areas. Such a system would initially consist of one to three recharge wells located near the east property boundary and screened below the base of the landfill. If appropriate, the system could be expanded during Phase II to other portions of the landfill site.

6. **Study Analysis and Feasibility Evaluation** -- In the event that the preferred remedy identified in the ROD is no longer feasible or cost effective, the County will propose a new alternative.

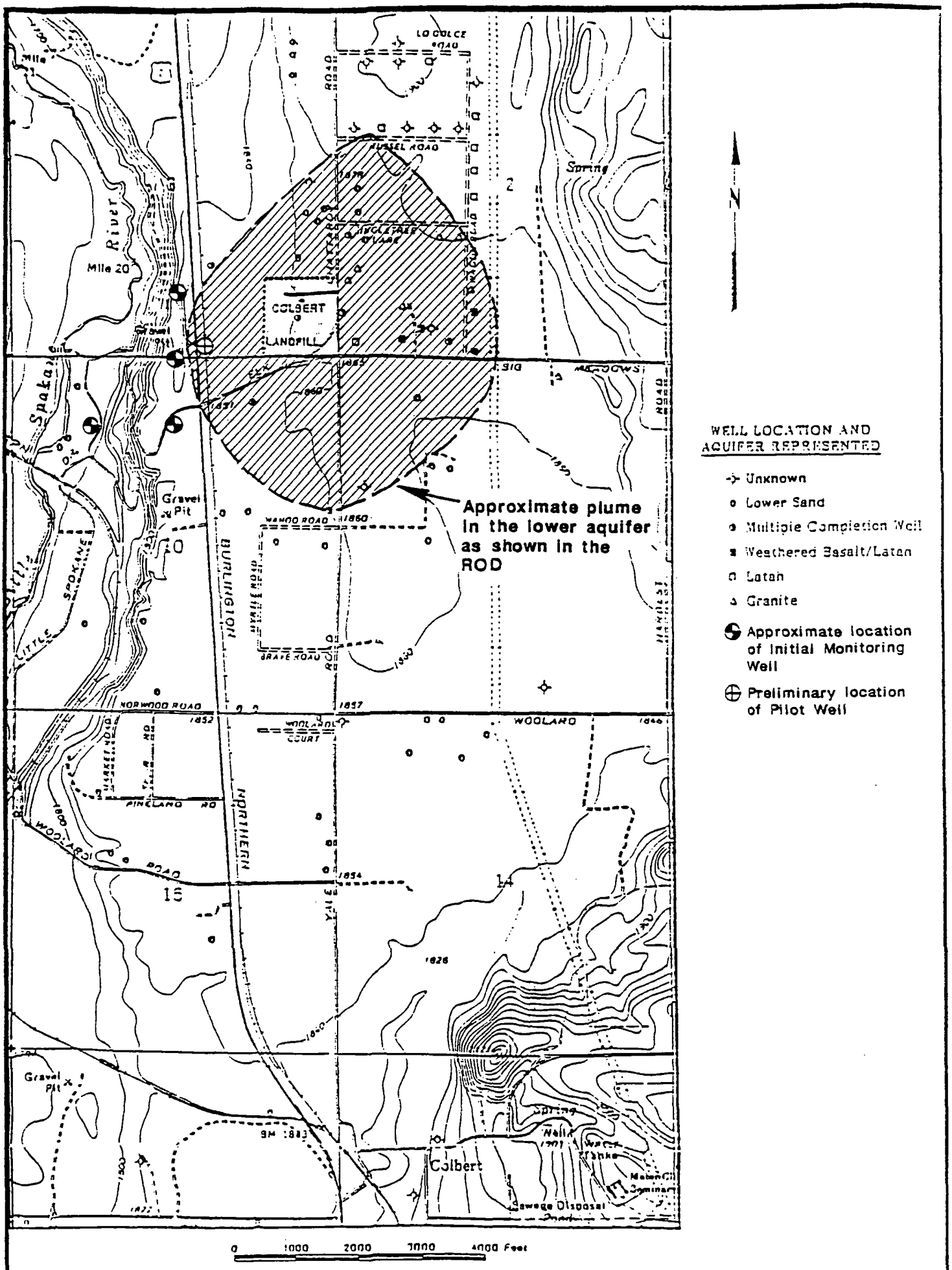
C. West System

1. **Introduction** -- Previous studies of contamination emanating from the Colbert Landfill have identified a contaminant plume moving to the west in the lower aquifer. The location of the plume is based on limited data obtained in late 1985. These data are insufficient to adequately define the extent of the contaminant plume and project the rate or direction of future contaminant migration. The purpose of Phase I for the lower sand and gravel aquifer west of the landfill is to develop specific design requirements for a Phase II - West ground water interception and treatment system, and initiate cleanup in this area. Activities described in this section relate to the lower aquifer west of the landfill and include: installation of a pilot ground water extraction and treatment system; installation of a ground water monitoring system to identify vertical and horizontal hydraulic gradients, determine the current location and distribution of the contaminant plume, and assess the performance of the pilot extraction system; assessment of treated water discharge management options; and definition of a Phase II - West ground water interception and treatment system.

2. **Site Investigations** --

a. Installation of Monitoring Wells -- A series of nested monitoring wells will be installed at four to six locations to provide data needed to assess the contaminant distribution and hydrogeologic properties of the lower aquifer west of the landfill for a system of ground water extraction wells. One to three monitoring wells will be installed at each location. These wells will be installed in phases, first to identify the preferred location of the pilot extraction well and later to assess pilot extraction system performance.

Initially, nested monitoring wells will be installed at approximately the four locations shown on Figure IV-3. The actual locations of the monitoring wells will depend on site access and may vary from the locations shown. All monitoring wells will be completed in the lower sand and gravel aquifer and will provide data related to contaminant concentration levels, vertical contaminant distribution, saturated thickness of the aquifer, and hydraulic gradients, from which the location and design characteristics of the pilot extraction well will be determined. If it is determined that the location of the pilot extraction well is not close to one of the initial monitoring well locations, up to two additional nests of monitoring wells will be installed near the selected pilot extraction well site. These wells will be used to confirm the final site selection for, and to assess the performance of, the pilot extraction well after it is installed. Monitoring wells at each location will be constructed of 2-inch Schedule 80 PVC and screened at incremental depths within the lower sand and gravel aquifer. Each monitoring well will be screened up to a maximum 20 percent of the aquifer thickness.




Source: Golder Associated, Inc., May 1987.

Phase I - West System



Figure IV-3

b. Monitoring Well Sampling and Analysis -- Chemical analysis of water samples from the monitoring wells will be used to evaluate contaminant characteristics and other important water quality parameters. Water level measurements will be used to evaluate aquifer thickness, vertical and horizontal hydraulic gradients, and the influence of the Little Spokane River on ground water flow. This information will be used for design, placement, and performance evaluation of the pilot extraction well and in the design of the Phase II - West treatment and discharge system.

Chemical analyses will focus on the six compounds identified in Table I-1 and will be performed by EPA Method 8010 (SW-846, USEPA, 1986) or equivalent. These compounds are:

1,1,1-trichloroethane (1,1,1-TCA)
1,1-dichloroethylene (1,1-DCE)
1,1-dichloroethane (1,1-DCA)
trichloroethylene (TCE)
tetrachloroethylene (PCE)
methylene chloride (MC)

Other parameters, including, but not limited to, temperature, pH, conductivity, hardness, iron, and manganese, may be included for use during treatment system design activities.

The monitoring wells at the four initial locations will be sampled after development. Analysis of samples from this effort will be used to identify the final location of the pilot extraction well. In the event of anomalies in data from this initial sampling, the County may, at its discretion, conduct follow-up sampling at bi-weekly intervals for verification purposes.

If necessary, monitoring wells will be installed at up to two additional locations in the vicinity of the proposed pilot extraction well location. These wells will be sampled after development. Data obtained from these wells will be necessary to later assess performance of the pilot extraction well. As above, in the event of anomalies in this data, the County may, at its discretion, conduct follow-up bi-weekly sampling and analysis for verification purposes.

During the first month after pumping of the pilot extraction well begins, samples for chemical analysis will be obtained at least weekly from the pilot extraction well and the two closest monitoring wells. After this initial 4-week period, the pilot extraction well and the monitoring wells will be sampled and analyzed at least quarterly during operation of the pilot system.

c. Water Level Monitoring -- Water level monitoring will be conducted in at least the two monitoring wells closest to the pilot extraction well. Data from this effort will be used to assess the performance of the pilot extraction well and further characterize the hydrogeology of the site. Monitoring will begin before the startup of the pilot pumping system and will continue

until water level conditions stabilize or until it is demonstrated that continuous pumping is not possible. At the County's discretion, private supply wells may be included in this study.

