IN THE SUPERIOR COURT OF THE STATE OF WASHINGTON
IN AND FOR THE COUNTY OF YAKIMA

STATE OF WASHINGTON,
DEPARTMENT OF ECOLOGY,

Plaintiff,

v.

CASCADE NATURAL GAS CORPORATION AND YAKIMA COUNTY,

Defendants.

No. 98 2 01173 3

ORDER ENTERING CONSENT DECREE

Having reviewed the Consent Decree signed by the parties to this matter, the Joint Motion for Entry of the Consent Decree, the Declaration of Donald W. Abbott, the Declaration of Maia D. Bellon, and the file herein, it is hereby

ORDERED AND ADJUDGED that the Consent Decree in this matter is entered and that the Court shall retain jurisdiction over the Consent Decree to enforce its terms.

DATED this 12th day of May, 1998.

ROBERT N. HACKETT, JR.
JUDGE

JUDGE
Yakima County Superior Court

//

//

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Presented by:

CHRISTINE O. GREGOIRE
Attorney General

MAIA D. BELLON, WSBA #24777
Assistant Attorney General
Attorney for Ecology

Date: 4/2/98

Approved for entry and notice
of presentation waived:

MILLER NASH WEINER HAGER & CARLSEN

THOMAS E. LINDLEY, WSBA #17004
Attorney for Cascade Natural Gas

Date: 4/6/98

FOR ~~YAKIMA~~ COUNTY

TERRY AUSTIN, WSBA #6708
Yakima County Deputy Prosecuting
Attorney

Date: 5/16/98

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APR 12 1998

JOAN M. EATON, YAKIMA COUNTY CLERK

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IN AND FOR THE COUNTY OF YAKIMA

STATE OF WASHINGTON,
DEPARTMENT OF ECOLOGY,

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CASCADE NATURAL GAS CORPORATION AND YAKIMA COUNTY,

Defendants.

No. 98 2 01175 3

JOINT MOTION FOR ENTRY OF CONSENT DECREE

The parties to this action hereby jointly move for entry of the Consent Decree in the above-entitled matter. The Consent Decree has been signed by the parties to this action, and has been the subject of a public notice and comment period.

MILLER NASH WEINER HAGER & CARLSEN

THOMAS E. LINDLEY, WSBA #17004
Attorney for Cascade Natural Gas

Date: 4/6/98

FOR YAKIMA COUNTY

TERRY AUSTIN, WSBA #6708
Yakima County Deputy Prosecuting Attorney

Date: 5/11/98

CHRISTINE O. GREGOIRE
Attorney General

MAIA D. BELLON, WSBA #24777
Attorney for Department of Ecology

Date: 4/2/98

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IN THE SUPERIOR COURT OF THE STATE OF WASHINGTON
IN AND FOR THE COUNTY OF YAKIMA

STATE OF WASHINGTON, DEPARTMENT OF ECOLOGY,

Plaintiff,

v.

CASCADE NATURAL GAS CORPORATION AND YAKIMA COUNTY,

Defendants.

No. 98 2 01177 3

DECLARATION OF MAIA D. BELLON

I, MAIA D. BELLON, declare under penalty of perjury under the laws of the State of Washington that the following is true and correct.

1. I am over the age of eighteen years old, competent to testify herein, and make this declaration from my own personal knowledge and belief.

2. I am an Assistant Attorney General assigned to represent the Washington State Department of Ecology (Ecology) and the Attorney General's Office on legal matters relating to the Site in Sunnyside, Washington referred to as the Cascade Natural Gas Site.

3. On behalf of Ecology and the Attorney General's Office, I took part in the negotiations that led to the Consent Decree that is being presented to the Court.

4. The Consent Decree was the subject of public notice and comment as required by RCW 70.105D.040(4)(a). Ecology also conducted a public hearing as required by WAC

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173-340-600(9)(d).

5. Ecology received no comments during the public comment period concerning the substance of this Consent Decree, so no changes were made in the Consent Decree or the Cleanup Action Plan attached as Exhibit B to the Consent Decree.

6. Ecology has determined that the proposed remedial action will lead to a more expeditious cleanup of hazardous substances in compliance with the cleanup standards under RCW 70.105D.030(2)(e).

DATED this 2nd day of April, 1998.

Maia D. Bellon

MAIA D. BELLON
Assistant Attorney General

\MB10\CASCADE\DECLARATION OF MAIA BELLON.DOC

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IN AND FOR THE COUNTY OF YAKIMA

STATE OF WASHINGTON,
DEPARTMENT OF ECOLOGY,

Plaintiff,

v.

CASCADE NATURAL GAS CORPORATION AND YAKIMA COUNTY,

Defendants.

No. 98 2 0117 3

DECLARATION OF DONALD W. ABBOTT

I, DONALD W. ABBOTT, declare under penalty of perjury under the laws of the State of Washington that the following is true and correct.

1. I am over the age of eighteen years old, competent to testify herein, and make this declaration from my own personal knowledge and belief.

2. I am employed as a Section Manager for the Toxics Cleanup Program at the Central Regional Office of the Washington State Department of Ecology (Ecology). I am the project manager assigned to the Cascade Natural Gas cleanup Site and am knowledgeable on matters relating to the Site in Sunnyside, Washington referred to as the Cascade Natural Gas Site.

3. On behalf of Ecology, I took part in the negotiations that led to the Consent Decree that is being presented to the Court.

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4. The Consent Decree was the subject of public notice and comment as required by RCW 70.105D.040(4)(a). Ecology also conducted a public hearing as required by WAC 173-340-600(9)(d).

5. Ecology received no written comments during the public comment period which was held from October 13 through November 14, 1997, and from January 30 through February 27, 1998, on the substance of the Consent Decree, so no changes were made in the Consent Decree or the Cleanup Action Plan attached as Exhibit B to the Consent Decree. A public hearing was also held on October 30, 1997.

6. Ecology has determined that the proposed remedial action will lead to a more expeditious cleanup of hazardous substances in compliance with the cleanup standards under RCW 70.105D.030(2)(e).

DATED this 6th day of April, 1998.

DONALD W. ABBOTT
Project Manager
Department of Ecology

F:\MB10\CASCADE\DECLARATION OF DON ABBOTT.DOC

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CASCADE NATURAL GAS CORPORATION AND YAKIMA COUNTY,

Defendants.

No. 98 2 01175 3

CONSENT DECREE

Table of Contents

		Page
I.	INTRODUCTION	3
II.	JURISDICTION	4
III.	PARTIES BOUND	5
IV.	DEFINITIONS	5
V.	STATEMENT OF FACTS	6
VI.	WORK TO BE PERFORMED	7
VII.	DESIGNATED PROJECT COORDINATORS	9
VIII.	PERFORMANCE	10
IX.	ACCESS	10
X.	SAMPLING, DATA REPORTING, AND AVAILABILITY	10
XI.	PROGRESS REPORTS	11
XII.	RETENTION OF RECORDS	12
XIII.	TRANSFER OF INTEREST IN PROPERTY	12
XIV.	RESOLUTION OF DISPUTES	13
XV.	AMENDMENT OF CONSENT DECREE	14
XVI.	EXTENSION OF SCHEDULE	14
XVII.	ENDANGERMENT	15
XVIII.	OTHER ACTIONS	16
XIX.	INDEMNIFICATION	17
XX.	COMPLIANCE WITH APPLICABLE LAWS	18

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XXI. REMEDIAL AND INVESTIGATIVE COSTS 19
XXII. IMPLEMENTATION OF REMEDIAL ACTION 19
XXIII. FIVE YEAR REVIEW 20
XXIV. PUBLIC PARTICIPATION 20
XXV. DURATION OF DECREE 21
XXVI. CLAIMS AGAINST THE STATE 21
XXVII. EFFECTIVE DATE 21
XXVIII. PUBLIC NOTICE AND WITHDRAWAL OF CONSENT 21

Exhibit A - Site Diagram
Exhibit B - Cleanup Action Plan
Exhibit C - Implementation Schedule
Exhibit D - Restrictive Covenant
Exhibit E - Ground Water Sampling Data Submittal Requirements

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I. INTRODUCTION

A. In entering into this Consent Decree (Decree), the mutual objective of the Washington State Department of Ecology (Ecology), Cascade Natural Gas Corporation ("CNG") and Yakima County ("County") is to provide for remedial action at a facility where there has been a release or threatened release of hazardous substances. This Decree requires CNG and the County to undertake the following remedial actions:

(1) Conduct long-term groundwater monitoring at the Cascade Natural Gas Facility in accordance with the Cleanup Action Plan attached to this Decree as Exhibit B.

(2) CNG shall file a restrictive covenant, attached as Exhibit D, for recording with the Yakima County Auditor's office within 120 days of the effective date of this Decree.

Ecology has determined that these actions are necessary to protect public health and the environment.

B. The complaint in this action is being filed simultaneously with this Decree. An answer has not been filed, and there has not been a trial on any issue of fact or law in this case. However, CNG and the County wish to resolve with Ecology the issues raised by Ecology's complaint. In addition, the parties agree that settlement of these matters without litigation is reasonable and in the public interest and that entry of this Decree is the most appropriate means of resolving these matters involving Ecology's claims.

C. In signing this Decree, CNG and the County (Defendants) agree to its entry and agrees to be bound by its terms.

D. By entering into this Decree, the parties do not intend to discharge nonsettling parties from any liability they may have with respect to matters alleged in the complaint. The parties retain the right to seek reimbursement, in whole or in part, from any liable persons for sums expended under this Decree.

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E. This Decree shall not be construed as proof of liability or responsibility for any releases of hazardous substances or cost for remedial action nor an admission of any facts; provided, however, that the Defendants shall not challenge the jurisdiction of Ecology in any proceeding to enforce this Decree.

F. The Court is fully advised of the reasons for entry of this Decree, and good cause having been shown: IT IS HEREBY ORDERED, ADJUDGED, AND DECREED AS FOLLOWS:

II. JURISDICTION

A. This Court has jurisdiction over the subject matter and over the parties pursuant to RCW 70.105D, the Model Toxics Control Act (MTCA).

B. Authority is conferred upon the Washington State Attorney General by RCW 70.105D.040(4)(a) to agree to a settlement with any potentially liable person if, after public notice and hearing, Ecology finds the proposed settlement would lead to a more expeditious cleanup of hazardous substances. RCW 70.105D.040(4)(b) requires that such a settlement be entered as a consent decree issued by a court of competent jurisdiction.

C. Ecology has determined that a release or threatened release of hazardous substances has occurred at the site which is the subject of this Decree.

D. Ecology has given notice to the Defendants, as set forth in RCW 70.105D.020(15), of Ecology's determination that the Defendants are potentially liable persons for the site and that there has been a release or threatened release of hazardous substances at the site.

E. The actions to be taken pursuant to this Decree are necessary to protect public health, welfare, and the environment.

F. The Defendants have agreed to undertake the actions specified in this Decree and consent to the entry of this Decree under the MTCA.

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III. PARTIES BOUND

This Decree shall apply to and be binding upon the signatories to this Decree (parties), their successors and assigns. The undersigned representative of each party hereby certifies that he or she is fully authorized to enter into this Decree and to execute and legally bind such party to comply with the Decree. Defendants agree to undertake all actions required by the terms and conditions of this Decree and not to contest state jurisdiction regarding this Decree. No change in ownership or corporate status shall alter the responsibility of the Defendants under this Decree. The Defendants shall provide a copy of this Decree to all agents, contractors and subcontractors retained to perform work required by this Decree and shall ensure that all work undertaken by such contractors and subcontractors will be in compliance with this Decree.

IV. DEFINITIONS

Except for as specified herein, all definitions in WAC 173-340-200 apply to the terms in this Decree.

A. Site: The site, referred to as Cascade Natural Gas Facility, is located at 512 East Decatur Avenue, Sunnyside, Washington. The site is more particularly described in Exhibit A to this Decree which is a detailed site diagram of where the hazardous substances have come to be located.

B. Parties: Refers to the Washington State Department of Ecology, Cascade Natural Gas Corporation and Yakima County.

C. Defendants: Refers to Cascade Natural Gas Corporation and Yakima County.

D. Consent Decree or Decree: Refers to this Consent Decree and each of the exhibits to the Decree. All exhibits are integral and enforceable parts of this Consent Decree. The terms "Consent Decree" or "Decree" shall include all exhibits to the Consent Decree.

E. Point of Compliance: The points of compliance for the facility shall be the property boundary. Groundwater cleanup levels shall be attained in all groundwaters from the point of compliance to the outer boundary of the hazardous substance plume. This point was

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chosen so that the site shall not be deemed clean until the cleanup levels in the approved Cleanup Action Plan are met throughout the site.

V. STATEMENT OF FACTS

Ecology makes the following findings of fact without any express or implied admissions by Defendants.

A. Cascade Natural Gas Corporation (CNG) presently owns property located at 512 East Decatur Avenue, Sunnyside, Washington. It leased the property from 1969 to 1979, and has owned the property since 1979.

B. By letter dated March 6, 1992, Ecology notified Cascade Natural Gas Corporation of its status as a "potentially liable person" under RCW 70.105D.040 after notice and opportunity to comment.

C. Cascade Natural Gas Corporation is an "owner or operator" as defined in RCW 70.105D.020(11) of a "facility" as defined in RCW 70.105D.020(4).

D. The County of Yakima (County) is one of the former owners of the Site. The County owned the Site, from at least 1928, through 1955. The County operated a public works shop and equipment yard on the Site. Aerial photographs dated October 26, 1937 and July 4, 1949, during the County's ownership of the Site, show what Ecology believes to be petroleum staining of the ground in the vicinity of the underground fuel storage tanks located on the Site. Affidavits provided by past County employees who worked at the site, and employees of other businesses which had occupied the Site after 1955, affirm the presence of the underground fuel storage tanks and the County's use of these tanks. Excavation and testing of soils and groundwater at the facility by Cascade Natural Gas revealed the presence of petroleum products and volatile organic compounds in the soils in the vicinity of the stained areas in the aerial photographs.

E. By letter dated May 23, 1995, Ecology notified the County of its status as a "potentially liable person" under RCW 70.105D.040 after notice and opportunity to comment.

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F. The County is an "owner or operator" as defined in RCW 70.105D.020(11) of a "facility" as defined in RCW 70.105D.020(4).

G. CNG has voluntarily undertaken independent cleanup activities to remediate the contamination found in the on-site soils. This independent cleanup action consisted of removing the soil contaminated by petroleum hydrocarbons to a permitted off-site location for remediation. This activity has removed the known petroleum hydrocarbon contamination at the site.

H. CNG and Ecology entered into an Agreed Order to conduct a remedial investigation/feasibility study ("RI/FS") of the site. After public notice and opportunity to comment Ecology accepted the RI/FS.

I. Based upon site specific data obtained during the remedial investigation, and an analysis of this data comparing alternative cleanup options, the RI/FS identified long-term groundwater monitoring and intrinsic bioremediation at the Site to be protective of human health and the environment. Ecology has accepted this alternative for cleanup at the Site.

VI. WORK TO BE PERFORMED

This Decree contains a program designed to protect public health, welfare and the environment from the known release, or threatened release, of hazardous substances or contaminants at, on, or from the site.

A. The Defendants shall conduct groundwater monitoring at the Cascade Natural Gas Facility in Sunnyside, Washington for a period of at least five years. The monitoring will be conducted as described in the Cleanup Action Plan for the Cascade Natural Gas Facility attached to this Decree as Exhibit B.

B. The Schedule for implementing this Decree and the Cleanup Action Plan is outlined in Exhibit C. The implementation schedule becomes effective on the effective date of this Decree.

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C. Within 120 days of the effective date of this Decree, the CNG shall record the Restrictive Covenant (deed restriction) attached as Exhibit D, with the Yakima County Auditor, or other appropriate County Entity.

D. A copy of the signed, notarized and recorded deed restriction shall be provided to the Ecology Project Coordinator within 30 days of recording.

E. Within 15 days after the effective date of this Decree, the Defendants shall submit the name of the contractor who will implement the groundwater monitoring aspect of the Cleanup Action Plan.

F. Within 30 days after the effective date of this Decree, the Defendants shall provide a draft Sampling and Analysis Plan for groundwater monitoring as described in WAC 173-340-820. Analytical methods and testing shall be in accordance with WAC 173-340-830. If a Sampling and Analysis Plan exists from past sampling activities at the site, it may be modified to reflect the requirements of this Decree, and submitted for Ecology review and approval.

G. Within 30 days of the effective date of this Decree, the Defendants shall submit a draft Quality Assurance/Quality Control Plan (QA/QC) for groundwater sampling and laboratory analysis of groundwater. If a QA/QC Plan exists from past sampling activities at the site it may be modified to reflect the requirements of this Decree, and submitted for Ecology review and approval.

H. The Defendants shall notify Ecology within 10 days, if at any time during the course of the sampling, the groundwater concentrations of the chemicals of concern exceed the maximum levels agreed upon in the Cleanup Action Plan.

I. Upon receipt of a notification that an agreed upon cleanup level has been exceeded, Ecology shall evaluate the information. If further information is necessary to assess the nature and extent of the contamination, Ecology may require the Defendants to prepare and submit a groundwater monitoring parameter exceedence report within 60 days unless an alternative deadline is specified in writing by Ecology. The report shall assess the cause and

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significance of the exceedence and shall propose a response. Based on the evaluation of the report, Ecology may specify responses to be implemented by the Defendants at the facility.

J. In accordance with WAC 173-340-840(5), groundwater sampling data shall be submitted according to Exhibit E: GROUNDWATER SAMPLING DATA SUBMITTAL REQUIREMENTS. These submittals shall be provided to Ecology as required under the schedule established in provision B, above.