3. **Pilot Extraction Well** -- Information obtained from the pilot extraction well is intended to aid in the design of a Phase II - West interception, treatment, and discharge system.

a. Location of the Pilot Extraction Well -- The pilot extraction well will be installed east of Highway 2 close to the abandoned railroad alignment. The preliminary location, based on available data, is shown on Figure IV-3. In selection of this preliminary site, consideration has been given to the location of the Phase II - West interception system.

b. Construction of the Pilot Extraction Well -- Construction details for the pilot extraction well will be influenced by information from the initial monitoring wells. It is anticipated that this well will be constructed using 6- or 8-inch diameter steel casing and a stainless steel screen. The screen length will be at least 10 feet and will be placed based on vertical contaminant distribution data from nearby monitoring wells.

c. Pumping of the Pilot Extraction Well -- The pilot extraction well will be equipped with a submersible pump. A well at this location should be capable of providing at least 100 gpm. At the County's discretion, the pumping rate may be increased to 200 gpm if the aquifer is capable of sustained production at that rate.

d. Duration of Pilot Testing -- It is intended that the pilot extraction well will operate for at least a 30-day period, and possibly until implementation of the complete Phase II - West system. If appropriate, it will be incorporated into the Phase II - West system.

e. Chemical Analysis of Pilot Well Samples -- Analysis of samples from the pilot extraction well will be as described in Section IV.C.2b.

4. **Treatment/Discharge System** -- The treatment system ultimately constructed as part of the Phase II - West system must utilize cost-effective and reliable technology. Cost effectiveness is to be based on long-term operating and maintenance costs as well as the initial installation cost.

A pilot gravity air stripping system, utilizing the drop in elevation between the bluff and the Little Spokane River, will be constructed as part of the Phase I activities. This system will operate by discharging pumped water to a ditch and allowing natural and induced aeration to volatilize contaminants. The ditch will be lined with a low permeability geomembrane fabric until the point where concentrations decrease to levels below the

Table IV-1 evaluation criteria. Samples will be collected at least weekly from the discharge to verify compliance with the Performance Standards. The ditch will include energy dissipaters to accelerate volatilization and minimize erosion.

Initially, the gravity air stripping system will be designed to accommodate flow rates of up to 200 gpm, but the ditch may, at the County's discretion, be sized to handle anticipated Phase II - West discharge rates. Final design of this system will depend on input water quality as characterized by the monitoring wells. Field testing during startup may be required to determine the length of geomembrane-lined ditch required to attain the Table IV-1 evaluation criteria. This pilot gravity air stripping system will not include off-gas treatment or air monitoring.

5. **Study Analysis and Feasibility Evaluation** -- In the event that the preferred remedy identified in the ROD is no longer feasible or cost effective, the County will propose a new alternative.

# V

## Phase II

### A. Extraction, Water Treatment, and Discharge - South System

1. **Bases for Design --**

a. The goal of the south ground water interception system is to prevent the spread of contaminated ground water downgradient* of the interception system. Both the Government Plaintiffs and the County recognizes that the interception system, during operation, may not capture 100 percent of the plume which contains constituents of concern, but consider it reasonable to design an interception system which approaches this goal.

b. Location of the Interception System -- The ground water interception system will be located based on information developed during Phase I pilot studies. Important considerations in placement of the interception system will include: concentrations and areal distributions of contaminants in the ground water; and hydrogeologic conditions identified during Phase I, such as saturated thickness of the aquifer, hydraulic conductivity, hydraulic gradients, and aquifer boundary conditions.

c. Treatment System -- The treatment system will be designed to meet the Performance Standards at the point of discharge from the treatment system. This design will be based on the maximum anticipated contaminant mass influent rate and treatment efficiency levels demonstrated during Phase I pilot testing. Compliance with applicable air emission standards will be addressed during treatment system design in accordance with the provisions of Section V.D.

d. Cost Effectiveness -- Design of the Phase II interception/treatment/discharge system will also consider cost effectiveness. The minimum level of effort required for the south interception system is prevention of the spread of the constituents of concern at concentrations which exceed the evaluation criteria identified in Table IV-1. The treatment and discharge system must meet the evaluation criteria. The County, at its discretion, may either select proven technology or new technologies which attain these criteria more economically. The system plans will be submitted to the Government Plaintiffs for review and approval.

---

* For the purpose of this Scope of Work, the terms upgradient and downgradient refer to the ground water gradient under non-pumping, steady state conditions, unless specifically indicated otherwise.

2. **Design Components and Bases for Decision--**

a. Monitoring -- The County may, at its discretion, decide, following completion of Phase I, to install up to three additional monitoring wells to better characterize the hydrogeology and contaminant distribution in the shallow aquifer. If so decided, the County will provide plans to the Government Plaintiffs for review, identifying the number and location of additional monitoring wells. Information from these wells would be used to confirm or refine data from Phase I prior to construction of the Phase II system.

As the plan for the Phase II ground water interception system is finalized, a ground water monitoring program will be instituted to evaluate interception system performance. The interception system monitoring wells will consist of at least three, and not to exceed eight, monitoring wells located downgradient of the ground water interception system, and two monitoring wells placed at the outer limit of the interception system. The wells at the outer limits will also serve as extraction wells, if adjustment control criteria (as described in Section V.A.2b) are exceeded in these wells during monitoring. The County will determine if the interception system monitoring wells will include wells installed as part of the Phase I program. Phase I wells not included as interception system monitoring wells will be monitored at the County's discretion. A more extensive monitoring system may be proposed by the County if they determine that additional monitoring is appropriate. Plans for additional monitoring would be provided to the Government Plaintiffs for review and approval.

Chemical analysis for the interception system monitoring wells will be accomplished for the four indicator compounds identified in Table V-1, using EPA Method 8010 (SW-846, USEPA, 1986), on the frequency described in the following paragraph. Methylene chloride and tetrachloroethylene have been excluded from Table V-1 due to the high probability of laboratory contamination for methylene chloride, and the limited distribution in the ground water of both methylene chloride and tetrachloroethylene. Although methylene chloride and tetrachloroethylene do not form the basis for interception system design and operation criteria, they will be included in chemical analysis annually for at least the first five years of system operation. If methylene chloride and/or tetrachloroethylene are detected at concentrations above the Table IV-1 evaluation criteria during Phase I or during annual sampling described in this paragraph, the compounds will be monitored at the frequency of the other compounds listed in Table V-1. After this five-year period, the need for continued analysis for methylene chloride and tetrachloroethylene will be re-evaluated.

TABLE V-1

OPERATIONAL AND ADJUSTMENT CONTROL CRITERIA[a]

| Compound | Maximum[b] Operational Control Criteria (ppb) | Maximum[c] Adjustment Control Criteria (ppb) |
|---|---|---|
| 1,1,1-Trichloroethane | 60 | 130 |
| 1,1-Dichloroethylene | N/A[d] | 5 |
| 1,1-Dichloroethane | 1,200 | 2,600 |
| Trichloroethylene | N/A[d] | 4 |

(a) Maximum criteria are presented in this table. Criteria may be lower than these values, as described in Sections V.A.2b. and V.C.2b. of this Scope of Work.
(b) Operational control criteria as represented by 30 percent of the Table IV-1 evaluation criteria.
(c) Adjustment control criteria as represented by 65 percent of the Table IV-1 evaluation criteria.
(d) Resulting concentration is too low to be accurately quantified using standard laboratory procedures. This constituent will not be included as part of the operational control criteria.

Quarterly sampling and analysis will be conducted for each of the interception system monitoring wells, except that the performance monitoring wells will initially be sampled more frequently as subsequently described in Section V.A.2b. Quarterly sampling of each well will be continued until no exceedance of the operational control criteria (as described in Section V.A.2b) is identified for twelve consecutive quarters. In the event that, for a particular well, no exceedances occur during the twelve quarters, sampling frequency will be reduced to an annual basis for the next two years. If no exceedances have been identified during this five-year period, the County will, with Government Plaintiff's approval, determine whether continued monitoring is appropriate based on the need to assure long-term protection of purveyor wells at the site. If, in a particular monitoring well (or converted extraction well, as described below in Section V.A.2b.), no exceedances occur, but an increasing trend in concentrations is identified that is likely to result in exceedance of the operational control criteria, the County will implement a longer-term sampling and analysis program that assures the protection of human health.

In the event that a single exceedance of an applicable criteria (Table IV-1 or Table V-1) occurs, a follow-up sample will be obtained. An exceedance will be confirmed if concentrations exceeding an applicable criteria are identified in three consecutive samples collected at two-week intervals. If an exceedance is confirmed, the County will submit, for the Government Plaintiffs' review and approval, a program including additional monitoring wells or additional monitoring of existing wells to address the exceedance.

The criteria presented in this section (V.A.2a) applies only to monitoring during system operation. While the interception system is shut off and on standby status, this system operation criteria is superseded by the monitoring criteria described in Section X of this Scope of Work.

b. Interception System -- In order to meet the goals identified in Section V.A.1a, the County will accomplish the following:

- Conduct the Phase I pilot studies to obtain the needed aquifer characteristics for designing an interception system.

- Complete a preliminary design engineering report detailing the most probable aquifer characteristics, design parameters and project costs. The system will be designed utilizing capture zone analysis to achieve overlapping cones of depression, and such that the total pumping capability of the interception well system is sufficient to intercept the plume to the extent described within this section (V.A.2b). Selection of pumping test methodologies and capture zone analysis will be

subject to the review and approval of the government plaintiffs.

The extraction wells will be installed near the leading edge of the plume. Extraction wells will be installed in succession from the center to the outermost limits of the plume. The spacing of the wells will be determined by the County based on hydrogeologic and chemical data. Additional wells will be installed until the ground water at the outermost limits is below the adjustment control criteria. The outermost wells will be included as interception system monitoring wells, and will be constructed such that conversion to extraction wells is possible if exceedances of adjustment control criteria are subsequently identified. If an outboard monitoring well is converted to an extraction well, an additional monitoring well (constructed for possible conversion to an extraction well) will be installed to the outside of the converted monitoring/extraction well.

The design criteria will serve as a guide to the use of the aquifer capture analysis referred to earlier in this section. The basis for the south interception system design will be that the average concentrations of the contaminants of concern in the upper aquifer downgradient of the interception system are predicted to be no greater than 15 percent of the Table I-1 Performance Standards based on capture zone analysis.

Commencing at a mutually agreed upon time following startup of the interception system, the downgradient interception system monitoring wells will be sampled monthly (for Table V-1 constituents) for two years, or some other mutually agreed-upon length of time. The Government Plaintiffs will select at least three, and not to exceed eight, of these downgradient wells for use as performance monitoring wells. These wells will be selected to provide a representative sampling of constituent concentrations across the full width of the interception system. Based on statistical analysis of the chemical data from these performance monitoring wells, a baseline concentration* will be identified for each Table V-1 constituent. This baseline concentration will be equal to the average of the time-averaged concentrations in the three (or more) performance monitoring wells after the data associated with the expected gradual changes following startup are eliminated.

Operational control criteria for the south interception system will be developed for the appropriate indicator compounds (1,1,1-TCA and 1,1-DCA) from Table V-1 and will be equal to the lesser of: 1) the baseline concentration plus 15 percent of the Table IV-1 evaluation criteria or 2) 30 percent of the Table IV-1

---

* If the resulting concentration is below the Practical Quantitation Limit (PQL) for a Table I-1 constituent, the PQL reported for EPA Method 8010 (USEPA, "Test Methods for Evaluating Solid Waste," SW-846, 3rd Ed. 1986) will be used as the baseline concentration for that constituent.

evaluation criteria. If, after confirmation (as defined in Section V.A.2a) the average concentration in the three (or more) performance monitoring wells exceeds the operational control criteria, the County will re-evaluate the operation of the interception system. Should this re-evaluation indicate adjustments to the system are appropriate, the County will submit a proposal for interception system adjustment to the Government Plaintiffs for review and approval. Adjustments may include increasing pumping rates (for one or more wells), or other adjustments to the existing system considered appropriate for improving interception system efficiency.

Adjustment control criteria for the south interception system will be developed for the indicator compounds from Table V-1 and will be equal to the lesser of: 1) the baseline concentration plus 50 percent of the Table IV-1 evaluation criteria or 2) 65 percent of the Table IV-1 evaluation criteria.

If after confirmation (as defined in Section V.A.2a), the average concentration in the three designated downgradient monitoring wells exceeds the adjustment control criteria for two consecutive quarters (or some other mutually agreed-upon timeframe that will better allow reflection of system adjustments in downgradient monitoring wells) following system adjustment (as described previously for operational control criteria exceedances), the interception system will be modified. Additionally, the interception system will be modified if any individual downgradient performance monitoring well exceeds the Table IV-1 evaluation criteria for two consecutive quarters (or other time period, as described above). Modifications may include increasing pumping rates (for one or more wells), adding extraction wells to the system, or other methods of correcting interception system deficiencies. The County will submit a proposal for interception system modifications to the Government Plaintiffs for review and approval.

In addition to the operation and adjustment control criteria described above, should any downgradient performance monitoring well, following the development of baseline concentrations, exhibit anomalous concentrations or trends in concentrations that are inconsistent with effective interception system performance (such as an increasing trend in concentration projected to lead to a long-term exceedance of the Table V-1 adjustment control criteria), the County will evaluate the operation of the interception system. This evaluation will address the potential cause(s) of the anomaly and possible system adjustments or modifications (if appropriate), and will be presented to the Government Plaintiffs in a written report for their review within 60 days of evaluation.

Prior to establishing baseline concentrations, the operational and adjustment control criteria for the interception system will be the Table IV-1 evaluation criteria. These criteria will be applied on an individual basis to each downgradient interception system monitoring well.

If it is determined by the County that an exceedance of the above criteria is the result of supply well interference with the interception system, adjustment to, or modification to, the system will include elimination of the interference. Elimination of the interference may require either partial or complete cessation of supply well use. The County will attempt to negotiate a settlement with the well owner. If an equitable agreement cannot be reached between the County and the well owner, the Government Plaintiffs may use their statutory authority to seek termination of usage for the interfering well.

Based on cost effectiveness or a determination by the County that acceleration of the cleanup is appropriate, the County may, at its discretion, propose additional upgradient extraction wells. Any such proposal will be submitted to the Government Plaintiffs for review and approval.

If ground water withdrawn by an extraction well meets the operational control criteria for two consecutive quarterly samplings, water from this well will not require treatment prior to discharge. If a subsequently confirmed exceedance of the operational control criteria is identified, treatment of water from the extraction well will be resumed.

Operation of an extraction well may be discontinued if ground water from that well meets the adjustment control criteria. If shutdown of the well thereby occurs, the well will be sampled as described above in Section V.A.2a for monitoring wells. If a subsequently confirmed exceedance of the adjustment control criteria or an identified trend of increasing chemical concentrations occurs that is projected to lead to an exceedance of the adjustment control criteria, the extraction well will be reactivated.

If contaminant concentrations in ground water entering an extraction well decrease (confirmed as described in Section V.A.2a for exceedances) to levels below the Table IV-1 evaluation criteria, pulse pumping may be initiated at the discretion of the County. Procedures for pulse pumping, which are protective of human health and the environment, will be provided to the Government Plaintiffs for review and approval.

c. Treatment System -- A water treatment system utilizing air stripping, designed to treat water to comply with the Performance Standards, will be installed. The treatment system design will use data developed during the Phase I pilot program. A facilities plan will be developed by the County and provided to the Government Plaintiffs for review and approval. The County may, at its discretion, select treatment system performance goals which provide a higher discharge water quality than that identified by the Performance Standards. Compliance with applicable air emissions standards is addressed in Section V.D.

In the event that water discharged from the treatment system exceeds the Table IV-1 evaluation criteria, necessary improvements or operational adjustments will be accomplished by the County after review and approval by the Government Plaintiffs. In the event that the treatment system cannot meet the Table IV-1 evaluation criteria for methylene chloride, the Government Plaintiffs may apply less stringent evaluation criteria for this constituent. Indicated exceedances will be confirmed using the same methodology described for monitoring wells in Section V.A.2a.

d. Discharge -- Disposal of treated water will be in a manner that meets the Table IV-1 evaluation criteria. Options include discharge to the Little Spokane River, discharge to Deep Creek, or recharge to the shallow aquifer (either upgradient or downgradient of the interception system). Discharge to Deep Creek and recharge to the shallow aquifer will require the specific approval of the Government Plaintiffs. Plans for the discharge system will be submitted to the Government Plaintiffs for review and approval.