K. The Defendants agree not to perform any remedial actions outside the scope of this Decree unless the parties agree to amend the scope of work to cover these actions. All work conducted under this Decree shall be done in accordance with WAC 173-340 unless otherwise provided herein.

VII. DESIGNATED PROJECT COORDINATORS

The project coordinator for Ecology is:
Donald Abbott
Washington Department of Ecology
15 West Yakima Ave., Suite 200
Yakima, WA 98902
Phone: (509) 454-7834

The project coordinator for the Defendants is:
Terry Austin
Yakima County Prosecuting Attorney
Yakima County Courthouse, Room 211
Yakima, WA 98901
Phone (509) 574 - 1210

Each project coordinator shall be responsible for overseeing the implementation of this Decree. The Ecology project coordinator will be Ecology's designated representative at the site. To the maximum extent possible, communications between Ecology and the Defendants and all documents, including reports, approvals, and other correspondence concerning the activities performed pursuant to the terms and conditions of this Decree, shall be directed through the project coordinators. The project coordinators may designate, in writing, working level staff contacts for all or portions of the implementation of the remedial work required by this Decree. The project coordinators may agree to minor modifications to the work to be performed without

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formal amendments to this Decree. Minor modifications will be documented in writing by Ecology.

Any party may change its respective project coordinator. Written notification shall be given to the other parties at least 10 calendar days prior to the change.

VIII. PERFORMANCE

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

IX. ACCESS

Ecology or any Ecology authorized representatives 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 work being performed pursuant to this Decree; reviewing Defendant's progress in carrying out the terms of this Decree; conducting such tests or collecting such samples as Ecology may deem necessary; using a camera, sound recording, or other documentary type equipment to record work done pursuant to this Decree; and verifying the data submitted to Ecology by the Defendants. All parties with access to the site pursuant to this paragraph shall comply with approved health and safety plans.

X. SAMPLING, DATA REPORTING, AND AVAILABILITY

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

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In accordance with WAC 173-340-840(5), groundwater sampling data shall be submitted according to Appendix E: GROUNDWATER SAMPLING DATA SUBMITTAL REQUIREMENTS. These submittals shall be provided to Ecology in accordance with Section XI of this Decree.

If requested by Ecology, the Defendants shall allow split or duplicate samples to be taken by Ecology and/or its authorized representatives of any samples collected by Defendants pursuant to the implementation of this Decree. The Defendants shall notify Ecology seven days in advance of any sample collection or work activity at the site. Ecology shall, upon request, allow split or duplicate samples to be taken by the Defendants or their authorized representatives of any samples collected by Ecology pursuant to the implementation of this Decree provided it does not interfere with the Department's sampling. Without limitation on Ecology's rights under Section IX, Ecology shall endeavor to notify the Defendants prior to any sample collection activity.

XI. PROGRESS REPORTS

The Defendants shall submit to Ecology written progress reports which describe the actions taken during the previous sampling period to implement the requirements of this Decree. The progress shall include the following:

A. A list of on-site activities that have taken place during the sampling period;

B. Detailed description of any deviations from required tasks not otherwise documented in project plans or amendment requests;

C. Description of all deviations from the schedule (Exhibit C) during the current sampling period and any planned deviations in the upcoming sampling period;

D. For any deviations in schedule, a plan for recovering lost time and maintaining compliance with the schedule;

E. All raw data (including laboratory analysis) received by the Defendants during the past sampling period and an identification of the source of the sample;

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F. All data shall be reported in graphical form with concentration over time in addition to reporting in tables and in electronic format;

G. A list of deliverables for the upcoming sampling period if different from the schedule; and

All monitoring reports shall be submitted within 45 days of the sampling event. Unless otherwise specified, progress reports and any other documents submitted pursuant to this Decree shall be sent by certified mail, return receipt requested, to Ecology's project coordinator.

XII. RETENTION OF RECORDS

The Defendants shall preserve, during the pendency of this Decree and for 10 years from the date this Decree is no longer in effect as provided in Section XXV, all records, reports, documents, and underlying data in its possession relevant to the implementation of this Decree and shall insert in contracts with project contractors and subcontractors a similar record retention requirement. Upon request of Ecology, the Defendants shall make all non-archived non-privileged records available to Ecology and allow access for review. All archived records shall be made available to Ecology within a reasonable period of time.

XIII. TRANSFER OF INTEREST IN PROPERTY

No voluntary or involuntary conveyance or relinquishment of title, easement, leasehold, or other interest in any portion of the site shall be consummated without provision for continued operation and maintenance of any containment system, treatment system, and monitoring system installed or implemented pursuant to this Decree.

Prior to transfer of any legal or equitable interest in all or any portion of the property, and during the effective period of this Decree, the Defendants shall serve a copy of this Decree upon any prospective purchaser, lessee, transferee, assignee, or other successor in interest of the property; and, at least 10 days prior to any transfer, the Defendants shall notify Ecology of said contemplated transfer.

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XIV. RESOLUTION OF DISPUTES

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

(1) Upon receipt of the Ecology project coordinator's decision, the Defendants have 14 days within which to notify Ecology's project coordinator of their objection to the decision.

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

(3) The Defendants may then request Ecology management review of the decision. This request shall be submitted in writing to the Toxics Cleanup Program Manager within seven days of receipt of Ecology's project coordinator's decision.

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

B. If Ecology's final written decision is unacceptable to the Defendants, the Defendants have the right to submit the dispute to the Court for resolution. The parties agree that one judge should retain jurisdiction over this case and shall, as necessary, resolve any dispute arising under this Decree. In the event the Defendants present an issue to the Court for review, the Court shall review the action or decision of Ecology on the basis of whether such action or decision was arbitrary and capricious and render a decision based on such standard of review.

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

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Where either party utilizes the dispute resolution process in bad faith or for purposes of delay, the other party may seek sanctions.

Implementation of these dispute resolution procedures shall not provide a basis for delay of any activities required in this Decree, unless Ecology agrees in writing to a schedule extension or the Court so orders.

XV. AMENDMENT OF CONSENT DECREE

This Decree may only be amended by a written stipulation among the parties to this Decree that is entered by the Court or by order of the Court. Such amendment shall become effective upon entry by the Court. Agreement to amend shall not be unreasonably withheld by any party to the Decree.

The Defendants shall submit any request for an amendment to Ecology for approval. Ecology shall indicate its approval or disapproval in a timely manner after the request for amendment is received. If the amendment to the Decree is substantial, Ecology will provide public notice and opportunity for comment. Reasons for the disapproval shall be stated in writing. If Ecology does not agree to any proposed amendment, the disagreement may be addressed through the dispute resolution procedures described in Section XIV of this Decree.

XVI. EXTENSION OF SCHEDULE

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

An extension shall only be granted for such period of time as Ecology determines is reasonable under the circumstances. A requested extension shall not be effective until approved by Ecology or the Court. Ecology shall act upon any written request for extension in a timely

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fashion. It shall not be necessary to formally amend this Decree pursuant to Section XV when a schedule extension is granted.

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

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

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

(3) Endangerment as described in Section XVII.

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

C. Ecology may extend the schedule for a period not to exceed ninety (90) days, except where an extension is needed as a result of:

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

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

(3) Endangerment as described in Section XVI.

Ecology shall give the Defendants written notification in a timely fashion of any extensions granted pursuant to this Decree.

XVII. ENDANGERMENT

In the event Ecology determines that activities implementing, or in noncompliance with, this Decree, or any other circumstances or activities, are creating or have the potential to create a

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danger to the health or welfare of the people on the site or in the surrounding area or to the environment, Ecology may order the Defendants to stop further implementation of this Decree for such period of time as needed to abate the danger or may petition the Court for an order as appropriate. During any stoppage of work under this section, the obligations of the Defendants with respect to the work under this Decree which is 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 is stopped, shall be extended, pursuant to Section XVI of this Decree, for such period of time as Ecology determines is reasonable under the circumstances.

In the event the Defendants determine that activities undertaken in furtherance of this Decree or any other circumstances or activities are creating an endangerment to the people on the site or in the surrounding area or to the environment, the Defendants may stop implementation of this Decree for such period of time necessary for Ecology to evaluate the situation and determine whether the Defendants should proceed with implementation of the Decree or whether the work stoppage should be continued until the danger is abated. The 24 hours after such stoppage of work, and thereafter provide Ecology with documentation of the basis for the work stoppage. If Ecology disagrees with the Defendants' determination, it may order the Defendants to resume implementation of this Decree. If Ecology concurs with the work stoppage, the Defendants' obligations shall be suspended and the time period 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 XVI of this Decree, for such period of time as Ecology determines is reasonable under the circumstances. Any disagreements pursuant to the clause shall be resolved through the dispute resolution procedures in Section XIV.

XVIII. OTHER ACTIONS

Ecology reserves its rights to institute remedial action(s) at the site and subsequently pursue cost recovery, and Ecology reserves its rights to issue orders and/or penalties or take any

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other enforcement action pursuant to available statutory authority under the following circumstances:

(1) Where the Defendants fail, after notice, to comply with any requirement of this Decree;

(2) In the event or upon the discovery of a release or threatened release not addressed by this Decree;

(3) Upon Ecology's determination that action beyond the terms of this Decree is necessary to abate an emergency situation which threatens public health or welfare or the environment; or

(4) Upon the occurrence or discovery of a situation beyond the scope of this Decree as to which Ecology would be empowered to perform any remedial action or to issue an order and/or penalty, or to take any other enforcement action. This Decree is limited in scope to the geographic site described in Exhibit A and to those contaminants which Ecology knows to be at the site when this Decree is entered.

Ecology reserves all rights regarding the injury to, destruction of, or loss of natural resources resulting from the release or threatened release of hazardous substances from the facility.

Ecology reserves the right to take any enforcement action whatsoever, including a cost recovery action, against potentially liable persons not party to this Decree.

XIX. INDEMNIFICATION

The Defendants agree to indemnify and save and hold the State of Washington, its employees, and agents harmless from any and all claims or causes of action for death or injuries to persons or for loss or damage to property arising from or on account of acts or omissions of the Defendants, their officers, employees, agents, or contractors in entering into and implementing this Decree. However, the Defendants shall not indemnify the State of Washington nor save nor hold its employees and agents harmless from any claims or causes of

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action arising out of the negligent acts or omissions of the State of Washington, or the employees or agents of the State, in implementing the activities pursuant to this Decree.

XX. COMPLIANCE WITH APPLICABLE LAWS

A. All actions carried out by Defendants pursuant to this Decree shall be done in accordance with all applicable federal, state, and local requirements, including requirements to obtain necessary permits, except as provided in paragraph B of this section.

B. Pursuant to RCW 70.105D.090(1), the substantive requirements of RCW 70.94, 70.95, 70.105, 75.20, 90.48, and 90.58 and of any laws requiring or authorizing local government permits or approvals for the remedial action under this Decree that are known to be applicable at the time of entry of the Decree have been included in Exhibit B, the Cleanup Action Plan, and are binding and enforceable requirements of the Decree.

The Defendants have a continuing obligation to determine whether additional permits or approvals addressed in RCW 70.105D.090(1) would otherwise be required for the remedial action under this Decree. In the event either the Defendants or Ecology determine that additional permits or approvals addressed in RCW 70.105D.090(1) would otherwise be required for the remedial action under this Decree, it shall promptly notify the other party of this determination. Ecology shall determine whether Ecology or the Defendants shall be responsible to contact the appropriate state and/or local agencies. If Ecology so requires, the Defendants shall promptly consult with the appropriate state and/or local agencies and provide Ecology with written documentation from those agencies of the substantive requirements those agencies believe are applicable to the remedial action. Ecology shall make the final determination on the additional substantive requirements that must be met by the Defendants and on how the Defendants must meet those requirements. Ecology shall inform the Defendants in writing of these requirements. Once established by Ecology, the additional requirements shall be enforceable requirements of this Decree. The Defendants shall not begin, or continue, the remedial action potentially subject to the additional requirements until Ecology makes its final determination.

ATTORNEY GENERAL OF WASHINGTON
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Ecology shall ensure that notice and opportunity for comment is provided to the public and appropriate agencies prior to establishing the substantive requirements under this section.

C. Pursuant to RCW 70.105D.090(2), in the event Ecology determines that the exemption from complying with the procedural requirements of the laws referenced in RCW 70.105D.090(1) would result in the loss of approval from a federal agency which is necessary for the State to administer any federal law, the exemption shall not apply and the Defendants shall comply with both the procedural and substantive requirements of the laws referenced in RCW 70.105D.090(1), including any requirements to obtain permits.

XXI. REMEDIAL AND INVESTIGATIVE COSTS

The Defendants agree to pay costs incurred by Ecology pursuant to this Decree. These costs shall include work performed by Ecology or its contractors for, or on, the site under RCW 70.105D both prior to and subsequent to the issuance of this Decree for investigations, remedial actions, and Decree preparation, negotiations, oversight and administration. Ecology costs shall include costs of direct activities and support costs of direct activities as defined in WAC 173-340-550(2). The Defendants agree to pay the required amount within 90 days of receiving from Ecology an itemized statement of costs that includes a summary of costs incurred, an identification of involved staff, and the amount of time spent by involved staff members on the project. A general statement of work performed will be provided upon request. Itemized statements shall be prepared quarterly. Failure to pay Ecology's costs within 90 days of receipt of the itemized statement will result in interest charges.

XXII. IMPLEMENTATION OF REMEDIAL ACTION

If Ecology determines that the Defendants have failed without good cause to implement the remedial action, Ecology may, after written notice to the Defendants, perform any or all portions of the remedial action that remain incomplete. If Ecology performs all or portions of the remedial action because of the Defendants' failure to comply with its obligations under this Decree, the Defendants shall reimburse Ecology for the costs of doing such work in accordance

ATTORNEY GENERAL OF WASHINGTON
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with Section XXI, provided that the Defendants are not obligated under this section to reimburse Ecology for costs incurred for work inconsistent with or beyond the scope of this Decree.

XXIII. FIVE YEAR REVIEW

As remedial action, including groundwater monitoring, continues at the site, the parties agree to review the progress of remedial action at the site, and to review the data accumulated as a result of site monitoring as often as is necessary and appropriate under the circumstances. At least every five years the parties shall meet to discuss the status of the site and the need, if any, of further remedial action at the site. Ecology reserves the right to require further remedial action at the site under appropriate circumstances. This provision shall remain in effect for the duration of the Decree.

XXIV. PUBLIC PARTICIPATION

Ecology shall maintain the responsibility for public participation at the site. However, the Defendants shall cooperate with Ecology and, if agreed to by Ecology, shall:

A. Prepare drafts of public notices and fact sheets, relating to this site, at important stages of the remedial action, such as the submission of work plans, Remedial Investigation/ Feasibility Study reports and engineering design reports. Ecology will finalize (including editing if necessary) and distribute such fact sheets and prepare and distribute public notices of Ecology's presentations and meetings;

B. Notify Ecology's project coordinator prior to the preparation of all press releases and fact sheets, and before major meetings with the interested public and local governments. Likewise, Ecology shall notify the Defendants prior to the issuance of all press releases and fact sheets, and before major meetings with the interested public and local governments;

C. Participate in public presentations on the progress of the remedial action at the site. Participation may be through attendance at public meetings to assist in answering questions, or as a presenter;

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D. In cooperation with Ecology, arrange and/or continue information repositories to be located at the Sunnyside Public Library and Ecology's Central Regional Office at 15 West Yakima Avenue, Yakima, Washington. At a minimum, copies of all public notices, fact sheets, and press releases; all quality assured groundwater, surface water, soil sediment, and air monitoring data; remedial actions plans, supplemental remedial planning documents, and all other similar documents relating to performance of the remedial action required by this Decree shall be promptly placed in these repositories.

XXV. DURATION OF DECREE

This Decree shall remain in effect and the remedial program described in the Decree shall be maintained and continued until the Defendants have received written notification from Ecology that the requirements of this Decree have been satisfactorily completed.

XXVI. CLAIMS AGAINST THE STATE

The Defendants hereby agree that they will not seek to recover any costs accrued in implementing the remedial action required by this Decree from the State of Washington or any of its agencies; and further, that the Defendants will make no claim against the State Toxics Control Account or any Local Toxics Control Account for any costs incurred in implementing this Decree. Except as provided above, however, the Defendants expressly reserve their right to seek to recover any costs incurred in implementing this Decree from any other potentially liable person.

XXVII. EFFECTIVE DATE

This Decree is effective upon the date it is entered by the Court.

XXVIII. PUBLIC NOTICE AND WITHDRAWAL OF CONSENT

This Decree has been the subject of public notice and comment under RCW 70.105D.040(4)(a). As a result of this process, Ecology has found that this Decree will lead to a more expeditious cleanup of hazardous substances at the site.

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If the Court withholds or withdraws its consent to this Decree, it shall be null and void at the option of any party and the accompanying complaint shall be dismissed without costs and without prejudice. In such an event, no party shall be bound by the requirements of this Decree.

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

Mary E. Burg
MARY E. BURG
Program Manager
Toxics Cleanup Program

Date: 4-20-98

CHRISTINE O. GREGOIRE
Attorney General

Maia Bellon
MAIA BELLON, WSBA #24777
Assistant Attorney General

Date: 4/2/98

FOR CASCADE NATURAL GAS

Ralph E Boyd
RALPH BOYD
Cascade Natural Gas

Date: 4-7-98

MILLER, NASH, WEINER, HAGER & CARLSEN

Thomas E Lindley
THOMAS E. LINDLEY, WSBA #17004
Attorney for Cascade Natural

Date: 4/6/98

FOR YAKIMA COUNTY COMMISSIONERS

Bettie Ingham
BETTIE INGHAM
Chairperson

Date: 05-12-98

FOR YAKIMA COUNTY

Terry Austin
TERRY AUSTIN, WSBA #6708
Yakima County Deputy Prosecuting Attorney

Date: 5/11/98

DATED this 12th day of May, 1998.