B. Extraction, Water Treatment, and Discharge - East System

1. **Bases for Design --**

a. Performance Standards for Ground Water -- The east ground water extraction system is intended for source control near the landfill site and not as an interception system.

b. Location of the East Source Control System -- The source control extraction system will be located based on information developed during Phase I pilot studies. Important considerations in placement of the extraction system will include concentrations and areal distributions of contaminants in the ground water; and hydrogeologic conditions such as saturated thickness of the aquifer(s), hydraulic conductivity, horizontal and vertical hydraulic gradients, and aquifer boundary conditions.

c. Treatment System -- The treatment system will be designed to meet the Performance Standards at the point of discharge from the treatment system. This design will be based on the maximum anticipated contaminant mass influent rate and treatment efficiency levels demonstrated during Phase I pilot testing. Compliance with applicable air emission standards is addressed in Section V.D.

d. Cost Effectiveness -- Design of the Phase II - East extraction/treatment/discharge system will also consider cost effectiveness. The extraction/treatment/discharge system must meet the Table IV-1 evaluation criteria with respect to treatment and discharge. The County may, at its discretion, either select proven technology or new technologies which more economically attain these criteria. The system plans will be submitted to the Government Plaintiffs for review and approval.

2. Design Components and Bases for Decision--

a. Monitoring -- The east extraction system is intended for source control and not plume interception. Consequently, no performance monitoring is required beyond that which is considered necessary by the County to evaluate treatment efficiency and to demonstrate the cost effectiveness of continued operation of the east system as a Remedial Action component for the lower aquifer(s). Phase I - East monitoring wells will be monitored at the discretion of the County.

In the event that monitoring wells upgradient of the extraction system, and outside its capture zone, show a consistent rise in contaminant concentrations that is likely to result in exceedance of the Table IV-1 evaluation criteria, additional upgradient (as previously defined) monitoring will be accomplished. The County will select the number and location of additional monitoring wells, subject to review and approval by the Government Plaintiffs. The County will determine if existing wells will be used or new monitoring wells will be installed.

The criteria presented in this section (V.B.2a) applies only to monitoring during system operation. This criteria is superseded, once the system is shut off, by the monitoring criteria described in Section X of this Scope of Work.

b. Source Control System -- The County will propose a source control system that includes six or more extraction wells. These wells will be installed to the north and to the east of the landfill site at locations exhibiting elevated contaminant concentrations and adequate hydrogeologic properties for sustained extraction at or near the flow rates set forth in the ROD. As presently envisioned by the County, the system will include at least three extraction wells to the north and three to the east of the landfill. The locations and flow rates of these wells will be determined by the County from Phase I study data and additional monitoring well data. The design for this system will be provided to the Government Plaintiffs for review and approval.

Based on the following criteria, the County may, at its discretion, expand the source control system beyond six extraction wells: aquifer yield; potential contaminant spreading induced by the addition of extraction wells; impact of increased contaminant mass loading to the treatment facility on meeting the Table IV-1 evaluation criteria; and system redundancy with respect to the west interception system and the objectives of the lower aquifer(s) Remedial Action.

Operation of an extraction well may be discontinued, upon approval of the Government Plaintiffs, if the well is not yielding, on a continuous basis, at least 50 percent (20 gpm) of the average discharge rate described in the ROD. If pumping is terminated for an extraction well, that well may, at the County's discretion, be included in the lower aquifer(s) monitoring program.

If deemed appropriate by the County, extraction wells may be subjected to pulse pumping rather than continuous pumping. Plans for pulse pumping will be submitted to the Government Plaintiffs for review and approval.

If ground water withdrawn by an extraction well meets the Table V-1 operational control criteria for two consecutive quarterly samplings, water from this well will not require treatment prior to discharge. If a subsequently confirmed exceedance of the operational control criteria is identified, treatment of water from the extraction well will be resumed.

Pumping may be discontinued from extraction wells if it is determined by the County, with review and approval by the Government Plaintiffs, that continued operation of the well(s) is no longer cost effective. Cost effectiveness will be evaluated based on the extent to which the extraction well(s) are achieving

the system goal of source control, and whether it is cost effective to extract contamination near the source rather than at the west interception system.

c. Treatment System -- A water treatment system utilizing air stripping, designed to treat water to comply with the Performance Standards, will be installed. The treatment system design will use data developed during the Phase I pilot program. A facilities plan will be developed by the County and provided to the Government Plaintiffs for review and approval. The County, at its discretion, may select treatment system performance goals which provide a higher discharge water quality than that identified by the Performance Standards. Compliance with applicable air emissions standards is addressed in Section V.D.

In the event that water discharged from the treatment system exceeds the Table IV-1 evaluation criteria, necessary improvements or operational adjustments will be accomplished by the County after review and approval by the Government Plaintiffs. Indicated exceedances will be confirmed by follow-up sampling and analysis using the same methodology described for monitoring wells in Section V.A.2.a.

In the event that the treatment system cannot meet the Table IV-1 evaluation criteria for methylene chloride, the Government Plaintiffs may apply less stringent evaluation criteria for this constituent. Indicated exceedances will be confirmed using the same methodology described for monitoring wells in Section V.A.2a.

d. Discharge -- Disposal of treated water will be in a manner that meets the Table IV-1 evaluation criteria. The County will choose the specific means of disposal; options include discharge to the Little Spokane River and recharge at or near the landfill site. The viability of treated water recharge at or near the landfill site will be evaluated by the County and may include consideration of cleanup acceleration resulting from contaminant flushing within the unsaturated zone, and the potential impact of increased contaminant loading on treatment system performance. If this evaluation confirms the viability of recharge, the County will submit a plan to the Government Plaintiffs for their review and approval.

C. Extraction, Water Treatment, and Discharge - West System

1. **Bases for Design --**

a. The goal of the west ground water interception system is to prevent the spread of contaminated ground water downgradient of the interception system. Both the Government Plaintiffs and County recognize that a higher level of protection is appropriate for that portion of the lower aquifer (downgradient of the interception system) within the zone of capture of existing supply wells, than for that portion of the aquifer downgradient of the interception system where contaminants can migrate directly to the Little Spokane River without impacting existing supply wells.

b. Location of the Interception System -- The ground water interception system will be located east of Highway 2 in proximity to the north-south alignment shown in the ROD.

c. Treatment System -- The treatment system will be designed to meet the Performance Standards at the point of discharge from the treatment system. This design will be based on the maximum anticipated contaminant mass influent rate and treatment efficiency levels demonstrated during Phase I pilot testing. Compliance with applicable air emission standards will be addressed during treatment system design in accordance with the provisions of Section V.D.

d. Cost Effectiveness -- Design of the Phase II interception/treatment/discharge system will also consider cost effectiveness. The minimum level of effort required for the west interception system is prevention of the spread of the constituents of concern at concentrations which exceed the evaluation criteria identified in Table IV-1. The treatment and discharge system must meet these evaluation criteria. The County, at its discretion, may either select proven technology or new technologies which more economically attain these criteria. The system plans will be submitted to the Government Plaintiffs for review and approval.

2. **Design Components and Bases for Decision--**

a. Monitoring -- A monitoring program will be instituted to evaluate the Phase II interception system performance. Two sets of monitoring wells will be included in the west interception system performance monitoring program. The first set (set A) of monitoring wells will be utilized for evaluation of interception system performance for those portions of the lower aquifer within the capture zone of existing supply wells located downgradient of the interception system, and will consist of three monitoring wells located directly upgradient of the existing supply wells. The second set (set B) of monitoring wells will be utilized for evaluation of interception system performance for those portions of the lower aquifer not directly impacting the water quality of the existing supply wells, and

will include three monitoring wells located downgradient of the interception system. Two additional monitoring wells placed at the outboard limit of the interception system will also be included in the interception system monitoring program. These outboard wells may also serve as extraction wells, if adjustment control criteria (as described in Section V.C.2b) are exceeded during monitoring.

The monitoring system may, at the discretion of the County, include new wells or, if appropriate, wells installed as part of the Phase I program. Phase I wells not included in the interception system performance monitoring program will be monitored at the County's discretion. A more extensive monitoring system may be proposed by the County if they determine that additional ground water monitoring is appropriate. Plans for additional monitoring would be provided to the Government Plaintiffs for review and approval.

Quarterly sampling and analysis will be conducted for each of the interception system monitoring wells, for the four indicator compounds shown in Table V-1 and discussed in Section V.A.2a, except the performance monitoring wells (sets A and B) will initially be sampled more frequently as subsequently described in Section V.C.2b. Quarterly sampling for each well will be continued until no exceedance of the Table V-1 adjustment control criteria is identified for twelve consecutive quarters. In the event that, for a particular well, no exceedances occur during the twelve quarters, sampling will be reduced to an annual frequency for the next two years. If no exceedances have been identified during this five-year period, the County will determine whether continued monitoring is appropriate based on the need to assure longer-term protection of purveyor wells near the site. If no exceedances occur in a particular monitoring well (or converted extraction well, as described in Section V.C.2b), but an increasing trend in concentrations is identified that would likely result in exceedance of the adjustment control criteria, the County will implement a longer-term sampling and analysis program that assures the protection of human health and the environment.