ROBERT N. MACKETT, JR.
JUDGE

JUDGE
Yakima County Superior Court

\MB10\CASCADE\FINAL CONSENT DECREE 2.DOC

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EXHIBIT A

SITE DIAGRAM

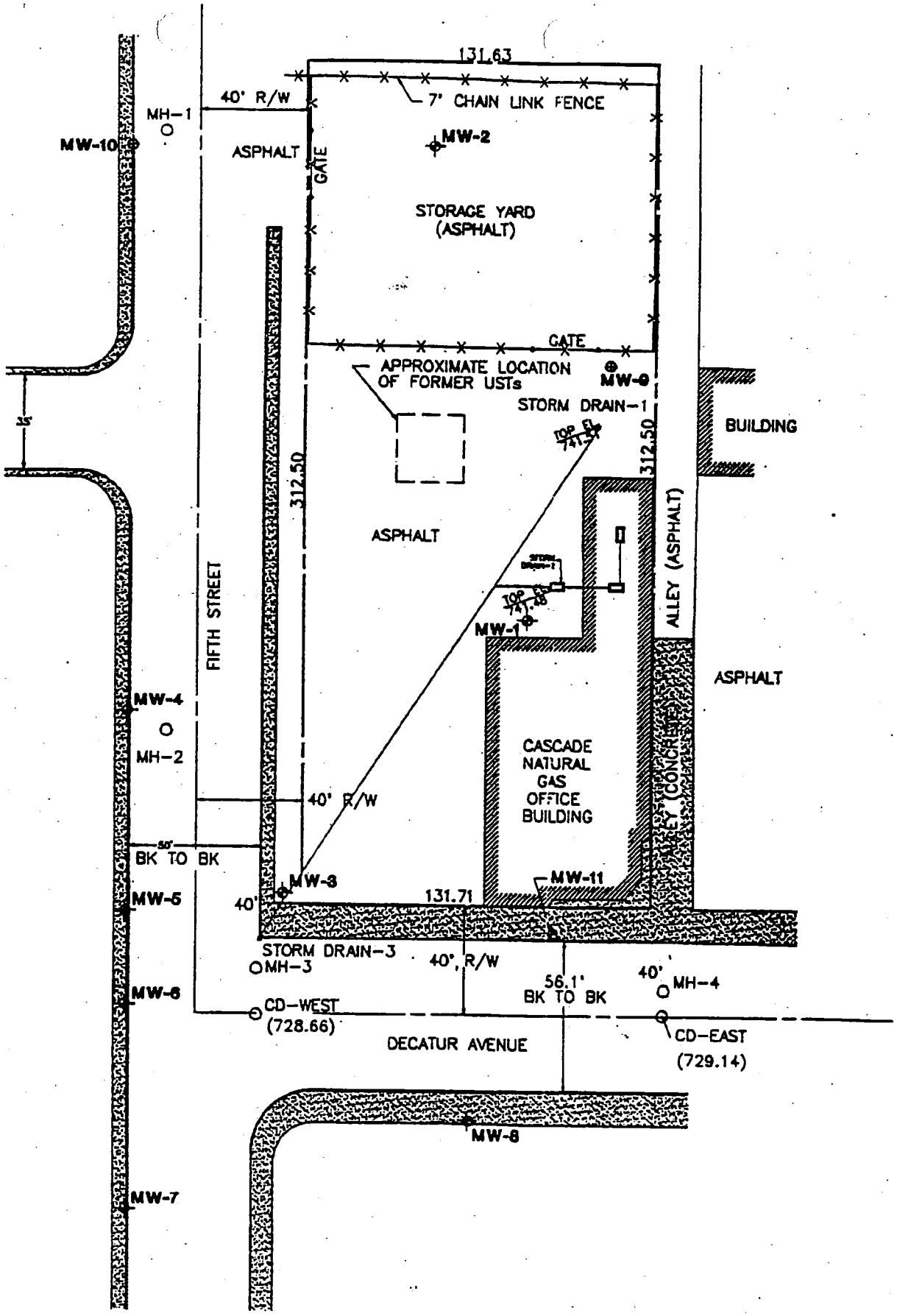

EXHIBIT A
Site Map

EXHIBIT B

CLEANUP ACTION PLAN

CLEANUP ACTION PLAN
CASCADE NATURAL GAS CORPORATION
Sunnyside, Washington

I. INTRODUCTION

Chapter 173-340 WAC, the Model Toxics Control Act ("MTCA"), specifies the criteria for approving cleanup at sites contaminated with hazardous materials. The MTCA requires that contaminated sites be investigated and Cleanup Action Plans be written and available for public review and comment prior to implementation. This Cleanup Action Plan ("CAP") provides for the remediation and monitoring of contaminated groundwater at the Cascade Natural Gas Facility ("Site") at Sunnyside Washington. The Site is located around and within 512 Decatur Avenue in Sunnyside, Washington. Soils and groundwater at the site were found to be contaminated during the closure and removal of underground storage tanks.

Ecology has identified two potentially liable parties ("PLP") at the Site; Cascade Natural Gas Corporation ("CNG") and Yakima County ("County").

Independent actions taken during underground storage tank removal at the Cascade Natural Gas property have substantially reduced the amount of contamination available which may reach groundwater. In addition, a Remedial Investigation/Feasibility Study (RI/FS) has been conducted, under Agreed Order No. DE 94TC-C165 and amendments thereto, at the Site to provide data used in determining if additional cleanup actions are needed at the Site. The completed RI/FS identified long-term groundwater monitoring and intrinsic bioremediation as the preferred alternative for additional cleanup. Ecology has selected this cleanup action based on data provided in the RI/FS.

The remediation activities described in this CAP include: long-term groundwater monitoring, intrinsic bioremediation, and implementing institutional controls to protect utility, maintenance, and construction workers from exposure to groundwater and soils that may be impacted by any residual contamination left at the site.

Statutory requirements (WAC 173-340-360) for cleanup actions at contaminated sites require: the protection of public health and the environment through compliance with cleanup standards established in WAC 173-340-700 and 760, compliance with applicable state and federal laws and provide for compliance monitoring. In addition, the law requires permanent solutions to the maximum extent practicable, to provide for a reasonable restoration time frame, and consideration of any concerns raised during public comment on the draft cleanup action plan.

Conditional points of compliance and cleanup levels have been established for the facility in accordance with WAC 173-340-360. Figure 1 shows conditional points of compliance for the facility and Table 1 shows the groundwater baseline monitoring levels for the contaminants found on site. These conditional points of compliance are necessary to show that the contaminate plume, contained in the groundwater, is being remediated and is not migrating or threatening public health and the environment.

II. BACKGROUND

A. Site History

Beginning around 1936, two to four underground storage tanks ("USTs") were located on this Site. Yakima County operated the property as a county shop and installed and operated at least two, and perhaps three, of these USTs, one for gasoline and one or two for diesel fuel; the County's ownership and operation of these USTs continued until 1956. When it vacated the Site in 1956, the County left all of its USTs buried at the Site. It is unclear whether one, two, or three USTs were still in operation when the County left the Site.

From 1956 to 1969 two automobile sales and service operations ("Dealers") occupied the Site. It is unclear as to which, if any, of the USTs were utilized by the Dealers. From the mid-1950s until the mid-1960s, one or two of the USTs may have been used to store fuel to heat the on-site buildings. The building was then converted to gas and electric heat. In 1960, a fourth UST, for gasoline, was installed near the three older USTs. By the mid-1960s, it is certain that all other USTs had ceased to be used, but all remained at the Site. In the mid-to-late 1960s the Site was wholly covered with asphalt, leaving only the dispenser for the newest gasoline UST visible. Each Dealer ultimately left the Site, and all, apparently, have ceased to exist.

In 1969 CNG began leasing the Site. Then in 1979 CNG purchased the Site. CNG staff have submitted statements that diesel fuel was never used at the Site. CNG did use the new gasoline UST from 1969 until 1988. In 1990, to comply with Washington's new UST regulations, CNG retained a contractor to excavate the one UST of which CNG was aware. At that point CNG discovered the remaining three other USTs, and also learned, for the first time, that both soil and groundwater beneath the Site contained gasoline, diesel, volatile, and semi-volatile organic compounds at levels above those that require remedial action under Washington's applicable regulations.

CNG has voluntarily undertaken activities to investigate and remediate the contamination. CNG has removed and remediated contaminated soil at the site. In addition, CNG has investigated potential diesel, gasoline, and volatile organic compounds contaminating the groundwater at the Site through the installation of monitoring wells and storm drain and sewer line monitoring.

In 1995 CNG completed a Remedial Investigation/Feasibility Study (RI/FS) at the site in order to assess potential threats attributable to the contamination. The conclusion, from the analysis of data collected during the RI/FS, is that long-term groundwater monitoring and natural attenuation and degradation will be sufficient to protect human health and the environment, and is the preferred alternative for cleanup.

B. Contaminants of Concern

Contaminants found in the groundwater and soil at the facility include: TPH-Gasoline, TPH-Diesel, BTEX, Naphthalene, 1,2-Dichloroethane, 2-Methylnaphtalene and Pentachlorophenol, Acetone and

TABLE 1
CASCADE NATURAL GAS SUNNYSIDE
Groundwater and County Drain Baseline Concentrations

WELL	BENZENE	ETHYL-BENZENE	TOLUENE	XYLENES	1,2-DICHLORO-ETHANE	TPH-G	TPH-D
	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MW-2	<1.0	<20	<20	<10	<10	<50	<250
MW-3	2900	330	240	280	460	5200	7900
MW-4	120	59	95	65	27	4100	1200
MW-5	78	26	180	240	To be determined	5700	1100
MW-6	<0.50	<0.50	<0.50	<1.0	To be determined	<50	<250
MW-7	<0.50	<0.50	<0.50	<1.0	To be determined	<50	<250
MW-8	<0.50	<0.50	<0.50	<1.0	To be determined	<50	<250
MW-9	<1.0	<20	<20	<10	10	75	5100
MW-11	<1.0	<20	<20	<10	11	<50	<250
CD-E	<2.0	<5.0	0.73	<5.0	<2.0	<50	<250
CD-W	30	18	1.2	<5.0	<2.0	<50	< 250
Cleanup levels are shown in Table 2.							

< values are not detected at the shown reporting limit.

Methylene Chloride. Of these contaminants TPH-Gasoline, TPH-Diesel, BTEX, Naphthalene, 2-Methylnaphtalene and 1,2-Dichloroethane have been found in the groundwater beneath the site.

Groundwater Contaminants

Several petroleum hydrocarbon constituents have been detected at concentrations in excess of the cleanup levels established for the site. Because natural attenuation and intrinsic bioremediation processes occur over time, it is normal for one or more of the monitoring wells to exhibit concentrations of some petroleum hydrocarbon constituents in excess of the established cleanup level.

The Dichloroethane has been found in the upgradient wells in concentrations that are lower than those found in the downgradient wells. This groundwater data, and data collected during soil removal at the site, indicates that there may be offsite and onsite sources for the Dichloroethane. Soil analysis during the construction of the monitoring wells has failed to reveal a source for this contamination. The onsite source may have been removed during the removal of the tanks or the source is still present and its location has not been detected during soil sampling activities.

Naphthalene and 2-Methylnapthalene are constituents of both gasoline and diesel and have been found in the groundwater at the Site. These constituents are commonly detected during extended BTEX runs on a gas chromatograph and are included in the TPH-G and TPH-D analysis. Since they can be effectively monitored through the TPH detection methods additional monitoring for these constituents will not be required.

Gasoline and Diesel, TPH-G and TPH-D, have been found in the groundwater beneath the site. These contaminants are found in concentrations above the MTCA Method-A cleanup levels.

Benzene, toluene, ethylbenzene, and xylene (BTEX) are common constituents of gasoline and have been found in the groundwater beneath the Site. This CAP establishes drinking water maximum contaminant levels (MCLs), and MTCA Method A and Method B cleanup levels, at the Site, for these contaminants. The MTCA Method A cleanup levels (WAC 173-340-720 Table 1) for ethylbenzene, toluene, and xylene were established to prevent adverse aesthetic characteristics to groundwater. Although the groundwater beneath the site is not a drinking water source nor is it a potential drinking water source WAC 173-340-710 requires that all cleanup actions comply with applicable state and federal laws.

Soil Contaminants

The petroleum contaminants TPH-G, TPH-D, and BTEX were detected at concentrations above the MTCA Method A cleanup levels during the removal of the underground storage tanks. During the interim action this soil was removed from the Site and remediated at an off-site location. Contaminated soil was collected in the tank pit from below the water table during the interim action. This soil had contamination above MTCA Method A cleanup levels. Technical difficulties in handling and transporting saturated soils prevented the removal of this soil. The pit was subsequently backfilled with clean fill material.

Pentachlorophenol("penta") was detected in the soil stockpiled from the interim action excavation and in the soils in monitoring well MW-9. The soil removed from the excavation was removed from the site to an approved landfill. Penta was detected in the soil (5.2 mg/kg) at the 4.5 to 5.0 feet interval in MW-9. It was not detected below that level in the boring. This indicates that the penta is not mobile. The penta was detected in concentrations below the MTCA Method B cleanup level (8.3 mg/kg). Penta has not been detected in the groundwater at the site. The possibility of mobilizing the penta through meteoric water percolating through the vadose zone is unlikely since the area where it was detected is paved with an asphaltic surface.

Acetone and Methylene Chloride were detected in the excavated soils which were stockpiled at the site. The compounds were detected in the samples for analysis and in the laboratory method blank. Since the analytes were detected in similar concentrations in the method blanks the contamination is suspected to be a result of laboratory contamination. Both of these compounds are common laboratory reagents. These contaminants were not detected in any of the soil samples collected during the construction of monitoring wells. The soils stockpiled on site have been removed to a permitted landfill.

No free liquid phase hydrocarbons have been detected in any of the monitoring wells that have been installed at the site.

C. Site Hydrogeology

The City of Sunnyside and the CNG Site are located within the Yakima fold belt of the Columbia Plateau Physiographic region. The fold belt is composed of east-west trending anticlinal ridges and synclinal basins. The site is located in a basin formed by the Snipes Mountain Anticline on the south and the Rattlesnake Hills Anticline on the north. The basin is underlain by downwarped Miocene flood basalt of the Columbia River Basalt Group, and filled with the lacustrine and fluvial sediments of the Pliocene Ellensburg Formation, Quaternary flood deposits from the Spokane Floods, loess deposits and Recent alluvium from stream valleys.

Cores taken at the site revealed that Quaternary or Recent stratified silts, sands and clays underlie the site to a depth of approximately 20 feet. These findings are consistent with other sites investigated within Sunnyside. The permeability at the site is estimated to be from $1X10^{-6}$ to $1X10^{-1}$ ft/min increasing in permeability with depth. Groundwater at the site fluctuates seasonally by approximately one foot with the groundwater high corresponding to the spring runoff. The groundwater flow direction is to the south and southwest toward underground drains installed by the city and county. The drains were installed to lower the groundwater in the vicinity of the site and to provide for surface water runoff. The drains are accessible, via manholes, and have been tested to determine the amount of contamination present. The test results show that contamination, similar to the contamination found in the on-site groundwater, is present in the drains. The downgradient drain, CD-West, has a higher contaminant concentration than CD-East. However, Method A and B levels for the contaminants of concern for surface water have not been exceeded. These drains effectively provide a barrier that prevents the contamination from spreading south of the site. This has been confirmed by the placement of monitoring wells on each side of the drain.

III. REGULATORY REQUIREMENTS

The criteria for selection of a cleanup alternative at a contaminated site is addressed in WAC 173-340-360. This regulation requires that the cleanup criteria chosen: shall protect health and the environment, shall comply with cleanup standards established in WAC 173-340-700 and 760, shall comply with applicable state and federal laws and shall provide for compliance monitoring. The cleanup action conducted shall: use permanent solution as much as possible, provide for a reasonable time line for cleanup and address any public concerns about the cleanup.

A. Applicable State and Federal Laws

WAC 173-340-710 requires that cleanup actions comply with all relevant and applicable state laws. The law which is applicable to this cleanup is the State Environmental Protection Act (SEPA). SEPA notification must be completed prior to cleanup at this site.

B. Cleanup Standards

Cleanup standards are a combination of cleanup levels which protect public health and the environment and points of compliance (locations where these cleanup levels must be attained).

Cleanup standards are identified for the particular hazardous substances at a site and the specific areas or pathways where humans and the environment can become exposed to these substances (WAC 173-340-700(2)(a)). Contaminants of concern have been identified at the Site. Pathways identified in the RI/FS include contaminated groundwater entering the established storm drains constructed under Decatur Street and construction workers who may dig beneath the site and come in contact with contaminated groundwater or residual contamination, if any, left in the soil.

Since the contamination is confined at depth in the soil or dissolved in the groundwater, casual contact with the contamination is not possible. Only under unusual circumstances such as major building construction or excavation to repair or replace underground utilities will the contaminated soil or groundwater be exposed.

The shallow groundwater at the site is not utilized as a drinking water supply nor is it anticipated to be a future drinking water supply, therefore there is no chance for casual or continuous ingestion of or contact with the groundwater. Groundwater entering the underground drains has not exceeded the Method B cleanup criteria for surface water. Institutional controls implemented through the restrictive covenant will prevent the withdrawal of groundwater at the Site without the direct approval of Ecology.

Cleanup standards for the site have been established which will protect public health and the environment. These standards are in accordance with WAC 173-340-360.

C. Cleanup Levels

Cleanup levels established for the site are Federal Maximum Contaminant Levels (MCLs) and the MTCA Method A and Method B cleanup levels as appropriate. In accordance with 173-340-700 and 705, MCLs and Method B are the applicable cleanup level for all sites in Washington State. When MCL and appropriate Method B cleanup levels, whichever is most stringent, (as shown on Table 2) have been achieved cleanup will be considered complete and no further cleanup action will be necessary when Method A cleanup levels (as shown on Table 2) have been achieved. The Method A cleanup levels for groundwater are specified in WAC 173-340-720 and are periodically published by Ecology in the MTCA Cleanup Levels and Risk Calculation (CLARC II) Updates. In addition, Method B cleanup levels also allow the use of Method A tabular values from WAC 173-340-720 and Practical Quantitation Limits (PQLs) as appropriate. Method B cleanup criteria for soil are specified in WAC 173-340-740 and are also published in CLARC II. Method B cleanup criteria for surface water are specified in WAC 173-340-730 and are also published in CLARC II. The selected cleanup levels for various media at the CNG Site are presented in Table 2 below. The use of PQLs as cleanup levels is discussed in Ecology's November 24, 1995 Implementation Memo No. 3.

TABLE 2

Constituent	Groundwater Cleanup Level (mg/l) ug/L	Soil Cleanup Level (mg/kg)	Surface Water Cleanup Level (mg/l) ug/L
TPH-g	1,000 (Method A)	100 (Method A)	NA
TPH-d	1,000 (Method A)	200 (Method A)	NA
Benzene	5 (Method A)	0.5 (Method A)	43 (Method B)
Toluene	1,600 (Method B)	160 (Method B-Groundwater Protection)[1]	48,500 (Method B)
Ethyl Benzene	800 (Method B)	80 (Method B-Groundwater Protection)	6,910 (Method B)
Xylenes	16,000 (Method B)	1,600 (Method B-Groundwater Protection)	NA
1,2-Dichloroethane	5 (Method A)	0.005[2]	59.4 (Method A)

1 Model Toxics Control Act Cleanup Regulation WAC 173-340-740(3)(a)(ii)(A)and Model Toxics Control Act Cleanup Levels and Risk Calculation (CLARC II) Update August 31, 1994. Soil cleanup level is equal to 100 times the Method B groundwater cleanup level.

2 PQL for 1,2-Dichloroethane.

D. Points of Compliance

The points of compliance for the facility shall be the contaminated area, including soil and groundwater, in its entirety. Monitoring points, consisting of monitoring wells, have been installed around the facility to insure that contamination does not increase with time or migrate toward potential receptors.

E. Protection of Public Health and the Environment

Site specific data collected during the RI/FS indicates that there are no receptors utilizing the shallow groundwater affected by the contamination at CNG. Monitoring wells have been installed, for groundwater sampling, around the perimeter of the site. Contaminant concentration baseline limits have been established, shown in Table 1, for groundwater at the perimeter wells. By establishing baseline limits and data it is possible to monitor the continued intrinsic biodegradation of the contamination. If there are exceedences of the baseline limits additional sampling or remediation may be required at the site. Actions to be taken in the event of exceedences are described in the Monitoring Well Network section of this Plan.

F. Institutional Controls

Institutional controls shall be established for the facility. The controls shall consist of a deed restriction which shall restrict the use of the land to commercial uses until the established cleanup levels are attained at the site. The restrictions shall require additional soil cleanup or removal if, at any time during the life of the site, there is construction which exposes any contaminated soils which may have been left on site. The contaminated soils exposed by such construction shall be remediated or removed from the site. Soil testing to quantify the amount of contamination present and conformational testing to insure all contamination has been removed shall be conducted during any additional cleanup activities. Any contaminated soils removed from the site shall be disposed of in a manner consistent with all applicable laws and regulations.

In addition, the covenant will restrict future use of groundwater which may be withdrawn at the site.

The deed restriction, attached to the Consent Decree as Exhibit 3, must be notarized and filed with Yakima County within 120 days of the effective date of the Decree.

G. Selection of Cleanup Actions

The Model Toxics Control Act specifies the criteria for approving cleanup actions, the order of preference for cleanup technologies, policies for permanent solutions, the application of these criteria to particular situations, and the process for making these decisions (WAC 173-340-360(1)(a)). Cleanup technologies at contaminated sites have been prioritized to minimize the amount of untreated hazardous substances remaining at a site. The priority of treating hazardous substances are, in descending order of preference: Reuse or recycling, destruction or detoxification; separation or volume reduction followed by reuse, recycling, destruction or detoxification of the

residual hazardous substance; immobilization of hazardous substances; on-site or off-site disposal at an engineered facility designed to minimize the future release of hazardous substances and in accordance with applicable state and federal laws; isolation or containment with attendant engineering controls; and institutional controls and monitoring.

Remedial Technologies Soils

Interim actions at the facility included the removal and treatment of the petroleum contaminated soil. During the tank removal the majority of the contaminated soil was removed for off site treatment. The excavated soil was treated by landfarming to reduce the toxicity and then reused as cover material in a permitted solid waste landfill. Soil sampling during the removal revealed that an unknown quantity of residual contaminated soil was left on site beneath the water table. It was not feasible to remove this soil due to technical problems associated with the removal and disposal of saturated material. These problems include the transportation and disposal of the saturated soil without spillage, endangerment along the transportation route, and runoff and infiltration during treatment.

The residual contaminated soil left in the upper saturated zone pose no threat to public health and the environment. The soil will continue to slowly release contamination into an aquifer which is not a drinking water source. Points of compliance have been established which will detect any movement of the contamination beyond the facility boundary.

Vapor Extraction System (VES)

Vapor extraction tests were performed at the Manhole 34 site, located approximately four city blocks north of the CNG Site, to determine the feasibility of using VES for soils and groundwater remediation. The soil and hydrogeology of the Manhole 34 site are virtually identical to the CNG site. Data generated from the tests indicated that VES is not a feasible method of site remediation.

Soil borings from the CNG site show that the soils are composed of deposits of stratified silt, clay and sand. Although the gross permeability of the deposits appear to be sufficient for an effective VES, the fact that the lower permeability sands are less contaminated than the intercalated silts and clays decreases extraction effectiveness by allowing preferential air flow in the sands rather than through the less permeable silt and clay.

The site is paved which enhances the effectiveness of VES, however it also prevents soil drying. The presence of water within the pores of the fine grained soil reduces the intrinsic permeability of the formation, reducing the effectiveness of the VES.

The RI/FS identified that VES will not work at the site due to the low intrinsic permeability and soil stratification. Monitoring and institutional controls will protect public health and the environment at this site.

Remedial Technologies Groundwater

Pump and treat for groundwater

The aquifer beneath the site is composed of silt, sand and clay. These deposits generally yield water readily from the sandy strata and very slowly, if at all, from the silty or clay units.

The area affected by the contamination is served by the City of Sunnyside municipal water wells and it is unlikely that any new single domestic wells will be installed in the affected area in order to provide a potable water source.

The City of Sunnyside municipal wells are not at risk if contamination migrates. They are completed to depths which will prevent the possibility of contamination and are crossgradient to the site.

Groundwater monitoring at the site revealed that there may be an on-site source of 1,2-Dichloroethane at the Site. This solvent is more dense than water therefore it migrates downward through the water column until an impervious strata is reached. It does not readily sorb to soil surfaces except where organic carbon is present. This property allows the material to pass rapidly through the soil column and enter the groundwater where it is dissolved and transported in the groundwater.

The source for the dichloroethane was not detected during soil sampling and monitoring well construction. Finding a small point source release would mean constructing additional wells or soil borings. The additional cost of this sampling and the subsequent removal and disposal of contaminated soils, if the source could be found, would afford no greater protection of public health and the environment than leaving the soil in place with institutional controls and conducting monitoring to insure the contamination does not migrate.

The hydrogeologic conditions at the site as discussed above show that the site is unacceptable for groundwater remediation through a pump and treat system.

G. Permanent Solutions

During excavation for tank removal contaminated soil was removed for off-site treatment. Additional contaminated soil was removed prior to filling the excavation. Soil sampling during these removals revealed that soils contaminated with petroleum products above MTCA Method A levels were removed. In addition to the soil removal at the site, the majority of the site is paved, preventing the mobilization of any residual contamination through meteoric water infiltration.

Source control, the interim action, has been a permanent solution for preventing continued groundwater contamination at the site.

No additional soil removal or treatment is expected unless there are site disturbances, such as construction, or there is an increase in contamination in the downgradient wells.

H. Restoration Timeframe

Ecology has evaluated all available data for determining a restoration time frame at the CNG site. The following were considered in determining the reasonableness of the chosen cleanup action.

1. The potential risks to human health and the environment are periodic exposure by workers repairing or installing underground utilities at the site and groundwater discharging to surface water via underground drains south of the site. The RI/FS data indicates that the residual contamination on and off site is limited to those dissolved in groundwater. Institutional controls are proposed which will be protective to these workers.

2. WAC 173-340-360(6) allows a longer restoration time frame for a site, to achieve cleanup levels at the point of compliance, if higher preference cleanup technologies are used. The proposed cleanup method will result in the complete destruction of the contamination through bioremediation rather than a media transfer such as that which occurs in a pump and treat system where the contamination is removed through carbon filtering. Ecology generally expects a site to be remediated within a generation (20 years) however, due to the site hydrogeology and the method of remediation, a longer restoration is anticipated at this site. Ecology has determined that a period of 30 years should be adequate to remediate this site.

3. The site is currently a commercial site within the city limits of Sunnyside, Washington. It is bounded on the south and east by commercial businesses. To the west is a mobile home park and to the north is a single family residence. There is no groundwater use in the area; all city residences utilize city water. The groundwater flow is from the northeast toward the southwest. Residences to the north and west of site could not be affected due to the flow direction. Stormwater drains to the west and south of the site will intercept the contamination before it enters the adjacent properties. Ecology has promulgated laws and regulations which will adequately prevent the placement of an improperly constructed water supply well within influence of the contaminated vicinity.

   Groundwater discharging to the underground stormwater drains have been tested and will continued be tested to insure MTCA surface water standards are not exceeded.

4. Potential future uses of the site and the surrounding area are not expected to change.

5. Groundwater from the shallow aquifer in the city of Sunnyside is not a source of drinking water. The city requires that residences and businesses use city-provided water.

6. The institutional controls at the site include physical measures, the site is paved to prevent contact with the groundwater contamination, and a deed restriction which will be filed and notarized.

7. A deed restriction will prevent groundwater withdrawal wells from being placed on the site. In addition, RCW 90.54.020(7) The Water Resources Act of 1971, encourages the establishment of public and privately owned water supply systems. Chapter 18.104 RCW requires Ecology be notified prior to a well being constructed within the state. WAC 173-160-205(2) prevents a water withdrawal well from being located within minimum distances of sources of contamination without Ecology providing a variance prior to construction of the well. It is Ecology's policy to prohibit the construction of individual water supply wells if there is a public water supply system available. Since the site is located within minimum distances of pollution sources a variance would be required prior to the construction of any domestic use well. These laws and regulations will adequately prevent domestic water supplies from being installed in the vicinity of the contaminated site.

8. Contamination migrating from the site can be effectively monitored through the network of monitoring wells established at the site. The periodic monitoring of the groundwater from these wells will insure that the remediation is progressing and the groundwater will not pose a threat to human health and the environment.

9. The toxicity of the hazardous substance at the site were considered when choosing this cleanup alternative. Due to the low probability of exposure and the institutional controls which will be placed upon the site Ecology determined that the chosen alternative is protective of human health and the environment.

10. The contaminants found at this site are well documented to be readily remediated at sites with similar conditions. Therefore intrinsic bioremediation will be an effective cleanup alternative at the site.

V. REMEDIAL TECHNOLOGIES

Cleanup technology selected for the site is intrinsic bioremediation in conjunction with institutional controls and monitoring of the groundwater. This technology was chosen because, do to site specific conditions, it will provide an overall protectiveness of human health and the environment.

VII. PUBLIC COMMENT

This draft document will be available for public comment, and comments will be incorporated into the final Cleanup Action as appropriate. The Draft RI/FS for Cascade Natural Gas was circulated for pubic comment. The document was available at the Sunnyside Library and Ecology's Central Regional Office in Yakima Washington. The availability was published in a legal advertisement in the Yakima Herald Republic on January 1, 1995, and in the Sunnyside Daily Sun News on

January 5, 1995. Focus Sheets were sent to concerned citizens and local governmental agencies in the Sunnyside area. No comments were received on the draft RI/FS.

VIII. CONCLUSIONS

Site specific data collected and evaluated in the RI/FS and this CAP identified no receptors utilizing groundwater at or around the site. Only under unusual circumstances would there be exposure to the residual contamination left at the site. The hydrogeologic conditions found at the site are not favorable to constructing a groundwater pump and treat system or a vapor extraction system. Ecology has determined that the proposed cleanup action, consisting of intrinsic bioremediation, long-term groundwater monitoring and institutional controls, is in compliance with the threshold requirements of Chapter 173-340 WAC.

IX. WORK TO BE PERFORMED

Field sampling will consist of the following:

1. Obtaining water level measurements in each well accurate to one one-hundredth of a foot (.01 foot).

2. Utilizing an oil-water interface meter to determine if free petroleum products are present in the well.

3. Obtaining representative water samples from wells for analytical testing.

4. Analytes to be tested include WTPH-G, WTPH-D, BTEX compounds and 1,2-Dichloroethane. Reporting limits will be analytical detection limits.

5. All analytical results will be reported in units of micrograms per Liter and in graphs with concentration over time and as tables.

6. A water table contour map shall be prepared and submitted showing groundwater elevations and flow directions after each sampling event.

7. Wells to be sampled are: MW-3, MW-4, MW-5, MW-6, MW-7 and MW-8, MW-9. See Figure 1 for locations. With the exception of well MW-3, which has historically exhibited the highest concentration of the chemicals of concern, these wells are located on the downgradient periphery of the contiguous contaminated area. These wells are strategically located to monitor potential migration of chemicals in groundwater downgradient of the CNG Site and the subsurface county drains.

   Samples of water from the county drain at locations CD-West and CD-East have not exceeded EPA or MTCA Method B surface water criteria for the chemicals of concerns. Continued monitoring of the county drain will be required if a significant

increase above the baseline concentration of a chemical of concern is identified in well MW-3 which is located nearby, and upgradient of, the county drain. In the event of a potential significant increase in well MW-3 (a significant increase for MW-3 is a 1% increase in the contamination from baseline as shown in Table 1), water samples will be collected from the county drain at location CD-West and CD-East (as shown on Figure 1) when well MW-3 is resampled in accordance with the requirements specified below in the Monitoring Network section of this plan. No further remedial action regarding the county drain will be necessary if the concentrations of the chemicals of concern do not exceed MTCA Method B surface water criteria shown on Table 1.

8. The wells shall be sampled once every three months (quarterly). The frequency of sampling shall be evaluated by Ecology on a yearly basis and may be reduced or maintained depending upon the results of previous analytical results. In addition, if after a five-year period the monitored wells exhibit a trend of decreasing concentrations of the chemicals of concern, then the monitoring program will be reevaluated by Ecology to assess the potential to terminate the program. The decision process to evaluate the monitoring frequency is discussed below in the Monitoring Network section of this plan. The schedule for sampling these wells is included in Appendix A.

9. All monitoring wells constructed at the Site shall be maintained in good condition as per the standards established in WAC 173-160. The wells shall be maintained to allow opportunity sampling by Ecology or Cascade Natural Gas.

X. REPORTING REQUIREMENTS

All analytical results shall be reported in the following manner:

1. Copies of all data sheets received from the laboratory will be submitted to Ecology. This includes all chromatographs and data showing any QA/QC analysis run by the laboratory.

2. All data will be presented in tables and graphically showing concentration over time.

3. The most recent sampling and analysis shall be presented as received from the lab as stand alone documents.

4. A brief report explaining the procedures used, anything unusual noted during sampling, the condition of each well and a discussion of the data will be submitted within 45 days of each sampling event.

5. All wells shall be surveyed to determine the latitude and longitude which shall be reported to Ecology in the first quarterly report.

6. The Ecology Site Manager shall be notified within 5 working days should free liquid petroleum products be discovered in any of the monitoring wells.

XI. FIELD SAMPLING AND QA/QC PLANS

A Field Sampling and QA/QC Plan shall be developed by CNG in accordance with the schedule in Consent Decree No. _____. If a QA/QC plan has been developed for other Site work it may be modified and submitted for Ecology review to reflect the current sampling activities.

XII. MONITORING NETWORK

Groundwater contamination above MTCA cleanup levels has been detected in several off-site and on-site wells. To effectively evaluate contaminant degradation over time, baseline levels of contamination have been, or will be, established for each well to be sampled. Table 1 identifies each well to be sampled and the maximum, or baseline, concentrations which have been detected in that well during 1993 and 1994 sampling events. If these baseline concentrations are exceeded, there is a possibility that additional contamination is moving off or onto the site.