In the event that a single exceedance of the adjustment control criteria occurs, a follow-up sampling will be accomplished. An exceedance will be confirmed if concentrations exceeding the adjustment control criteria specified in Table V-1 are identified in three consecutive samples collected at two-week intervals. If an exceedance is confirmed, the Government Plaintiffs may require installation of additional monitoring wells or implementation of more extensive monitoring of existing wells. Further, the County will submit, for the Government Plaintiffs' review and approval, a program to address the exceedance. This program will include measures to protect human health and the environment.

The criteria presented in this section (V.C.2a) applies only to monitoring during system operation. While the interception

system is shut off and on standby status, this system operation criteria is superseded by the monitoring criteria described in Section X of this Scope of Work.

b. Interception System -- In order to meet the goals identified in Section V.A.1a, the County will accomplish the following:

- Conduct the Phase I pilot studies to obtain the needed aquifer characteristics for designing an interception system.

- Complete a preliminary design engineering report detailing the most probable aquifer characteristics, design parameters and project costs. The system will be designed utilizing capture zone analysis to achieve overlapping cones of depression, and such that the total pumping capability of the interception well system is sufficient to intercept the plume to the extent described in this section. Selection of pumping test methodologies and capture zone analysis will be subject to the review and approval of the Government Plaintiffs.

These extraction wells will be installed east of Highway 2 in proximity to the north-south alignment shown in the ROD. Extraction wells will be installed in succession from the center to the outermost limits of the plume. The spacing of the wells will be determined by the County based on hydrogeologic and chemical data. Extraction wells will be installed until the ground water at the outermost limits of the system is below the adjustment control criteria. The outermost wells will be used for interception system monitoring and will be constructed such that conversion to extraction wells is possible if exceedances of adjustment control criteria are subsequently identified. If an outboard monitoring well is converted to an extraction well, an additional monitoring well (constructed for possible conversion to an extraction well) will be constructed to the outside of the converted monitoring/extraction well.

Interception system design criteria will be based on the Table I-1 Performance Standards. Operational and adjustment criteria will be developed based on Table IV-1 evaluation criteria and observed interception system efficiency during the early stages of Phase II.

The design criteria will serve as a guide for the use of the capture analysis referred to in this section. The basis for design of that portion of the west system that intercepts ground water migrating into the capture zone(s) of existing downgradient supply wells will be that the average concentrations of the constituents of concern in the existing supply wells downgradient of the interception system are predicted to be no greater than 15 percent of the Table I-1 Performance Standards based on capture

zone analysis. The remainder of the system will be designed such that the average concentrations of constituents of concern in the lower aquifer downgradient of the interception system will be no greater than 50 percent of the Table I-1 Performance Standards.

Commencing at a mutually agreed-upon time following startup of the interception system, the two sets (A and B) of downgradient performance monitoring wells will be sampled monthly (for Table V-1 constituents) for two years, or some other mutually agreed-upon length of time. Based on statistical analysis of the chemical data from these wells, separate baseline concentrations* will be identified for each set (A and B) of downgradient performance monitoring wells for each Table V-1 constituent. The baseline concentrations for each set (A and B) of monitoring wells will be equal to the average of the time-averaged concentrations in the three performance monitoring wells associated with that set and, if appropriate, may include vertical averaging for nested wells or well clusters, after the data associated with the expected gradual changes following startup are eliminated.

Operational control criteria for the west interception system will be developed for the appropriate Table V-1 indicator compounds (1,1-TCA and 1,1-DCA) and will only apply to that portion of the system intercepting ground water migrating towards existing downgradient supply well capture zones and will be equal to the lesser of: 1) the baseline concentration based on the "A" set of monitoring wells plus 15 percent of the Table IV-1 evaluation criteria or 2) 30 percent of the Table IV-1 evaluation criteria. If, after confirmation (as defined in Section V.A.2a) the average concentration in the "A" set of performance monitoring wells exceeds the operational control criteria, the County will re-evaluate the operation of the interception system. Should this re-evaluation indicate adjustments to the system are appropriate, the County will submit a proposal for interception system adjustment to the Government Plaintiffs for review and approval. Adjustments may include increasing pumping rates (for one or more wells), or other adjustments to the existing system considered appropriate for improving contaminant interception efficiency.

Adjustment control criteria for the west interception system will be developed for the Table V-1 indicator compounds and will be equal to the lesser of: 1) the baseline concentration (for set "A" or "B monitoring wells", as appropriate) plus 50 percent of the Table IV-1 evaluation criteria or 2) 65 percent of the Table IV-1 evaluation criteria.

---

* If the resulting concentration is below the Practical Quantitation Limit (PQL) for a Table I-1 constituent, the PQL reported for EPA Method 8010 (USEPA, "Test Methods for Evaluating Solid Waste," SW-846, 3rd Ed. 1986) will be used as the baseline concentration for that constituent.

If after confirmation (as defined in Section V.A.2a), the average concentration in either the "A" or "B" sets of downgradient monitoring wells exceeds the adjustment control criteria for two consecutive quarters (or some other mutually agreed upon timeframe that will better allow reflection of system adjustments in downgradient monitoring wells) following system adjustment (as described previously for operational control criteria exceedances), the interception system will be modified if applicable. Additionally, the interception system will be modified if any Set "A" individual downgradient performance monitoring well exceeds the Table IV-1 evaluation criteria for two consecutive quarters (or other time period, as described above). Modifications may include increasing pumping rates (for one or more wells), adding extraction wells to the system, or other methods of correcting interception system deficiencies. The County will submit a proposal for interception system modification to the Government Plaintiffs for review and approval.

In addition to the operation and adjustment control criteria described above, should any set "A" downgradient performance monitoring well, following the development of baseline concentrations, exhibit anomalous concentrations or trends in concentrations inconsistent with effective interception system performance (such as an increasing trend in concentration projected to lead to a long-term exceedance of the Table V-1 adjustment control criteria), the County will evaluate the operation of the interception system. This evaluation will address the potential cause(s) of the anomaly and possible system adjustments or modifications (if appropriate), and will be presented to the Government Plaintiffs in a written report for their review within 60 days of the evaluation.

If it is determined by the County that an exceedance of the above criteria is the result of supply well interference with the interception system, adjustment to, or modification to, the system may include elimination of the interference. Elimination of the interference may require either partial or complete cessation of supply well use. The County will attempt to negotiate a settlement with the well owner. If an equitable agreement cannot be reached between the County and the well owner, the Government Plaintiffs will use their statutory authority to seek termination of usage for the interfering well.

Based on cost effectiveness or a determination by the County that acceleration of the cleanup is appropriate, the County may, at its discretion, propose additional upgradient extraction wells. Any such proposal will be submitted to the Government Plaintiffs for review and approval.

If ground water withdrawn by an extraction well meets the operational control criteria for two consecutive quarterly samplings, water from this well will not require treatment prior to discharge. If a subsequently confirmed exceedance of the operational control criteria is identified, treatment of water from the extraction well will be resumed.

Operation of an extraction well may be discontinued if ground water at that well meets the adjustment control criteria. If shutdown of the well thereby occurs, the well will be sampled as described above in Section V.C.2a for monitoring wells. If a subsequently confirmed exceedance, or an identified trend of increasing chemical concentrations occurs that can be projected to lead to an exceedance, of the adjustment control criteria at downgradient supply wells, reactivation of the extraction well may be necessary.

If concentrations in ground water entering an extraction well decrease (confirmed as described in Section V.B.2a for exceedances) to levels below the Table IV-1 evaluation criteria, pulse pumping may be initiated at the discretion of the County. Procedures for pulse pumping, which are protective of human health and the environment, will be provided to the Government Plaintiffs for review and approval.

c. Treatment System -- A water treatment system utilizing air stripping, designed to treat water to comply with the Performance Standards, will be installed. The treatment system design will use data developed during the Phase I pilot program.

If water discharged from the treatment system exceeds the Table IV-1 evaluation criteria, necessary improvements or operational adjustments will be accomplished by the County after review and approval by the Government Plaintiffs. In the event that the treatment system cannot meet the Table IV-1 evaluation criteria for methylene chloride, the Government Plaintiffs may apply less stringent evaluation criteria for this constituent. Indicated exceedances will be confirmed using the same methodology described for monitoring wells in Section V.C.2a.