With intrinsic biodegradation, the contaminant concentration at the point of compliance should decrease rather than increase over time. If, after the first year of sampling and review, contaminant concentrations do not show a significant increase (i.e., 1 percent or more above the base line concentrations shown on Table 1) in any of the monitored wells, the frequency of sampling may be reduced to a semiannual (twice yearly) basis with monitoring events to be completed during the periods of historically low and high groundwater levels. The absence of any significant increases and the maintenance or decrease of chemical concentrations in all wells after the second year review may result in an additional reduction of sampling frequency or the number of wells to be sampled. The modified sampling schedules will be established at the mutual agreement of the Ecology Site Manager and CNG.
Since 1,2-Dichloroethane has not been tested in water samples from MW-6, MW-7 and MW-8, the baseline concentration will be established after the first round of sampling.

The Ecology Site Manager will be notified within 10 days of PLP's receipt of final written analytical results which show that an agreed upon baseline level has been exceeded. If the baseline level has been exceeded by 1% or greater the PLPs may be required to submit an exceedance report to the Ecology Site Manager within 60 days. The exceedance report will assess the cause and significance of the exceedance and will propose a response. The Ecology Site Manager may specify responses to be implemented by the PLPs.

EXHIBIT C

IMPLEMENTATION SCHEDULE

EXHIBIT C
IMPLEMENTATION SCHEDULE

IMPLEMENTATION SCHEDULE CASCADE NATURAL GAS							
SUNNY SIDE WASHINGTON							
TASK				days from effective date of decree			
Name Contractor				15			
Draft Sampling and Analysis Plan				30			
Draft QA/QC Plan				30			
Record Restrictive Covenant				120			
Groundwater Monitoring Commences				60			

EXHIBIT D

RESTRICTIVE COVENANT

AFTER RECORDING RETURN TO:

Ralph Boyd
Cascade Natural Gas Corporation
22 Fairview Avenue North
Seattle, WA 98901

RESTRICTIVE COVENANT
Cascade Natural Gas Corporation
512 East Decatur, Sunnyside, Washington

The property that is the subject of this Restrictive Covenant is the subject of a remedial action under Chapter 70.105D RCW. The cleanup action to be performed at the Cascade Natural Gas property (hereinafter referred to as the "Site") is described in the Cleanup Action Plan ("CAP") which is Exhibit B of Consent Decree No._____ ("Decree") entered in State of Washington Department of Ecology v. Cascade Natural Gas Corporation and County of Yakima. The Site is legally described as follows:

> Encompassing Lots 15 through 26 and the south half of Lot 27, Block 13, Sunnyside, Washington according to the official plat thereof recorded in Volume "A" of Plats, page 59, records of Yakima County, Washington

The remedial action undertaken to cleanup the Site (hereafter the "cleanup action") is described in the Remedial Investigation/Feasibility Study ("RI/FS") submitted by SECOR International Inc. to the Washington State Department of Ecology ("Ecology") Central Regional Office and Cascade Natural Gas Corporation (report dated 26 November 1995). This document is on file at Ecology Central Regional Office in Yakima, Washington. This Restrictive Covenant is required by Ecology as defined in WAC 173-340-440 because the Cleanup Action at the Site resulted in residual concentrations of petroleum and other organic products which exceed Model Toxics Control Act (MTCA) cleanup levels for groundwater and soil established under WAC 173-340-720(2) and 740(2).

The undersigned, Cascade Natural Gas Corporation, is the fee owner of real property in the County of Yakima, State of Washington. The contamination that is the subject of this restrictive covenant is described in the above referenced report. The property owner makes the following declaration as to limitations, restrictions, and uses to which the Site may be put, and specifies that such declarations shall constitute covenants to run with the land, as provided by law, and shall be binding on all parties and all persons claiming under them, including all current and future owners of any portion of or interest in the Site.

Section 1: Halogenated organic compounds and petroleum compounds have been found in the soil and groundwater located under the paved portion of the Cascade Natural Gas property and East Decatur Avenue located south of the site. Remediation or removal of any residually contaminated soil must occur before the owner or successor owner alters, modifies, or removes the paving or existing building in any manner that exposes the contamination. Any plans for alteration, modification or removal that may expose the contamination shall be submitted to and approved by Ecology or its successor agency prior to such actions.

Section 2: The integrity of monitoring wells placed on the property for the purpose of groundwater monitoring shall be maintained during the period that monitoring is required in Consent Decree No._____. Should future construction activities on the property require abandonment or removal of monitoring wells, such removal or abandonment shall not occur without the prior written approval of Ecology. Said monitoring wells shall be abandoned and replaced in a manner approved by Ecology.

Section 3: The owner of the property must give written notice to Ecology, or to its successor agency, of the owner's intent to convey any interest in the property or any portion of the property. No conveyance of title, easement, lease, or other interest in the property shall be consummated by the property owner without adequate and complete provision for continued groundwater monitoring and compliance with this restrictive covenant. Copies of this restrictive covenant shall be furnished to any transferee of such real property interest.

Section 4: The owner or a successor owner shall allow authorized representatives of Ecology, or its successor agency, the right to enter the property at reasonable times for the purpose of evaluating compliance with the CAP and carrying out its duties under chapter 70.105D RCW. Duties include but are not limited to the right to take samples, inspect remedial actions conducted at the property relating to the contamination identified in the above referenced RI/FS, and to inspect records that are related to the Cleanup Action.

Section 5: Until the appropriate MCTA cleanup levels, as specified in Consent Decree No._____ and CAP, are attained in both soil and groundwater, this property shall not be utilized for residential use.

Section 6: The owner must notify and obtain approval from Ecology or its successor agency prior to any use of the property that is inconsistent with the terms of this Restrictive Covenant, or the Consent Decree and its attachments and amendments. Ecology or its successor agency may approve any inconsistent use only after public notice and comment.

Section 7: The owner of the Site and any successor owners reserve the right under WAC 173-340-440 to record an instrument which provides that this Restrictive Covenant shall no longer be of any further force or effect. However, such an instrument may be recorded only with the consent of Ecology, or its successor agency. Ecology, or its successor Agency, may consent to the recording of such an instrument only after appropriate public notice and comment.

_____
Ralph Boyd
For Cascade Natural Gas Corporation

_____
Date

EXHIBIT E

GROUNDWATER SAMPLING DATA SUBMITTAL REQUIREMENTS

STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

P.O. BOX 47600 • Olympia, Washington 98504-7600 • (206) 459-6000

January 27, 1993

TO: Persons Collecting Ground Water and Other Data at MTCA Sites

FROM: Carol Fleskes, Program Manager
Toxics Cleanup Program

SUBJECT: Cleanup Information No. 91-1: Ground Water, Soil, Sludge, and Sediment Data (Environmental Data)

Purpose

The purpose of this memorandum is to establish consistency and procedures for organizing, reporting, transmitting, and storing and retrieving surface water, ground water, soil, sludge, and sediment data (environmental data). These procedures will improve Ecology's ability to clean up contaminated sites by making meaningful data readily available to the public, legislature, management, project managers, and site workers.

Applicability

These procedures apply to all environmental data collection activities required by the Model Toxics Control Act and Regulations. Exceptions may be made for low-risk sites as determined by the Ecology project manager.

Background

Currently, very little of the environmental data collected for the state at toxic cleanup sites is available in a readily usable form. With only a few exceptions, these data are submitted to the department in the form of voluminous paper reports. This form precludes the staff from performing rapid, accurate, and, many times, meaningful analysis of spatial and temporal trends of the data. In addition, the evaluation of environmental data cannot always be effective because of missing and/or improper pertinent information.

This procedure establishes appropriate methods to ensure that data submitted to Ecology are encoded, stored, and presented in a magnetic media format (diskette) so that data can be consistently used by our staff. This procedure will reduce data analysis time when compared to using laborious, time-consuming hand methods of the past. Today, at most of the larger sites and many of the smaller sites, these data are computer processed by the PLP's and consultants. This procedure will generally require the data be rearranged and in some cases, additional data items collected.

The results of receiving digital data in a consistent manner will allow exchange of environmental data with EPA and between Ecology programs. This format is a super set of that developed by EPA. It is being used by other Ecology Programs.

Standardization of the data will mean that a broad range of computational, statistical, graphical and modeling software will be readily available to summarize and analyze the data. Standardized reports will be available for the first time in the program.

Responsibilities

The attached procedures shall be required for all of the environmental data collection activities, as follows:

- Directly by TCP;
- By any contractors or consultants tasked by TCP;
- By "potentially liable parties" acting under terms of a consent decree or order.

Implementation of the procedures shall be by incorporation of the appropriate language into contracts, work plans, orders, consent decrees, or other appropriate documents by the site project manager or contract officer.

Data shall be entered into the Ecology data base by a data administrator. There is an inter-program team that established new parameters. At this time, Bill Myers at headquarters is acting in this capacity and as the TCP representative to the team.

Depending on the availability of a wide-area network, the data would be directly or indirectly available to staff and other data users. At this time, the Site Cleanup Section is developing links from the present data base program to other statistical, graphical, and analytical software packages.

Also attached is a model letter which is sent along with a diskette, to anyone using our format to submit environmental data. These diskettes are also available to staff. To obtain a copy, call Bill at the telephone number shown on the letter.

KC:cp
Attachments

SITE DESCRIPTION AND SAMPLE DATA SUBMITTAL REQUIREMENTS

1. Media

Required data must be submitted on MS-DOS[1](version 5) or compatibly formatted diskettes. The diskettes may be 5 1/4 inch (or 3 1/2 inch) either: double sided, double density; or double sided, high density.

2. Data Formats

The SITE DESCRIPTION FILE, FIELD SAMPLE FILE and the LABORATORY SAMPLE FILE are quote, comma delimited ASCII files used as the standard format for transferring sample data to and from Ecology (LOTUS WK1 files and Ashton Tate DBF files may be substituted for ASCII files). The files will include the fields in the format and order listed (C=Character, N=Numeric, D=date[Character may be substituted in non DBF or WK1 format]).

The following Appendices are attached to standardize information entered into required files (see following appendices):

A. Matrix Codes

B. Sample Source Codes

C. Collection Method Codes

D. Chemical Data Dictionary (Standardizes Spelling, STORET P-codes., etc entered into the SAMPLE ANALYSIS FILE.

E. Laboratory Qualifiers

F. County Fips Codes

G. State Plane Zones (N or S)(NOTE: Copy of RCW 58.20 provided for reference)

H. Hydrologic Unit Map

I. Model Letter RE: Toxics Cleanup Program Database Material

3. Submittal

Computer diskettes containing the SITE DESCRIPTION FILE, FIELD SAMPLE FILE and/or the LABORATORY SAMPLE FILE, clearly labeled for Project and Originator shall be submitted in duplicate, along with a backup hard copy of the diskette contents.

[1] Trademark of the Microsoft Corporation

FIELD DEFINITIONS FOR
SITE DESCRIPTION FILE

*Wells and Borings must include all Fields except as noted optional.
Underlined Fields are required for all stations.

FIELD	TYPE	WIDTH	DEFINITION
REP_DATE	D	10	Reporting date (mm/dd/yyyy).
REP_NAME	C	48	Reporting entity, data submitted by.
PRJ_NAME	C	48	Project, site, or facility name.
STA_TYPE	C	12	Station type (Ground water, Surface wtr, Sediment, Soil, Sludge, Biological or Air).
STA_USE	C	1	Well use (USGS codes) O=observation, W=water withdrawal, X=waste disposal, D=drain, T=test hole, E=geothermal, P=oil/gas, U=unused, R=recharge, Z=destroyed.
WTR_USE	C	1	Water use (USGS codes) W=water quality/level monitoring, D=dewatering, N=industrial, S=stock supply, B=bottling, I=irrigation, Q=aquaculture, U=unused, C=commercial supply, H=domestic supply P=public supply, J=industrial cooling, F=fire protection, Z=other.
DATA_REL	C	1	Data Reliability (USGS codes) C=field checked, L=poor location, U=unchecked.
STA_ID	C	12	Well ID number.
PRI_STA	C	15	Ecology primary station code. To be obtained from Ecology TCP.
SEC_STA1	C	12	Additional station code (previous well numbers, alternate or other well designations).
SEC_STA2	C	12	Additional station code (if any).
SEC_STA3	C	12	Additional station code (if any).
STATE_FIPS	C	2	State FIPS code (WA=53).

SITE DESCRIPTION FILE CONTINUED...

FIELD	TYPE	WIDTH	DEFINITION
COUNTYFIPS	C	3	County FIPS code (use state county code, Appendix F).
STATE_CHAR	C	2	State (WA).
COUNTYCHAR	C	16	County.
OWN_NAME	C	30	Monitoring well owner name.
OWN_DT	D	8	Date of ownership of well (mm/dd/yyyy).
OWN_ADD	C	60	Address of owner.
DRILLER	C	30	Name of Driller.
STA_DESC	C	48	Activity Site, Sample location, or Well location description (for example: "East of Bldg. 2" or "SE corner, intersection 6th & Seneca").
LOC_METHD	C	48	Method of determination of station location coordinates (Note: survey to known horizontal datum is required).
LAT	N	8	Latitude OPTIONAL (degrees-minutes-seconds-tenths).
LONG	N	9	Longitude OPTIONAL (degrees-minutes-seconds-tenths).
STPCO_NORT	N	12	Northerly state plane coordinates REQUIRED (nearest ft).
STPCO_EAST	N	12	Easterly state plane coordinates REQUIRED (nearest ft).
STPCO_ZONE	C	1	State plane coordinates: state plane zone REQUIRED (N or S).
LAND_NET	C	20	Land net location of well (Township, Range, Section, 1/4-1/4 Sec.) Use USGS 1/4-1/4 section alphabetic designator A through R OPTIONAL.

SITE DESCRIPTION FILE CONTINUED...

FIELD	TYPE	WIDTH	DEFINITION
UTM_NORTH	N	9	UTM grid system coordinates: North (meters) OPTIONAL.
UTM_EAST	N	8	UTM grid system coordinates: East (meters) OPTIONAL.
UTM_ZONE	C	2	UTM grid zone.
MAP_NAME	C	24	Name of USGS map and scale covering the sampling location(e.g., Yakima 100K, 1977).
BORE_DEP	N	8	Depth of original hole drilled if applicable (nearest 0.01 ft).
WELL_DEP	N	8	Well depth (nearest 0.01 ft).
WTR_ELEV1	N	8	Water level elevation at time of installation (nearest 0.01 ft).
WLEV_DAT1	D	10	Date of water level elevation measurement (mm/dd/yyyy).
MEAS_ELEV	N	8	Measuring point (reference point) elevation (nearest 0.01 ft).
MEAS_DESC	C	48	Measuring point description.
DATUM	C	48	Measuring point datum (The source of the altitude used to survey in the sampling location altitude i.e. City of Tacoma Sewer Survey 1921).
LEV_COMM	C	240	Comments, depth and water level data.
ALTITUDE	N	8	Approximate land surface elevation XXXXX.XX (ft) at the Station Location.
DEPTOWTR1	N	8	Water depth at time of install. (nearest 0.01 ft).
CONST_DT	D	10	Date of installation (mm/dd/yyyy).
MOREINT	C	1	More than one open interval (Y/N).

SITE DESCRIPTION FILE CONTINUED...

FIELD	TYPE	WIDTH	DEFINITION
UP_DEPTH	N	8	Depth to top of open interval (ft below measuring point).
LOW_DEPTH	N	8	Depth to bottom of open interval (ft below measuring point).
CONST_COMM	C	240	Comments, construction details.
MTD_CON	C	1	Method of construction (USGS WATSTORE codes) A=air rotary, B=bored/augured, C=cable tool, D=dug, H=hydraulic rotary, J=jetted, P=air percussion, T=trenching, V=driven, W=drive wash, R=reverse rotary, X=mud rotary, Z=other.
FILT_LEN	N	5	Length of filter pack (nearest 0.01 ft).
FILT_MAT	C	48	Type of filter pack material and size of material (e.g., Sand 200 mesh).
DIA_BOR	N	8	Boring diameter (in).
DIA_CAS	N	8	Casing diameter (in).
CAS_MAT	C	1	Casing material (USGS WATSTORE codes) B=brick, C=concrete, D=copper, F=teflon/fluorocarbon, G=galvanized iron, I=wrought iron, M=other metal, P=pvc/plastics, R=rock/stone, S=steel, T=tile, W=wood, U=coated steel, Z=other.
DIA_OPN	N	6	Diameter of open interval (in).
LEN_OPN	N	6	Length of open interval (nearest 0.01 ft).
TYP_OPN	C	1	Type of open interval (USGS WATSTORE codes) P=perforated/slotted screen, L=louvered/shuttered screen, S=screen (unknown type), F=fracture, R=wire wound, M=mesh, T=sand point, W=walled, X=open hole, Z=other.

SITE DESCRIPTION FILE CONTINUED...

FIELD	TYPE	WIDTH	DEFINITION
TYP_OMT	C	1	Material type, open interval (USGS WATSTORE codes) R=stainless steel, F=teflon/fluorocarbon, G=galvanized iron, P=pvc/plastic, B=brass/bronze, W=wrought iron, S=steel, T=tile, C=concrete, M=other metal, Z=other.
INT_COMM	C	240	Comments, open interval.
LOG_AVAIL	C	1	Well log data available? (Y/N).
TYP_LOG	C	10	Type of well log (USGS WATSTORE codes) A=time, B=collar, C=caliper,D=driller, E=electric, F=fluid conduction, G=geologist, H=magnetic, I=induction, J=gamma ray, K=dip meter, L=lateral log, M=microlog, N=neutron, O=microlateral log, P=photo/video, Q=radioactive, S=sonic, T=temperature, U=gamma gamma, V=fluid velocity, X=core, Z=other.
LOG_DOC	C	240	Log data source documents (e.g. Remedial Investigation Report).
OTHER_DOC	C	240	Other data source documents.
LOG_LOC	C	60	Location of well log (e.g. Ecology Southwest Regional Office).
AQUI_TEST	C	1	Aquifer testing performed (Y/N).
PUMP_DATA	C	240	Pump data such as: Type, Manufacturer, Horsepower, and depth set .
ANDAT_AVAL	C	1	Analytical or Statistical data available (Y/N).
PROGRAM	C	9	Ecology program (TCP, WQFA, WQ, other).
GEN_COMM	C	240	General comments.
HUCODE	C	8	See US Geological Survey Hydrologic Unit Map 1974-Washington.
AGN_USE	C	1	Agency use (USGS codes) A=Active, I=inactive, O=inventory only.