A gravity air stripping system, which takes advantage of the elevation drop between the bluff near Highway 2 and the Little Spokane River may be installed, if Phase I pilot system test results indicate this method will meet Table IV-1 evaluation criteria. If, based on the criteria identified in Section V.D., off-gas treatment is required, a conventional air stripping system will be installed.

d. Discharge -- Disposal of treated water will be to the Little Spokane River. Discharge water will meet the Table IV-1 evaluation criteria. Plans for the discharge system will be submitted to the Government Plaintiffs for review and approval.

D. Air Emissions Abatement

The necessity for air stripping tower off-gas abatement during Phase II will be evaluated based on the assessment of lifetime cancer risk for carcinogenic compounds, and on hazard indices for non-carcinogenic compounds, in accordance with methods described in the Superfund Public Health Evaluation Manual (EPA 54011-86/060, 1986). Phase I data, and the criteria described below, will be used in these evaluations during Phase I. Additional data developed during the early stages of Phase II will be used to reassess the Phase I evaluation. If the County can demonstrate to the Government Plaintiffs that the lifetime cancer risks and the hazard indices are below $10^{-6}$ and 1, respectively, off-gas treatment will not be required.

A preliminary analysis of air emissions for the Table I-1 compounds has been accomplished using a standard Gaussian plume model and 100 percent transfer efficiency (water to air media). The analysis considered receptor distances of 500 and 1000 feet, a stack height of 40 feet, and assumed that all water treatment would be accomplished at one location. The analysis used National Weather Service Wind Data for the Spokane International Airport and an initial mass flux to the stripping towers equal to that arrived at from the projected influent concentrations and pumping rates identified in the RI/FS. It was further assumed that the total mass of each constituent removed during the clean-up could be equal to as much as 5 times the mass of each constituent identified as being present in the ground water, based on the data contained in the RI/FS.

Based on these assumptions, the model predicts that for the carcinogenic and potential carcinogenic compounds (TCE, DCE, PCE, and MC) the summation of the incremental increases in cancer risk for the individual compounds is below $10^{-6}$ (1 in 1 million), and the hazard index summation for all Table I-1 non-carcinogenic compounds is below 1. Because the analysis utilized some assumptions which have not been fully confirmed at the site, the following verification steps will be taken:

1. Air monitoring and modeling will be conducted during Phase I to confirm the wind speed, wind direction, and applicability of the Gaussian model. If the County determines that air emissions can be better analyzed using a different model, the proposed model, and rationale for its use, will be submitted to the Government Plaintiffs for review and approval.

2. Phase I and Phase II data will be evaluated to estimate the total mass of the six indicator constituents present in the ground water.

3. Measurements will be made during Phase I and the early stages of Phase II to identify the mass flux of the six

indicator constituents to the stripping tower(s). These data will be compared with the flux rates identified in the RI/FS.

If the new information supports the initial analysis, air stripping tower off-gas abatement will not be required.

If the Phase I data does not support the initial analysis, the County will re-examine the need for Phase II off-gas treatment. This re-examination will be accomplished prior to Phase II and presented to the Government Plaintiffs for their review and approval. Should this re-examination identify that off-gas treatment is necessary on either a temporary or permanent basis, based on the criteria described above, the County will make the appropriate adjustments to incorporate carbon absorption, or some other agreed-upon method of air emissions abatement, in the stripping tower design for Phase II.

Air emissions abatement will be re-evaluated during the early stages of Phase II (within a year of Phase II startup). If the Phase II data do not support the Phase I analysis, the County will re-examine the need for off-gas treatment within 60 days of re-evaluation and submit such re-examination to the Government Plaintiffs for review and approval. Should this re-examination identify that off-gas treatment is necessary on either a temporary or permanent basis, based on the criteria described above, the County will retrofit the stripping tower(s) with carbon absorption, or some other agreed-upon method of air emissions abatement. Alternately, should this re-examination identify that off-gas treatment is no longer necessary (if required following Phase I analysis), off-gas treatment may be terminated.

VI

## LANDFILL CLOSURE

The Colbert Landfill will be closed by Spokane County to meet the goals and objectives of the State Minimum Functional Standards (WAC 173-304) for landfill closure, including regrading, ground water and gas monitoring, capping, and post-closure maintenance. The primary purposes of the cap are to: reduce the potential for infiltration and, thus, reduce the rate of leachate generation; address vector control; and restrict human access. The Minimum Functional Standards normally require at least 2 feet of $1 \times 10^{-6}$ cm/sec or lower permeability soil or equivalent to be used for the cap. An artificial impermeable membrane, at least 50 mils thick, may be substituted for the soil cover.

Although a low permeability cap is generally beneficial for closure of municipal landfills, such a cap may reduce the migration of contaminants to the interception system(s), and thereby impede the performance of the Remedial Action. Section 173-304-700 of the Minimum Functional Standards provides for the jurisdictional health department to grant variances from landfill closure requirements for those situations where compliance with the regulation would be detrimental without equal or greater benefit to the public. Spokane County will have the option to appeal to the Spokane County Health District to defer or eliminate the need for the low-permeability cap. The County will, at a minimum, maintain a sufficient soil cover to address vector control and restrict human access to the solid waste.

VII

## DOMESTIC WELL MONITORING

Monitoring of domestic wells in the vicinity of the Colbert Landfill will be conducted to evaluate the progress of the Remedial Action and to identify wells that exceed Performance Standards, so that alternative drinking water supplies may be provided (see Section VIII - Alternative Water Supply). The domestic well monitoring program described in this section is a continuation of the domestic well sampling program currently being accomplished by the County. This program is being conducted under the review of the Colbert Landfill Ground Water Sampling Committee.

### SAMPLING AND ANALYSIS PROCEDURES

The ground water sampling and analysis procedures for domestic well monitoring will be those in use by the Colbert Landfill Ground Water Sampling Committee at the date of entry of this Consent Decree. Changes to these sampling and analysis procedures will not be made without the approval of this committee and the County. Any changes will be submitted to the Government Plaintiffs for their concurrence.

### SAMPLING FREQUENCY

Ground water samples, at a minimum, will be collected annually from all wells included in the domestic well monitoring program. More frequent samples may be collected from selected wells at the discretion of Colbert Landfill Ground Water Sampling Committee and the County. If concentrations in any well exceed Performance Standards, that residence will be evaluated for an alternative water supply in accordance with Section VIII (Alternative Water Supply) of this Scope of Work. Sampling of a water supply well may be discontinued or reduced by the County if:

1. An alternative water supply has been provided for that residence;

2. The Colbert Landfill Ground Water Sampling Committee determines that the supply well is not threatened by contamination from the Colbert Landfill site;

3. Remedial Actions have been demonstrated to be complete.

VIII

## ALTERNATIVE WATER SUPPLY

If any compound originating from the site is identified in any domestic water supply well in use prior to the date of entry of this Consent Decree at a concentration exceeding the Performance Standards, a new sample shall be taken by the County within one week of receipt of the analysis of the first sample. The new sample shall be analyzed on an expedited schedule. If the second sample confirms that the concentrations exceed Performance Standards, the County will promptly provide an alternative drinking water supply source to the residence. At the County's discretion, the new water supply may include, but is not limited to, either bottled water (on an interim basis) or connection of the affected residence to the Whitworth Water Supply System or an approved Class IV system. The County shall be responsible only to provide a drinking water supply to those impacted residences in an amount equal to the drinking water supply standards for residences established by the Department of Social and Health Services in effect at the time of entry of this Consent Decree, or the annual average production of the well, whichever is less.

If any compound originating from the site is identified in any domestic water supply well in use prior to the date of entry of this Consent Decree at a concentration exceeding 65 percent of the Table IV-1 evaluation criteria, a new sample shall be taken by the County within one month of receipt of analysis of the first sample. The new sample shall be analyzed within one month. If the second sample confirms that the concentration exceeds the 65 percent level, that supply well shall be placed on a sampling frequency of once every month for a period of one year. The confirming sample and subsequent monthly samples (if required) will be analyzed in accordance with the procedures set forth in the applicable (Phase I or Phase II) ground water monitoring work plan.

If the average concentration over that 12 month period exceeds 65 percent of any of the Table IV-1 evaluation criteria, the County will provide an alternate water supply to that residence. If the average concentration is below the 65 percent level, that well may be returned to the regular monitoring schedule. Without admitting any legal obligation to do so, the County will provide an alternate water supply to the following residences, if desired: (b)(6)

In the event that operation of the Remedial Action adversely impacts the yield of supply wells in use prior to the date of entry of this Consent Decree, the County will mitigate the impact. For this purpose, adverse impact is defined as a reduction in water supply to levels below the lesser of:

1. The discharge rate and total allowable annual volume defined by a valid water right, filed with the State of Washington prior to entering of this Consent Decree.