** END OF SITE DESCRIPTION FILE ***

FIELD DEFINITIONS FOR
FIELD SAMPLE FILE

*All Fields Required

FIELD	TYPE	WIDTH	DEFINITION
PRI_STA	C	15	Ecology Monitoring Well No. will be assigned by Ecology TCP Program.
STA_ID	C	12	Site well ID no. or other designation.
X_LOCATION	C	12	Surveyed coordinates reported in the State Plane Coordinates (to the nearest foot).
Y_LOCATION	C	12	
STPLNZONE	C	1	N = North; S = South.
LO_DAT_U	C	5	Year of Reference datum either 1929 or 1983 and which system L Lat Long or S for State Plane Coordinate System.
LOC_DATUM	C	48	Reference datum from Map or survey e.g., 1983 North American Datum (see Appendix F, RCW 58.20)
DEPT_WATER	N	8	Depth to water (in 0.01 ft) at time of sampling.
UP_DEPTH	N	7	Depth (nearest 0.01 ft) to the top of the interval sampled (e.g. Top of well screen or core interval).
LOW_DEPTH	N	7	Depth (nearest 0.01 ft) to the bottom of the interval sampled (e.g. Bottom of well screen or core interval).
WTR_ELEV	N	8	Water level elevation (in 0.01 ft) at the time of sampling.
AGENCY	C	8	Agency requesting sampling data.
SAMPLE_DAT	D	8	Date of well sampling (mm/dd/yyyy).
SAMP_TIME	C	4	Time of well sampling in military time.
SAMPLE_ID	C	8	Sample ID code or no.

FIELD SAMPLE FILE CONTINUED:

FIELD	TYPE	WIDTH	DEFINITION
FILTERED Yes(Y) or	L	1	Was the sample field filtered? No(N)
ANALYSIS_MTHOD	C	15	EPA Analysis method descriptions (i.e EPA Method 601).
MEAS_ELEV	N	8	Surveyed elevation of the measuring point used to determine water level depths and elevations. (nearest 0.01 ft).
MEAS_DESC	C	48	Description of the well measuring point used (e.g., top of casing, file mark on casing, etc.).
DATUM	C	48	Vertical datum used to reference elevations (e.g., MSL and source/date of information).
MATRIX	C	2	Type of sample; water, sediment, soil, other (from Appendix A).
SOURCE_COD	C	2	Physical environment sampled (from Appendix B).
COLLECTMET	C	2	Collection method code (from Appendix C).
FIELD_PH	N	5	The pH value taken at time of sampling (e.g. 11.67)
FIELD_COND	N	7	The conductivity value in umhos.
FIELD_TEMP in	N	5	The field temperature of the sample degrees celsius.
PURGE_METH	C	1	Purging method: B = Bail, P= Pump
PURGE_VOL	C	2	Number of boring volumes removed prior to sampling (liquid).
PRJ_NAME	C	48	Project, site, or facility name.

**** END OF FIELD SAMPLE FILE ***

FIELD DEFINITIONS FOR LABORATORY SAMPLE FILE

*All Fields Required

FIELD	TYPE	WIDTH	DEFINITION
PRI_STA	C	15	Ecology Monitoring Well No. will be assigned by Ecology TCP Program.
STA_ID	C	12	Site well ID no. or other designation.
SAMPLE_DAT	D	8	Date of well sampling (mm/dd/yyyy).
ANALYZ_DAT	D	8	Date the sample was analyzed (mm/dd/yyyy).
SAMPLE_ID	C	8	Sample ID code or no.
LAB_NAME	C	10	Laboratory performing analysis.
LABSAMP_ID	C	10	Sample number assigned by the laboratory.
CONSTITUEN	C	30	Chemical constituent names as defined in Ecology's Chemical Dictionary (see attached Appendix D)
CAS_ID	C	12	Chemical Abstract Systems ID (see Appendix D).
P_CODE	C	5	STORET Parameter Code (see Appendix D).
RESULT	N	12	Detected chemical concentration result.
UNITS	C	10	Units of measurement (e.g., µg/Kg).
QUAL	C	4	Contract Laboratory Program chemical data qualifiers (such as U, J, R, UJ, etc.). Non-Contract Lab Program qualifiers, such as less-than signs ("<") orasterisks, are not acceptable (see Appendix E).
QA_QUAL	C	4	Qualifier associated with QA Review of Lab report (See Appendix E).
LIMIT	C	10	Lab instrument detection limit.

LABORATORY SAMPLE FILE CONTINUED:

FIELD	TYPE	WIDTH	DEFINITION
DILUTION	N	6	Amount the sample was reduced and diluted to accommodate analysis (i.e. 10X,20X).
FILTERED	L	1	Was the sample lab filtered? Yes(Y) or No(N)
ANALYSIS_MTHOD	C	15	EPA Analysis method descriptions (i.e EPA Method 601).
MATRIX	C	2	Type of sample; water, sediment, soil, other (from Appendix A).
PRJ_NAME	C	48	Project, site, or facility name.

** END OF LABORATORY SAMPLE FILE ***

APPENDIX A: MATRIX CODES

10	Water-Total
11	Water-Dissolved
40	Sediment/Soil
45	Semi-Solid/Sludge
70	Sediment for EP Toxicity
80	Oil/Solvent
00	Other

APPENDIX B: SAMPLE SOURCE CODES AND DESCRIPTIONS

00	Unspecified source
01	Unknown liquid media (drum/tank)
02	Unknown liquid media (spill area)
03	Unknown liquid media (waste pond)
10	Water (general)
12	Ambient stream/river
13	Lake/reservoir
14	Estuary/ocean
15	Spring/seepage
16	Rain
17	Surface runoff/pond (general)
18	Irrigation canal/return flow
20	Well (general)
21	Well (industrial/agricultural)
22	Well (drinking water supply)
23	Well (test/observation/monitoring)
24	Drinking water intake
25	Drinking water (at tap)
30	Effluent wastewater (general)
31	Municipal effluent
32	Municipal inplant waters
33	Sewage runoff/leachate
34	Industrial effluent
35	Industrial inplant waters
36	Industrial surface runoff/pond
37	Industrial waste pond
38	Landfill runoff/pond/leachate
40	Sediment (general)
42	Bottom sediment of deposit
44	Sludge (general)
45	Sludge (waste pond)
46	Sludge (drum/tank)
48	Soil (general)
49	Soil (spill/contaminated area)
50	Bore hole material

Sample Source Codes and Descriptions (continued)

60	Air (general)
61	Ambient air
62	Source of effluent air
63	Industrial or workroom air
64	Hi-vol filter
70	Tissue (general)
71	Fish tissue
72	Shellfish tissue
73	Bird tissue
74	Mammal tissue
75	Macroinvertebrate
76	Algae
77	Periphyton
78	Plant/vegetation
80	Oil/solvent (general)
81	Oil (transformer/capacitor)
82	Oil/solvent (drum/tank)
83	Oil/solvent (spill area)
84	Oil/solvent (waste pond)
90	Commercial product formulation
95	Well drill water
96	Well drill mud
97	Well sealing material
98	Gravel pack material

APPENDIX C: COLLECTION METHOD CODES

00	Unknown
10	Hand grab
11	Plastic bucket
12	Stainless steel bucket
13	Brass kemmerer
14	PVC kemmerer
15	D.O. dunker
16	DH 48/DH 49 Integrating sampler
17	Van Dorn bottle
18	Glass dip tube
19	Other
20	Automatic sampler (general)
21	ISCO auto sampler
22	Manning auto sampler
23	Hydrostar or similar pump
24	Submersible pump (electric)
25	Well point sampler (pump)
26	Stainless steel bailer (hand)
27	PVC bailer
28	Teflon bailer
29	Peristaltic pump
30	Dredge (unspecified)
31	Dredge (Peterson)
32	Dredge (Van Dorn)
33	Dredge (Van Veen)
34	Core
35	Freeze core
36	Bladder Pump
40	Macroinvertebrate (unspecified)
41	Picked by hand
42	Kick net
43	Surber
44	Modified Hess type sampler
45	Rock basket
46	Hester Dendy sampler
50	Fish (unspecified)
51	Fish (shocking)
52	Fish (netting)
53	Fish (hook & line)
54	Fish (poison)
60	Periphyton (unspecified)
61	Rock scraping
62	Glass slides

APPENDIX D: CHEMICAL DICTIONARY
01/27/93

COMP_NAME	JHK_NO	STORET_NO	CAS_NO	UNITS
1,1,1,2-Tetrachloroethane	527.00	77562	630206	µg/L
1,1,1-Trichloroethane	1.00	34506	71556	µg/L
1,1,2,2-Tetrachloroethane	2.00	34516	79345	µg/L
1,1,2,2-Tetrachloroethene	75.05	34475	127184	µg/L
1,1,2-Trichloro2,2,1trifluoroethane	3.00	77652	76131	µg/L
1,1,2-Trichloroethane	4.00	34511	79005	µg/L
1,1-Dichloroethane	5.00	34496	75343	µg/L
1,1-Dichloroethene	6.00	34501	75354	µg/L
1,1-Dichloroethylene	6.01	34501	75354	µg/L
1,1-Dichloropropene	546.00	77168	563586	µg/L
1,2,3-Trichlorobenzene	534.00	77613	87616	µg/L
1,2,3-Trichloropropane	441.00	81610	96184	µg/L
1,2,3-Trinitrobenzene	85.00	73275	99354	µg/Kg
1,2,4-Trichlorobenzene	7.00	34551	120821	µg/L
1,2,4-Trimethylbenzene	536.00	77222	95636	µg/L
1,2,4-Trinitrobenzene	100.00			
1,2-Dibromoethane (EDB)	8.00	77651	106934	µg/L
1,2-Dichlorobenzene	9.00	34536	95501	µg/L
1,2-Dichloroethane	10.00	34531	107062	µg/L
1,2-Dichloromethane	68.01	34423	75092	µg/L
1,2-Dichloropropane	11.00	34541	78875	µg/L
1,2-Diethoxyethane	482.00	81527	629141	µg/L
1,2-Diethylbenzene	548.00	77340	135013	µg/L
1,2-Dimethylbenzene	77.02	77135	95476	µg/L
1,2-Dimethylhydrazine	582.00	73562	540738	µg/L
1,2-Diphenylhydrazine	84.00	34346	122667	µg/L
1,3,5-Trimethylbenzene	541.00	77226	108678	µg/L
1,3,5-Trinitrobenzene	156.00	73275	99354	µg/Kg
1,3-Dichlorobenzene	12.00	34566	541731	µg/L
1,3-Dichloropropene	544.00	34561	542756	µg/L
1,3-Diethylbenzene	549.00	77348	141935	µg/L
1,3-Dimethylbenzene	67.01	77134	108383	µg/L
1,4-Dichlorobenzene	13.00	34571	106467	µg/L
1,4-Diethylbenzene	550.00	77345	105055	µg/L
1,4-Dimethylbenzene	475.03	77133	106423	µg/L
1,4-Dioxane	583.00	82388	123911	mg/L
1-Methylethyl ester carbamic acid	574.00	73615	615532	µg/L
1-Methylnapthalene	211.00	77418	90120	µg/L
2 Methoxy-5-nitroaniline	584.00	73622	99558	µg/L
2 Methylaniline	585.00	77142	95534	µg/L
2 Methylaniline hydrochloride	586.00	73649	636215	µg/L
2,2,4-Trimethylpentane	545.00		5408401	
2,2-Dichloropropane	547.00	77170	594207	µg/L
2,3,4,5-Tetrachloropheno	1553.00	77767	4901513	µg/L
2,3,6-Trichloro benzeneacetic acid	575.00	85347		
2,3,7,8-TCDD	87.02	34675	1746016	µg/L

CAS NO should be read as follows. From Right: 1 digit, dash, 2 digits, dash (ie 1774-85-0).

APPENDIX D: CHEMICAL DICTIONARY
01/27/93

COMP_NAME	JHK_NO	STORET_NO	CAS_NO	UNITS
2,3,7,8-Tetrachlorodibenzo-p-dioxin	87.00	34675	1746016	µg/L
2,3-Dichloropropylene	88.00	77166	78886	µg/L
2,4,5-T Methyl Ester	89.00	39740	93765	µg/L
2,4,5-TB	554.00	82650	93801	µg/Kg
2,4,5-TP (Silvex)	91.00	39760	93721	µg/L
2,4,5-TP Methyl Ester	90.00			
2,4,5-Trichlorophenol	14.00	77687	95954	µg/L
2,4,5-Trichlorophenoxyacetic acid	319.00	39740	93765	µg/L
2,4,6-Trichlorophenol	15.00	34621	88062	µg/L
2,4,6-Trimethyl-1-1,3,5-Trioxane	92.00	77322	123637	µg/L
2,4-D	93.00	39730	94757	µg/L
2,4-D Methyl Ester	93.01	39730	94757	µg/L
2,4-DB (Water, Total)	555.00	38745	94826	µg/L
2,4-Dichlorophenol	16.00	34601	120832	µg/L
2,4-Dichlorophenoxy butyric acid	235.00		94826	µg/L
2,4-Dimethylphenol	17.00	34606	105679	µg/L
2,4-Dinitrophenol	18.00	34616	51285	µg/L
2,4-Dinitrotoluene	19.00	34611	121142	µg/L
2,4-Toluenediamine	587.00	78888	95807	µg/L
2,5-Dinitrotoluene	94.00	77637	619158	µg/L
2,6-Dinitrotoluene	20.00	34626	606202	µg/L
2-Butanone	376.03	81595	78933	µg/L
2-Chloroethyl vinyl ether	22.00	34576	110758	µg/L
2-Chloronaphthalene	23.00	34581	91587	µg/L
2-Chlorophenol	24.00	34586	95578	µg/L
2-Chlorotoluene	535.00	38680	95498	µg/L
2-Cyclohexene-1-one	488.00	930697		
2-Ethyl hexanoic acid	196.00	82114	149575	µg/L
2-Hexanone	25.00	77103	591786	µg/L
2-Methyl-2H-benzotriazole	576.00	85813	29385431	µg/L
2-Methyl-4,6-dinitrophenol	96.00	34657	534521	µg/L
2-Methyl-4-chlorophenoxyacetic acid	367.02	39151	94746	µg/L
2-Methyl-4-pentanone	95.00	78133	108101	µg/L
2-Methyl-p-cresol	17.01	34606	105679	µg/L
2-Methylnaphthalene	26.00	77416	91576	µg/L
2-Methylphenol	27.00	77152	95487	µg/L
2-Nitroaniline	28.00	30195	88744	µg/L
2-Nitrophenol	29.00	34591	88755	µg/L
2-Pentanone	97.00	77060	107879	µg/L
2-chloro-1-hydroxybenzene	24.02	34586	95978	µg/L
3,3'-Dichlorobenzidine	98.00	34631	91941	µg/L
3,3-Dimethoxybenzidine	588.00		199904	µg/L
3,3-Dimethylbenzidine	589.00	73560	119937	µg/L
3,4-Benzofluoranthene	99.00	34230	205992	µg/L
3,4-Dichlorobenzyl N-methylcarbama +	571.00		1966581	µg/L
3,5-Dichlorobenzoic acid	240.00		51365	µg/L
3-Chloro octane	528.00			

CAS NO should be read as follows. From Right: 1 digit, dash, 2 digits, dash (ie 1774-85-0).

APPENDIX D: CHEMICAL DICTIONARY
01/27/93

COMP_NAME	JHK_NO	STORET_NO	CAS_NO	UNITS
3-Nitroaniline	30.00	78300	99092	µg/L
4,4'-DDD	208.01	39360	72548	µg/L
4,4'-DDE	209.01	39365	72559	µg/L
4,4'-DDT	210.01	39370	50293	µg/L
4,4-Methylene bis(n,n-dimethyl) an+	592.00	101611		µg/L
4,6-Dinitro-2-methylphenol	96.01	34657	534521	µg/L
4,6-Dinitrophenol	101.00	82226	88857	µg/L
4,7-Methanoisobenzofuran-1(3H) -one+	570.00			µg/L
4-Bromophenoxybenzene	102.00			
4-Bromophenyl phenyl ether	103.00	34636	101553	µg/L
4-Chloro-2-methyl analine hydrochl+	590.00		3165933	µg/L
4-Chloro-2-methyl aniline	591.00		95692	µg/L
4-Chloro-3-methylphenol	31.00	34452	59507	µg/L
4-Chloro-m-cresol	31.01	34452	59507	µg/L
4-Chloroaniline	464.00	78303	106478	mg/Kg
4-Chlorophenyl phenyl ether	33.00	34641	7005723	µg/L
4-Chlorotoluene	540.00	77277	106434	µg/L
4-Methyl-2-pentanone	34.00	78133	108101	µg/L
4-Methyl-o-cresol	17.02	34606	105679	µg/L
4-Methylphenol	35.00	77146	106445	µg/L
4-Nitroaniline	36.00	73278	100016	µg/Kg
4-Nitrophenol	37.00	34646	100027	µg/L
5-Bromopyrimidine	104.00			
5-Hydroxy Dicamba	256.00			µg/L
AAtrex	281.01	39033	1912249	µg/L
Acenaphthene	38.00	34205	83329	µg/L
Acenaphthylene	39.00	34200	208968	µg/L
Acephate	385.02	81815	30560191	µg/L
Acetone	40.00	81552	67641	µg/L
Acifluorfen	215.00	79193	6247659	µg/L
Acrolein	105.00	34210	107028	µg/L
Acrylamide	593.00	38576	79061	µg/L
Acrylonitrile	106.00	34215	107131	µg/L
Alachlor	273.00	77825	15972608	µg/L
Alanex	273.01	77825	15972608	µg/L
Aldicarb	274.00	39053	116063	µg/L
Aldicarb sulfone	320.00	82587	1646884	µg/L
Aldicarb sulfoxide	318.00	82586	1646873	µg/L
Aldrin	107.00	39330	309002	µg/L
Alkalinity as CaCO3, Total	453.00	00410	471341	mg/L
Alkalinity, Total (CaCO3)	246.00	00410	471341	mg/l
Alpha Particle Activity, gross	611.00	01519	12587461	pCi/L
Aluminum, Dissolved	511.00	01106	7429905	µg/L
Aluminum, Total	510.00	01105	7429905	µg/L
Aluminum, Total Recoverable	108.00	01104	7429905	µg/L

CAS NO should be read as follows. From Right: 1 digit, dash, 2 digits, dash (ie 1774-85-0).

APPENDIX D: CHEMICAL DICTIONARY
01/27/93

COMP_NAME	JHK_NO	STORET_NO	CAS_NO	UNITS
Ametryn	275.00	82184	834128	µg/L
Amiben	276.00	82051	133904	µg/L
Aminocarb	277.00	38404	2032599	µg/L
Aminotriazole	278.00	73509	61825	µg/L
Amitrole	278.01	73509	61825	µg/L
Ammonia-N, Total as-N	109.00	00610	17778880	mg/L
Aniline	110.00	77089	62533	µg/L
Anion Balance	111.00			
Anthracene	112.00	34220	120127	µg/L
Antimony, Dissolved	524.00	01095	7440360	µg/L
Antimony, Total	113.00	01097	7440360	µg/L
Antimony, Total Recoverable	21.00	01268	7440360	µg/L
Aqualin	105.01	34210	107028	µg/L
Aramite	594.00		140578	µg/L
Aroclor 1016	114.00	34671	12674112	µg/L
Aroclor 1221	115.00	39488	1104282	µg/L
Aroclor 1232	116.00	39492	11141165	µg/L
Aroclor 1242	117.00	39496	53469219	µg/L
Aroclor 1248	118.00	39500	12672296	µg/L
Aroclor 1254	119.00	39504	11097691	µg/L
Aroclor 1260	120.00	39508	11096825	µg/L
Arsenic, Dissolved	322.00	01000	7440382	µg/L
Arsenic, Inorganic (dissolved)	121.00	01000	7440382	µg/L
Arsenic, Total	137.00	01002	7440382	µg/L
Arsenic, Total Recoverable	122.00	00978	7440382	µg/L
Asbestos	123.00	34225	1332214	µg/L
Atraton	280.00	82185	1610179	µg/L
Atrazine	281.00	39033	1912249	µg/L
Avadex	532.00	73386	2303164	mg/Kg
Avenge	330.01	78882	43222486	µg/L
Azinphos-Ethyl	282.00	81292	2642719	µg/L
Azinphos-Methyl (Guthion)	359.01	39580	86500	µg/L
Azobenzene	595.00	77625	103333	µg/L
Azodrin	383.01	81890	6923224	µg/L
BFB	459.00			%
BHC	132.00	81283	608731	µg/L
BOD	499.01	00310		mg/L
Balan	283.00	39002	1861401	µg/L
Banvel	284.00	82052	1918009	µg/L
Barium, Dissolved	508.00	01005	7440393	µg/L
Barium, Total	509.00	01007	7440393	µg/L
Barium, Total Recoverable	124.00	01009	7440393	µg/L
Basagran	286.01	38710	25057890	µg/L
Basalin	354.01	79194	3324539	µg/L
Basanite	337.01	81287	88857	µg/L
Baygon	424.01	38537	114261	µg/L
Baymix	307.02	81293	56724	µg/L

CAS NO should be read as follows. From Right: 1 digit, dash, 2 digits, dash (ie 1774-85-0).

COMP_NAME	JHK_NO	STORET_NO	CAS_NO	UNITS
Baytex	351.01	38685	55389	µg/L
Benefin	283.01	39002	1861401	µg/L
Benfluralin	283.02	39002	1861401	µg/L
Benlate	285.01	38705	17804352	µg/L
Benomyl	285.00	38705	17804352	µg/L
Bensulide	288.01	82197	741582	µg/L
Bentazon	286.00	38710	25057890	µg/L
Benz(a)anthracene	130.01	34526	56553	µg/L
Benzene	41.00	34030	71432	µg/L
Benzene, 1-chloro-4-(methylsulfony+	572.00			
Benzidine	125.00	39120	92875	µg/L
Benzo(a)anthracene	130.00	34526	56553	µg/L
Benzo(a)pyrene	126.00	34247	50328	µg/L
Benzo(b)fluoranthene	127.00	34230	205992	µg/L
Benzo(b/k)fluoranthene	531.00	34242	207089	µg/L
Benzo(g,h,i)perylene	128.00	34521	191242	µg/L
Benzo(ghi)perylene	128.01	34521	191242	µg/L
Benzo(k)fluoranthene	129.00	34242	207089	µg/L
Benzoic acid	42.00	77247	65850	µg/L
Benzol	41.01	34030	71432	µg/L
Benzotrichloride	596.00		98077	µg/L
Benzyl alcohol	43.00	77147	100516	µg/L
Benzyl chloride	597.00	73520	100447	µg/L
Beryllium, Dissolved	515.00	01010	7440417	µg/L
Beryllium, Total	514.00	01012	7440417	µg/L
Beryllium, Total Recoverable	131.00	00998	7440417	µg/L
Beta Particle Activity, gross	612.00	85817	12587472	pCi/L
Betasan	288.00	82197	741582	µg/L
Bicarbonate as CaCO3	454.00	00425	471341	mg/L
Bicarbonate as HCO3	133.00	00440	71523	mg/L
Bidrin	328.01	38454	141662	µg/L
Bifenox	382.01	78883	42576023	µg/L
Biochemical Oxygen Demand	499.00	00310		mg/L
Bis(2-chloroethoxy)methane	44.00	34278	111911	µg/L
Bis(2-chloroethyl)ether	45.00	34273	111444	µg/L
Bis(2-chloroisopropyl)ether	46.00	34283	108601	µg/L
Bis(2-ethylhexyl) ester hexanedioi+	577.00	103321		
Bis(2-ethylhexyl)phthalate	140.00	39100	117817	µg/L
Bis(chloromethyl)ether	598.00	34268	542881	µg/L
Bis(n-octyl)phthalate	465.01	34596	117840	µg/L
Boron	134.00	01020	7440428	µg/L
Bravo	313.02	70314	1897456	µg/L
Bromacil	289.00	82198	314409	µg/L
Bromex	386.01	38855	300765	µg/L
Bromide(dissolved)	135.00	82298	24959679	µg/L
Bromobenzene	542.00	81555	108861	µg/L

CAS NO should be read as follows. From Right: 1 digit, dash, 2 digits, dash (ie 1774-85-0).

APPENDIX D: CHEMICAL DICTIONARY
01/27/93

COMP_NAME	JHK_NO	STORET_NO	CAS_NO	UNITS
Bromochloromethane	533.00	32105	124481	µg/L
Bromodichloromethane	47.00	32101	75274	µg/L
Bromoform	48.00	32104	75252	µg/L
Bromomethane	49.00	34413	74839	µg/L
Bromoxynil (Water, Whole)	556.00	70979	1689845	µg/L
Butachlor, Water/Whole/Recoverable	633.00	30235	23184669	µg/L
Butanone	376.02	81595	78933	µg/L
Butyl benzyl phthalate	136.00	34292	85687	µg/L
Butylate	290.00	81410	2008415	µg/L
Butylbenzenes, Total	292.01	45049		µg/L
C3-Alkylbenzenes, Total	291.00	45046		µg/L
C4-Alkylbenzenes, Total	292.00	45049		µg/L
CEC	161.01	81356		meq/100G
CIPC	305.01	81322	101213	µg/L
COD	492.01	81319		mg/L
Cadmium, Dissolved	406.00	01025	7440439	µg/L
Cadmium, Total	407.00	01027	7440439	µg/L
Cadmium, Total Recoverable	138.00	01113	7440439	µg/L
Calcium	521.00	00910	7440702	mg/L as CaCO3
Calcium, Dissolved	520.00	00915	7440702	mg/L
Calcium, Total	141.00	00916	7440702	mg/L
Camphor (ACN)	287.00	81324	76222	µg/L
Captan	293.00	39640	133062	µg/L
Carbaryl	294.00	77700	63252	µg/L
Carbazole	329.00	77571	86748	µg/L
Carbendazim	295.00	38735	10605217	µg/L
Carbofuran	296.00	81405	1563662	µg/L
Carbon disulfide	50.00	77041	75150	µg/L
Carbon tetrachloride	51.00	32102	56235	µg/L
Carbon, Total Organic	250.00	00680	7440440	µg/L
Carbonate as CO3	142.00	00445	3812326	mg/L
Carbonate as CaCO3	455.00	00430	471341	mg/L
Carbophenothion	297.00	39786	786196	µg/L
Carboxin	139.00	70987	5234684	µg/L
Cation Balance	143.00			
Cation Exchange Capacity	161.00	81356		meq/100G
Chemical Oxygen Demand	492.00	81319		mg/L
Chloramben	276.01	82051	133904	µg/L
Chlordane	144.00	39350	57749	µg/L
Chlordecon	298.00	81281	143500	µg/L
Chlordimeform	299.00	77953	6164983	µg/L
Chloride, Total	145.00	00940	16887006	mg/L
Chlorine, Total Residual	146.00	50060	7782505	mg/L
Chlorobenzene	52.00	34301	108907	µg/L
Chlorobenzilate	300.00	39460	510156	µg/L
Chlorocyclohexane	86.00	77217	542187	µg/L
Chlorodibromomethane	58.01	32105	124481	µg/L
Chloroethane	53.00	34311	75003	µg/L

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APPENDIX D: CHEMICAL DICTIONARY
01/27/93

COMP_NAME	JHK_NO	STORET_NO	CAS_NO	UNITS
Chloroethene	82.03	39175	75014	µg/L
Chloroethylene	82.02	39175	75014	µg/L
Chloroform	54.00	32106	67663	µg/L
Chloromethane	55.00	34418	74873	µg/L
Chloroneb	301.00	38423	2675776	µg/L
Chloropicrin	303.00	77548	76062	µg/L
Chloropropham	305.00	81322	101213	µg/L
Chloropropylate	302.00	38429	5836102	µg/L
Chlorothalonil	313.01	70314	1897456	µg/L
Chlorpyrifos	304.00	77969	2921882	µg/L
Chlorthal	314.02	39770	1861321	µg/L
Chromium VI	506.01	01032	18540299	µg/L
Chromium, Dissolved	516.00	01030	7440473	µg/L
Chromium, Hexavalent	506.00	01032	18540299	µg/L
Chromium, Total	491.00	01034	7440473	µg/L
Chromium, Total Recoverable	147.00	01118	7440473	µg/L
Chrysene	148.00	34320	218019	µg/L
Cinnamene	74.03	77128	100425	µg/L
Ciodrin	306.00	82565	7700176	µg/L
Co-Ral	307.01	81293	56724	µg/L
Cobalt	149.00	01037	7440484	µg/L
Coliform, Fecal	505.01	31616		#/100ml
Coliform, Total	150.00	31628		#/100ml
Color	599.00		00080	std. units
Conductivity	449.02		00094	µmhos/cm
Copper, Dissolved	408.00	01040	7440508	µg/L
Copper, Total	442.00	01042	7440508	µg/L
Copper, Total Recoverable	152.00	01119	7440508	µg/L
Corrosivity	600.00			std. units
Coumaphos	307.00	81293	56724	µg/L
Creosote	308.00	39140	8801589	µg/L
Crotoxyphos	306.01	82565	7700176	µg/L
Cumene	309.00	77223	98828	µg/L
Cyanazine	310.00	81757	21725462	µg/L
Cyanide	153.00	78248	57125	µg/L
Cyanide, Dissolved Std Method	279.00	00723	57125	µg/L
Cycloate	311.00	81892	1134232	µg/L
Cyclohexane	254.00	81570	110827	µg/L
D-D Mix	441.01	81610	96184	µg/L
DBCP	315.00	38761	96128	µg/L
DCNA	316.00	38447	99309	µg/L
DCOD	168.01	80116		mg/L
DCPA	314.01	39770	1861321	µg/L
DDD	208.00	39360	72548	µg/L
DDE	209.00	39365	72559	µg/L
DDT	210.00	39370	50293	µg/L
DDVP	317.00	73071	62737	µg/L

CAS NO should be read as follows. From Right: 1 digit, dash, 2 digits, dash (ie 1774-85-0).

APPENDIX D: CHEMICAL DICTIONARY
01/27/93

COMP_NAME	JHK_NO	STORET_NO	CAS_NO	UNITS
DEF	324.00	81295	78488	µg/L
DMPA	336.00	81285	299854	µg/L
DNBP	337.00	81287	88857	µg/L
DNOC	338.00	34657	534521	µg/L
DO	169.01	00299	7782447	mg/L
Daconil	313.00	70314	1897456	µg/L
Dacthal	314.00	39770	1861321	µg/L
Dalapon	312.00	38432	75990	µg/L
Dasanit	350.01	38684	115902	µg/L
Demeton	325.00	39560	8065483	µg/L
Devrinol	387.01	79195	1529999	µg/L
Di-n-butylphthalate	155.00	39110	84742	µg/L
Di-n-octylphthalate	465.00	34596	117840	µg/L
Diallate	532.01	73386	2303164	mg/Kg
Diazinon	158.00	39570	333415	µg/L
Dibenz(a,h)anthracene	159.01	34556	53703	µg/L
Dibenz(a,h)anthracene-d	14557.00	79040	53703	mg/Kg
Dibenzo(a,h)anthracene	159.00	34556	53703	µg/L
Dibenzofuran	57.00	81302	132649	µg/L
Dibromochloromethane	58.00	32105	124481	µg/L
Dibromochloropropane	315.01	38761	96128	µg/L
Dibromodichloromethane	489.00	77779	594183	µg/L
Dibromomethane	160.00	81522	106934	µg/L
Dicamba	284.01	82052	1918009	µg/L
Dichloran	316.01	38447	99309	µg/L
Dichlorobromomethane	47.01	32101	75274	µg/L
Dichlorodifluoromethane	162.00	34668	75718	µg/L
Dichloromethane	68.02	34423	75092	µg/L
Dichloroprop	244.00	30190	120365	µg/L
Dichlorvos (DDVP)	317.01	73071	62737	µg/L
Dicofol	327.00	39780	115322	µg/L
Dicrotophos	328.00	38454	141662	µg/L
Dicyclopropyl methanone	579.00			µg/L
Dieldrin	164.00	39380	60571	µg/L
Diesel	472.00	78939	68476346	µg/L
Diethyl ether	165.00	81576	60297	µg/L
Diethylphthalate	59.00	34336	84662	µg/L
Diethylphthalate-d4	558.00			
Difenson	397.01	39022	80331	µg/L
Difenzoquat	330.00	78882	43222486	µg/L
Diisopropyl ether	154.00	81577	108203	µg/L
Dimecron	414.01	78881	13171216	µg/L
Dimethoate	331.00	46314	60515	µg/L
Dimethyl ketone	40.02	81552	67641	µg/L
Dimethyldisulfide	166.00	81580	624920	µg/L
Dimethylphthalate	60.00	34341	131113	µg/L
Dimethyltetrachlorophthalate	314.03	39770	1861321	µg/L
Dinitro-o-cresol	338.01	34657	534521	µg/L

CAS NO should be read as follows. From Right: 1 digit, dash, 2 digits, dash (ie 1774-85-0).