   If water is being used without a valid water right, the user will only be entitled to mitigation with respect to the quantity defined by the laws of the State of Washington as being exempt from the filing requirements.

2. The capacity of the supply well in gallons per day.

In order to require the County to mitigate such adverse impacts, the following conditions must be met:

1. Access to the impacted well must be granted by the property owner to the County prior to and during the implementation of the Remedial Action. The County may, at its discretion: a) monitor water level elevations within the well; b) measure the well depth; c) accomplish a well capacity test; and/or d) accomplish any other tasks, procedures or tests deemed appropriate by the County or required by the Government Plaintiffs to evaluate the possible future impact of the Remedial Action.

2. In the event that the County chooses not to monitor a well and a claim is subsequently made by the property owner alleging adverse impact by the Remedial Action, the owner may be requested to sign an affidavit detailing the extent of the impact.

If it is determined that a supply well has been adversely impacted by the Remedial Action, the County may, at their discretion, elect to take any of the following actions:

1. Provide an alternative water supply;

2. Modify the operation of the extraction wells;

3. Modify the supply well system. Modifications may include repositioning of the pump or the addition of a pressurized storage tank;

4. Construct a new well to supplement the existing well; or

5. Exercise any other reasonable action acceptable to the well owner and the County.

Nothing in this Consent Decree shall be construed to mean that the County is responsible to the Whitworth Water District or any other water system owner, either public or private, for costs

in excess of those required to provide the above connections. Excess costs include fire flow; storage requirements; and over-sizing the system to provide service to non-effected properties.

Nothing in this Consent Decree will prohibit the County from negotiating a written release with the property owner regarding any claims of inverse condemnation and/or diminished property value due to adverse impact on yield or as a result of the existence of contamination at levels exceeding the Table I-1 Performance Standards.

IX

## INSTITUTIONAL CONTROLS

The County shall, to the degree authorized by law, implement institutional controls to prevent human access to the Colbert Landfill until such time as the local jurisdictional health department considers such access to be acceptable. The state may implement institutional controls to prevent installation of purveyor wells in areas and at depths known to be contaminated, where such newly installed wells are likely to cause the spread of contamination, or where such wells are likely to impede Remedial Activities.

X

## PERFORMANCE CRITERIA

In accordance with the ROD, ground water extraction will continue until all wells in contaminated zones show that the ground water consistently meets health protection levels. Health protection levels will be those Performance Standards identified in Table I-1 of this Scope of Work. The County will notify the Government Plaintiffs that they have met the Performance Standards prior to ceasing ground water extraction, pumping, and treatment from the interception systems. The County's notification to discontinue pumping and treatment shall include a demonstration, based on the monitoring results described below, that the Performance Standards in Table I-1 shall be met on a permanent basis. Because the east system is intended for source control, the continued operation of this system will be at the County's discretion.

Monitoring wells installed during Phase I that are not part of an interception system monitoring program may be included in this demonstration. If included, Phase I - West and East monitoring wells will be assigned to the west interception system, and Phase I - South monitoring wells will be assigned to the south interception system. At some time in the future, additional monitoring wells may be installed upgradient of the interception system(s) to help assess completion of Remedial Action. If additional upgradient wells are required, the number, location and design of these wells will be mutually determined at the appropriate time by the Government Plaintiffs and County.

Operation and maintenance of each extraction/treatment and discharge system will continue until the ground water at each monitoring well assigned to that system (as defined in Section V and supplemented in the previous paragraph) meets the Performance Standards for four consecutive quarterly samplings. If four consecutive quarterly samplings of these monitoring wells all show the ground water to meet the Performance Standards at each assigned monitoring well, the County may, at its discretion, place that interception system on standby status. Standby extraction wells will become monitoring wells. Quarterly sampling and analysis of these monitoring wells will continue for a period of three years. If, during these three years of monitoring, the ground water at each monitoring well continues to meet the Performance Standards, the County may, at its discretion, deactivate the associated extraction and treatment system. In the event that an exceedance of the Performance Standards occurs, a follow-up sample will be collected. An exceedance will be confirmed if chemical constituent levels exceeding the Performance Standards are identified in three consecutive samples collected at two-week intervals. If a confirmed exceedance occurs, the appropriate portion of the associated interception and treatment system will be placed in operation until such time as the standby status criteria is achieved again.

After termination of standby status for each interception system, the County will continue to monitor all accessible supply wells, which have previously exhibited confirmed contamination at levels exceeding the Performance Standards, once per year for an additional five years. All monitoring, and all other obligations of the County under this Consent Decree, will cease when the ground water in all monitoring wells consistently meets the Performance Standards for this final five-year period.

If trends in ground water monitoring data indicate that the length of time required to meet the Performance Standards will be significantly longer than that reported in the RI/FS, the County may petition the Government Plaintiffs for less stringent Performance Standards.

XI

## SCHEDULE

A schedule for submission of detailed work plans and additional documentation shall be submitted by the County no later than two (2) months from entry of the Consent Decree. Upon the Government Plaintiffs' approval, the schedule shall be submitted to the Court and become a part of the Consent Decree. The schedule shall identify specifically when work plans for Phase I, the Health and Safety Plan, the Quality Assurance Project Plan, the Phase I Engineering Report, and Phase I progress reports shall be delivered. It shall also describe the basis for establishing a schedule for the Phase II work plans, Landfill Closure Plan, Alternative Water Supply Plan, Plan for Institutional Controls, Phase II Plans and Specifications, Phase II Construction Documentation Report, and Phase II progress reports.

Specifically, the schedule shall address the following work plans:

- Health and Safety Plan;
- Quality Assurance Project Plan;
- Phase I Pilot Well Plan;
- Phase I Ground Water Monitoring Plan;
- Phase I Treatment and Discharge Plan;
- Phase II Extraction Well Plan;
- Phase II Ground Water Monitoring Plan;
- Phase II Treatment and Discharge Plan;
- Landfill Closure Plan;
- Alternative Water Supply Plan; and
- Plan for Institutional Controls;

and the following additional documentation:

- Phase I Engineering Report;
- Phase II Plans and Specifications;
- Phase I and Phase II Progress Reports; and
- Phase II Construction Documentation Report.

# APPENDIX D

## REVISED CODE OF WASHINGTON: CONSULTANT AND CONTRACTOR PROCUREMENT PROCEDURES

**36.32.240 Competitive bids——Purchasing department.** In any county the board of county commissioners may by resolution establish a county purchasing department and thereafter such department shall contract on a competitive basis for all public works and purchase or lease on a competitive basis all supplies, materials, and equipment, for all departments of the county, exclusive of the county hospital, pursuant to the provisions hereof and under such rules as the board shall by resolution adopt, except for such contracts and purchases as shall be made pursuant to RCW 36.77.065, 36.77.070 and 36.82.130, and except for such contracts and purchases for the printing of election ballots, voting machine labels and all other election material containing the names of candidates and ballot titles, and performance-based contracts as defined in RCW 39.35A.020(3), that are negotiated under chapter 39.35A RCW: *Provided*, That in all class AA or class A counties or in any county of the first class it shall be mandatory that a purchasing department be established. [1985 c 169 § 8; 1983 c 3 § 77; 1974 ex.s. c 52 § 1; 1967 ex.s. c 144 § 15; 1963 c 4 § 36.32.240. Prior: 1961 c 169 § 1; 1949 c 33 § 1; 1945 c 61 § 1; Rem. Supp. 1949 § 10322-15.]

Severability——1967 ex.s. c 144: See note following RCW 36.98.030.

**36.32.250 Competitive bids——Procedure in awarding contracts——Bid deposits——Contractor's bond.** No contract, lease, or purchase may be entered into by the county legislative authority or by any elected or appointed officer of such county until after bids have been submitted to the county upon specifications therefor. Such specifications shall be in writing and shall be filed with the clerk of the county legislative authority for public inspection, and an advertisement thereof stating the time and place where bids will be opened, the time after which bids will not be received, the character of the work to be done, or material, equipment, or service to be purchased, and that specifications therefor may be seen at the office of the clerk of the county legislative authority, shall be published in the county official newspaper: *Provided*, That advertisements for public works contracts for construction, alteration, repair, or improvement of public facilities shall be additionally published in a legal newspaper of general circulation in or as near as possible to that part of the county in which such work is to be done: *And provided further*, That if the county official newspaper is a newspaper of general circulation covering at least forty percent of the residences in that part of the county in which such public works are to be done publication of an advertisement of the applicable specifications in the county official newspaper only shall be sufficient. Such advertisements shall be published at least once in each week for two consecutive weeks prior to the last date upon which bids will be received and as many additional publications as shall be determined by the county legislative authority. The bids shall be in writing, shall be filed with the clerk, shall be opened and read in public at the time and place named therefor in said advertisements, and after being opened, shall be filed for public inspection. No bid may be considered for public work unless it is accompanied by a bid deposit in the form of a surety bond, postal money order, cash, cashier's check, or certified check in an amount equal to five percent of the amount of the bid proposed. The contract for the public work, lease, or purchase shall be awarded to the lowest responsible bidder, taking into consideration the quality of the articles or equipment to be purchased or leased. Any or all bids may be rejected for good cause. The county legislative authority shall require from the successful bidder for such public work a contractor's bond in the amount and with the conditions imposed by law. If the bidder to whom the contract is awarded fails to enter into the contract and furnish the contractor's bond as required within ten days after notice of the award, exclusive of the day of notice, the amount of the bid deposit shall be forfeited to the county and the contract awarded to the next lowest and best bidder. The bid deposit of all unsuccessful bidders shall be returned after the contract is awarded and the required contractor's bond given by the successful bidder is accepted by the county legislative authority. In the letting of any contract, lease, or purchase involving less than three thousand five hundred dollars, advertisement and competitive bidding may be dispensed with on order of the county legislative authority. Notice of intention to let contracts or to enter into lease agreements involving

amounts exceeding one thousand dollars but less than three thousand five hundred dollars, shall be posted by the county legislative authority on a bulletin board in its office not less than three days prior to making such lease or contract. For advertisement and competitive bidding to be dispensed with as to purchases between one thousand and three thousand five hundred dollars, the county legislative authority must authorize by resolution a county procedure for securing telephone or written quotations, or both, from enough vendors to assure establishment of a competitive price and for awarding such contracts for purchase of materials, equipment, or services to the lowest responsible bidder. Immediately after the award is made, the bid quotations obtained shall be recorded and open to public inspection and shall be available by telephone inquiry. Wherever possible, supplies shall be purchased in quantities for a period of at least three months, and not to exceed one year. Supplies generally used throughout the various departments shall be standardized insofar as possible, and may be purchased and stored for general use by all of the various departments which shall be charged for the supplies when withdrawn from the purchasing department.

This section does not apply to performance-based contracts, as defined in RCW 39.35A.020(3), that are negotiated under chapter 39.35A RCW. [1985 c 369 § 1; 1985 c 169 § 9; 1977 ex.s. c 267 § 1; 1975 1st ex.s. c 230 § 1; 1967 ex.s. c 144 § 16; 1967 c 97 § 1; 1965 c 113 § 1; 1963 c 4 § 36.32.250. Prior: 1945 c 61 § 2; Rem. Supp. 1945 § 10322-16.]

**Reviser's note:** This section was amended by 1985 c 169 § 9 and by 1985 c 369 § 1, each without reference to the other. Both amendments are incorporated in the publication of this section pursuant to RCW 1.12.025(2). For rule of construction, see RCW 1.12.025(1).

**Severability——1967 ex.s. c 144:** See note following RCW 36.98.030.

## Chapter 39.80
## CONTRACTS FOR ARCHITECTURAL AND ENGINEERING SERVICES

Sections

39.80.010 Legislative declaration.
39.80.020 Definitions.
39.80.030 Agency's requirement for professional services——Advance publication.
39.80.040 Procurement of architectural and engineering services——Submission of statement of qualifications and performance data——Participation by minority and women-owned firms.
39.80.050 Procurement of architectural and engineering services——Contract negotiations.
39.80.060 Procurement of architectural and engineering services——Exception for emergency work.
39.80.900 Savings.
39.80.910 Severability——1981 c 61.

**39.80.010 Legislative declaration.** The legislature hereby establishes a state policy, to the extent provided in this chapter, that governmental agencies publicly announce requirements for architectural and engineering services, and negotiate contracts for architectural and engineering services on the basis of demonstrated competence and qualification for the type of professional services required and at fair and reasonable prices. [1981 c 61 § 1.]

**Effective date——1981 c 61:** "This act shall take effect on January 1, 1982." [1981 c 61 § 9.]

**39.80.020 Definitions.** Unless the context clearly requires otherwise, the definitions in this section shall apply throughout this chapter.

(1) "State agency" means any department, agency, commission, bureau, office, or any other entity or authority of the state government.

(2) "Local agency" means any city and any town, county, special district, municipal corporation, agency, port district or authority, or political subdivision of any type, or any other entity or authority of local government in corporate form or otherwise.

(3) "Special district" means a local unit of government, other than a city, town, or county, authorized by law to perform a single function or a limited number of functions, and including but not limited to, water districts, irrigation districts, fire districts, school districts, community college districts, hospital districts, sewer districts, transportation districts, and metropolitan municipal corporations organized under chapter 35.58 RCW.

(4) "Agency" means both state and local agencies and special districts as defined in subsection[s] (1), (2), and (3) of this section.

(5) "Architectural and engineering services" or "professional services" means professional services rendered by any person, other than as an employee of the agency, contracting to perform activities within the scope of the general definition of professional practice in chapters 18.08, 18.43, or 18.96 RCW.

(6) "Person" means any individual, organization, group, association, partnership, firm, joint venture, corporation, or any combination thereof.

(7) "Consultant" means any person providing professional services who is not an employee of the agency for which the services are provided.

(8) "Application" means a completed statement of qualifications together with a request to be considered for the award of one or more contracts for professional services. [1981 c 61 § 2.]

**Effective date——1981 c 61:** See note following RCW 39.80.010.

**39.80.030 Agency's requirement for professional services——Advance publication.** Each agency shall publish in advance that agency's requirement for professional services. The announcement shall state concisely the general scope and nature of the project or work for which the services are required and the address of a representative of the agency who can provide further details. An agency may comply with this section by: (1) Publishing an announcement on each occasion when professional services provided by a consultant are required by the agency; or (2) announcing generally to the public its projected requirements for any category or type of professional services. [1981 c 61 § 3.]

**Effective date——1981 c 61:** See note following RCW 39.80.010.

**39.80.040 Procurement of architectural and engineering services——Submission of statement of qualifications and performance data——Participation by minority and women-owned firms.** In the procurement of architectural and engineering services, the agency shall encourage firms engaged in the lawful practice of their profession to submit annually a statement of qualifications and performance data. The agency shall evaluate current statements of qualifications and performance data on file with the agency, together with those that may be submitted by other firms regarding the proposed project, and shall conduct discussions with one or more firms regarding anticipated concepts and the relative utility of alternative methods of approach for furnishing the required services and then shall select therefrom, based upon criteria established by the agency, the firm deemed to be the most highly qualified to provide the services required for the proposed project. Such agency procedures and guidelines shall include a plan to insure that minority and women-owned firms are afforded the maximum practicable opportunity to compete for and obtain public contracts for services. The level of participation by minority and women-owned firms shall be

consistent with their general availability within the professional communities involved. [1981 c 61 § 4.]

**Effective date——1981 c 61:** See note following RCW 39.80.010.

**39.80.050 Procurement of architectural and engineering services——Contract negotiations.** (1) The agency shall negotiate a contract with the most qualified firm for architectural and engineering services at a price which the agency determines is fair and reasonable to the agency. In making its determination, the agency shall take into account the estimated value of the services to be rendered as well as the scope, complexity, and professional nature thereof.

(2) If the agency is unable to negotiate a satisfactory contract with the firm selected at a price the agency determines to be fair and reasonable, negotiations with that firm shall be formally terminated and the agency shall select other firms in accordance with RCW 39.80-.040 and continue in accordance with this section until an agreement is reached or the process is terminated. [1981 c 61 § 5.]

**Effective date——1981 c 61:** See note following RCW 39.80.010.

**39.80.060 Procurement of architectural and engineering services——Exception for emergency work.** (1) This chapter need not be complied with by any agency when the contracting authority makes a finding in accordance with this or any other applicable law that an emergency requires the immediate execution of the work involved.

(2) Nothing in this chapter shall relieve the contracting authority from complying with applicable law limiting emergency expenditures. [1981 c 61 § 6.]

**Effective date——1981 c 61:** See note following RCW 39.80.010.

**39.80.900 Savings.** Nothing in this chapter shall affect the validity or effect of any contract in existence on January 1, 1982. [1981 c 61 § 7.]

**Effective date——1981 c 61:** See note following RCW 39.80.010.

**39.80.910 Severability——1981 c 61.** If any provision of this act or its application to any person or circumstance is held invalid, the remainder of the act or the application of the provision to other persons or circumstances is not affected. [1981 c 61 § 8.]

**Effective date——1981 c 61:** See note following RCW 39.80.010.