COMP_NAME	JHK_NO	STORET_NO	CAS_NO	UNITS
Dinoseb	337.02	81287	88857	µg/L
Dioxathion	332.00	38783	78342	µg/L
Dioxin	87.01	34675	1746016	µg/L
Diphenamide	333.00	78004	957517	µg/L
Diphenoloxide	167.00	77587	101848	µg/L
Diquat	334.00	78885	85007	µg/L
Direct Black 38	601.00			µg/L
Direct Blue 6	602.00		2602462	µg/L
Direct Brown 95	603.00		16071866	µg/L
Dissolved COD	168.00		80116	mg/L
Dissolved Oxygen	169.00	00299	7782447	mg/L
Dissolved TOC	170.00	00679	7440440	kg/100GAL
Disufoton sulfone	642.00			µg/L
Disulfoton (Di-Syston)	171.00	81888	298044	µg/L
Disulfoton sulfoxide	643.01	81030	2497076	µg/L
Dithane	365.01	38831	8018017	µg/L
Dithiocarbamate	446.01	38917	137304	µg/L
Diuron	335.00	39650	330541	µg/L
Dowpon	312.01	38432	75990	µg/L
Dursban	304.01	77969	2921882	µg/L
Dyfonate	339.00	81294	944229	µg/L
Dylox	340.00	39014	52686	µg/L
EC	449.01	00094		µmhos/cm
EDB	8.01	77651	106934	µg/L
EPN	344.00	81290	2104645	µg/L
EPTC	345.00	81894	759944	µg/L
Endosulfan	341.00	34361	959988	µg/L
Endosulfan I	341.01	34361	959988	µg/L
Endosulfan II	342.00	34356	33213659	µg/L
Endosulfan Sulfate	172.00	34351	1031078	µg/L
Endothall	343.00	38926	145733	µg/L
Endrin	174.00	39390	72208	µg/L
Endrin Aldehyde	173.00	34366	7421934	µg/L
Endrin Ketone	490.00	78008	53494705	µg/L
Enide	333.01	78004	957517	µg/L
Epichlorohydrin	604.00	106898		µg/L
Eptam	345.01	81894	759944	µg/L
Etazine	428.01	38542	26259450	µg/L
Ethanol	346.00	77004	64175	µg/L
Ethenylbenzene	74.04	77128	100425	µg/L
Ethion	175.00	39398	563122	µg/L
Ethoprop	634.00	81758	13194484	µg/L
Ethyl acetate	176.00	81585	141786	µg/L
Ethyl acrylate	605.00		140885	µg/L
Ethyl alcohol	346.01	77004	64175	µg/L
Ethyl isopropyl ketone	95.01	78133	108101	µg/L
Ethylan	411.01	39034	72560	µg/L

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APPENDIX D: CHEMICAL DICTIONARY
01/27/93

COMP_NAME	JHK_NO	STORET_NO	CAS_NO	UNITS
Ethylbenzene	61.00	34371	100414	µg/L
Ethylene dibromide	8.02	77651	106934	µg/L
Ethylene dichloride	10.01	34531	107062	µg/L
Ethylene glycol	347.00	77023	107211	µg/L
Ethylene thiourea	348.01	38928	96457	µg/L
Ethylidene thiourea	348.00	38928	96457	µg/L
Evik	275.01	82184	834128	µg/L
Fecal Coliform, MFM-FCBR	505.00	31616		#/100ml
Fenamiphos	349.00	38929	22224926	µg/L
Fenarimol	635.00			µg/L
Fensulfothion	350.00	38684	115902	µg/L
Fenthion	351.00	38685	55389	µg/L
Fenuron	352.00	38468	101428	µg/L
Ferbam	353.00	38806	14484641	µg/L
Ferric(3+)	188.01	01045	7439896	µg/L
Ferrous(2+)	188.02	01045	7439896	µg/L
Fluchloralin	354.00	79194	3324539	µg/L
Fluoranthene	177.00	34376	206440	µg/L
Fluorene	62.00	34381	86737	µg/L
Fluorescein(Sodium)	178.00		518478	
Fluoride	179.00	00950	16984488	mg/L
Fluormeturon	355.00	38811	2164172	µg/L
Fluridone	636.00		59756604	µg/L
Foaming Agents	606.00	01288		mg/L
Folex	369.01	39019	150505	µg/L
Folpet	607.00	46351	133073	µg/L
Fonofos	339.01	81294	944229	µg/L
Formaldehyde	356.00	71880	50000	mg/L
Freon 113	3.01	77652	76131	µg/L
Freon 12, Halon	162.01	34668	75718	µg/L
Furadan	296.01	81405	1563662	µg/L
Furazolidone	608.00	67458		µg/L
Furium	609.00			µg/L
Furmecyclox	610.00		60568050	µg/L
Gardona	581.01	38877	961115	
Gardoprim	436.01	38559	5915413	µg/L
Gasoline	471.00		6842596	
Gesatamin	280.01	82185	1610179	µg/L
Glyphosate	358.00	79743	1071836	µg/L
Grain alcohol	346.02	77004	64175	µg/L
Guthion	359.00	39580	86500	µg/L
Hardness, Total	248.00	00900	471341	mg/L CaCO3
Heptachlor	181.00	39410	76448	µg/L
Heptachlor Epoxide	180.00	39420	1024573	µg/L
Heptene	182.00	81589	25339564	µg/L
Hexachlorobenzene	183.00	39700	118741	µg/L
Hexachlorobutadiene	63.00	34391	87683	µg/L

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APPENDIX D: CHEMICAL DICTIONARY
01/27/93

COMP_NAME	JHK_NO	STORET_NO	CAS_NO	UNITS
Hexachlorocyclohexane	132.01	81283	608731	µg/L
Hexachlorocyclohexane (alpha)	265.04	39337	319846	µg/L
Hexachlorocyclopentadiene	64.00	34386	77474	µg/L
Hexachloroethane	65.00	34396	67721	µg/L
Hexazinone	360.00	38815	51235042	µg/L
Hydram	394.02	82199	2212671	µg/L
Hydrazine	184.00	81313	302012	mg/L
Hydrocarbons, Total	473.00	81336		mg/L
Hydrocarbons, Total Fuel	462.00			
Hydrocarbons, Total Petroleum	461.00	46116	14280309	mg/L
Hydroxide	185.00	71830	14280309	mg/L
Hydroxide as CaCO3	456.00			
Hyvar	289.01	82198	314409	µg/L
IPC	423.01	39052	122429	µg/L
Imidan	361.00	39800	732116	µg/L
Indeno(1,2,3-cd)pyrene	186.00	34403	193395	µg/L
IntStd: 2,4,6-Tribromophenol	559.00	34719	118796	µg/L
IntStd: Hexabromobenzene	560.00			
Ion Balance	451.00			%
Ioxynil	561.00		16898341	µg/L
Iron, Dissolved	323.00	01046	7439896	µg/L
Iron, Total	188.00	01045	7439896	µg/L
Iron, Total Recoverable	362.00	00980	7439896	µg/L
Isobutylbenzene	552.00	77334	538932	µg/L
Isophorone	66.00	34408	78591	µg/L
Isopropyl carbanilate	423.02	39052	122429	µg/L
Isopropylbenzene (Cumene)	309.01	77223	98828	µg/L
Karmex	335.01	39650	330541	µg/L
Kepone	298.01	81281	143500	µg/L
Kerb	419.01	39080	23950585	mg/Kg
Kerosene	363.00	78878	8008206	µg/L
Kjeldahl-N, Total	249.00	00625	17778880	mg/L as N
Langlier Index	500.00			
Lead, Dissolved	402.00	01049	7439921	µg/L
Lead, Organic	463.00			
Lead, Total	403.00	01051	7439921	µg/L
Lead, Total Recoverable	189.00	01114	7439921	µg/L
Lindane	357.01	39340	58899	µg/L
Linuron	364.00	39530	330552	µg/L
Lithium	466.00	01130	7439932	µg/L
Lorsban	304.02	77969	2921882	µg/L
MBAS	233.01	34790	7429905	mg/L
MCPA	367.00	39151	94746	µg/L
MCPA Dimethylamine Salt	367.01	39151	94746	µg/L
MCPB	368.00	38486	94815	µg/L
MCPP (Water, Total)	562.00	38491	93652	µg/L
MEK	376.01	81595	78933	µg/L

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APPENDIX D: CHEMICAL DICTIONARY
01/27/93

COMP_NAME	JHK_NO	STORET_NO	CAS_NO	UNITS
MIBK	34.02	78133	108101	µg/L
MSMA	385.00	38935	2163806	µg/L
Magnesium as CaCO3	519.00	00920	7439954	mg/L
Magnesium, Dissolved	518.00	00925	7439954	mg/L
Magnesium, Total	191.00	00927	7439954	mg/L
Malathion	192.00	39530	121755	µg/L
Mancozeb	365.00	38831	8018017	µg/L
Maneb	366.00	38835	12427382	µg/L
Manganese, Dissolved	404.00	01056	7439965	µg/L
Manganese, Total	193.00	01055	7439965	µg/L
Manganese, Total Recoverable	405.00	01123	7439965	µg/L
Matacil	277.01	38404	2032599	µg/L
Mercury, Dissolved	477.00	71890	7439976	µg/L
Mercury, Total	476.00	71900	7439976	µg/L
Mercury, Total Recoverable	194.00	71901	7439976	µg/L
Merphos	369.00	39019	150505	µg/L
Mesitylene	370.00	77226	108678	µg/L
Metasystox	371.00	39020	8022002	µg/L
Methidathion	374.00	78879	950378	µg/L
Methiocarb	373.00	38500	2032657	µg/L
Methomidophos	372.00	38927	10265926	µg/L
Methomyl	375.00	39051	16752775	µg/L
Methoxychlor	195.00	39480	72435	µg/L
Methyl Phenols, Total	378.00	45058	1319773	µg/L
Methyl Trithion	197.00	39790	953173	µg/L
Methyl Xylenes, Total	444.01	78136	25551137	µg/L
Methyl bromide	49.01	34413	74839	µg/L
Methyl chloride	55.01	34418	74873	µg/L
Methyl ethyl ketone	376.00	81595	78933	µg/L
Methyl isobutyl ketone	34.01	78133	108101	µg/L
Methyl ketone	40.03	81552	67641	µg/L
Methyl n-butyl ketone	25.01	77103	591786	µg/L
Methyl n-propyl ketone	97.01	77060	107879	µg/L
Methyl paraoxon	637.00			µg/L
Methylbenzene	76.01	34010	108883	µg/L
Methylcyclohexane	198.00	77100	108872	µg/L
Methylene Blue Active Substances	493.00	38260	61734	
Methylene bromide	160.01	81522	106934	µg/L
Methylene chloride	68.00	34423	75092	µg/L
Metolachlor	163.00		51218452	µg/L
Metribuzin	379.00	81408	21087649	µg/L
Mevinphos	413.01	39610	7786347	µg/L
Mexacarbate	380.00	38507	315184	µg/L
Mirex	381.00	39755	2385855	µg/L
Modown	382.00	78883	42576023	µg/L
Molinate	394.01	82199	2212671	µg/L

CAS NO should be read as follows. From Right: 1 digit, dash, 2 digits, dash (ie 1774-85-0).

APPENDIX D: CHEMICAL DICTIONARY
01/27/93

COMP_NAME	JHK_NO	STORET_NO	CAS_NO	UNITS
Molybdenum	467.00	01060	7439987	µg/L
Monitor	372.01	38927	10265926	µg/L
Monochloroethene	82.04	38175	75014	µg/L
Monochloroethylene	82.01	39175	75014	µg/L
Monocrotophos	383.00	81890	6923224	µg/L
Monsodium methyl arsonate	385.01	38935	2163806	µg/L
Monuron	384.00	38511	150685	µg/L
N-Nitroso-N-methylethylamine	613.00	73613	10595956	µg/L
N-Nitroso-di-n-butylamine	614.00	73609	924163	µg/L
N-Nitroso-di-n-propylamine	69.00	34428	621647	µg/L
N-Nitrosodiethanolamine	615.00	73610	1116547	µg/L
N-Nitrosodiethylamine	616.00	73611	55185	µg/L
N-Nitrosodimethylamine	392.00	34438	62759	µg/L
N-Nitrosodiphenylamine	199.00	34433	86306	µg/L
N-Nitrosopyrrolidine	617.00	78206	930552	µg/L
NH3-N, Total	109.01	00610	17778880	mg/L as N
NO3+NO2-N, Total	321.01	00630	17778880	mg/L as N
Naled	386.00	38855	300765	µg/L
Naphthalene	70.00	34696	91203	µg/L
Napropamide	387.00	79195	1529999	µg/L
Neburon	388.00	38521	555373	µg/L
Nemacure	349.01	38929	22224926	µg/L
Nickel, Dissolved	481.00	01065	7440020	µg/L
Nickel, Total	483.00	01067	7440020	µg/L
Nickel, Total Recoverable	200.00	01074	7440020	µg/L
Nitrate+Nitrite-N, Total	321.00	00630	17778880	mg/L as N
Nitrate-N	452.00	00620	17778880	mg/L as N
Nitrite-N	202.00	00615	17778880	mg/L as N
Nitrobenzene	71.00	34447	98953	µg/L
Nitrofen	389.00	81303	1836755	µg/L
Nitrofurazone	618.00	59870		µg/L
Nitroguanidine	203.00	79753	556887	µg/L
Nonadecane	391.00	77822	629925	µg/L
Norflurazon, in Water	639.00	78064		µg/L
OBPA	206.00	58366		
Octachloronaphthalene	563.00		2234131	µg/L
Odor	619.00			std. units
Oil & Grease	207.00	03582		mg/L
Ordram	394.00	82199	2212671	µg/L
Orthene	395.00	81815	30560191	µg/L
Oryzalin	396.00	78884	19044883	µg/L
Ovex	397.00	39022	80331	µg/L
Oxamyl	398.00	38865	23135220	µg/L
Oxydisulfoton (Disyston Sulphoxide)	643.00	81030	2497076	µg/L
PAH (Polyaromatic hydrocarbons)	620.00			µg/L
PBB (Polybrominated Biphenyls)	621.00		59536651	µg/L
PCB	219.01	76012	1336363	µg/L

CAS NO should be read as follows. From Right: 1 digit, dash, 2 digits, dash (ie 1774-85-0).

APPENDIX D: CHEMICAL DICTIONARY
01/27/93

COMP_NAME	JHK_NO	STORET_NO	CAS_NO	UNITS
PCB-1016	114.01	34671	12674112	µg/L
PCB-1221	115.01	39488	1104282	µg/L
PCB-1232	116.01	39492	11141165	µg/L
PCB-1242	117.01	39496	53469219	µg/L
PCB-1248	118.01	39500	12672296	µg/L
PCB-1254	119.01	39504	11097691	µg/L
PCB-1260	120.01	39508	11096825	µg/L
PCE	75.01	34475	127184	µg/L
PCNB	409.00	39029	81316	µg/L
PCP	213.01	39032	87865	µg/L
PID Reading	470.00			
Paraquat	399.00	82416	4685147	µg/L
Parathion	212.00	39540	56382	µg/L
Parathion, Ethyl-	400.00	46315	56382	µg/L
Parathion, Methyl-	401.00	39600	298000	µg/L
Pebulate, Water, Whole	640.00	79192		µg/L
Pendimethalin	222.02	79190	40487421	µg/L
Penoxalin	222.00	82410	40487421	µg/L
Pentachlorobenzene	410.00	77793	608935	µg/L
Pentachlorophenol	213.00	39032	87865	µg/L
Perchlorate	214.00			
Perchloroethene	75.03	34475	127184	µg/L
Perchloroethylene	75.02	34475	127184	µg/L
Persulfate-N, Total	580.00		7727540	µg/L
Perthane	411.00	39034	72560	µg/L
Phenanthrene	216.00	34461	85018	µg/L
Phencapton (Water, Whole)	564.00	81289	2275141	µg/L
Phenol	73.00	34694	108952	µg/L
Phenol, 4-AAP	217.00		108952	
Phenylethylene	74.02	77128	100425	µg/L
Phorate	218.00	46313	298022	µg/L
Phosalone	412.00	81291	2310170	µg/L
Phosdrin	413.00	39610	7786347	µg/L
Phosmet	361.01	39800	732116	µg/L
Phosphamide	331.01	46314	60515	µg/L
Phosphamidon	414.00	78881	13171216	µg/L
Phosphate-P, Diss Ortho	498.00	00671	7723140	mg/L as P
Phosphate-P, Ortho	205.00	00660	14265442	mg/L as PO 4
Phosphorodithioic acid, O,O,S-trim +	573.00	39580	86500	µg/L
Phosphorous-P, Total	251.00	00665	7723140	mg/L as P
Picloram	257.00	39720	1918021	µg/L
Polychlorinated biphenyl	219.00	76012	1336363	µg/L
Potassium, Dissolved	517.00	00935	7440097	mg/L
Potassium, Total	220.00	00937	7440097	mg/L
Princep	430.01	39055	122349	µg/L
Profluralin	415.00	38872	26399360	µg/L

CAS NO should be read as follows. From Right: 1 digit, dash, 2 digits, dash (ie 1774-85-0).

APPENDIX D: CHEMICAL DICTIONARY
01/27/93

COMP_NAME	JHK_NO	STORET_NO	CAS_NO	UNITS
Prometon	416.00	39056	1610180	µg/L
Prometryn	417.00	39057	7287196	µg/L
Pronamide	419.00	39080	23950585	µg/L
Propachlor	418.00	38533	1918167	µg/L
Propane	420.00	82358	74986	µg/L
Propanone	40.01	81552	67641	µg/L
Propargite	421.00	82065	2312358	mg/L
Propazine	422.00	39024	139402	µg/L
Propham	423.00	39052	122429	µg/L
Propoxur	424.00	38537	114261	µg/L
Propylbenzenes, Total	291.01	45046		µg/L
Propylene oxide	622.00	77011	75569	µg/L
Prowl	222.01	79190	40487421	µg/L
Prowl, Lechate	221.00	79190	40487421	µg/L
Prowl, Soil	223.00	85793	40487421	µg/L
Pyrene	224.00	34469	129000	µg/L
Pyrethrins	425.00	39930	8003347	µg/L
Radium 226	623.00	09501	13982633	pCi/L
Radium 226 & 228	624.00	11503		pCi/L
Retene	457.00	73076	483658	µg/L
Roneet	311.01	81892	1134232	µg/L
Ronnel	427.00	39357	299843	µg/L
Round-up	426.00	39941	1071836	µg/L
SCA	225.00			
Secbumeton	428.00	38542	26259450	µg/L
Selenium, Dissolved	484.00	01145	7782492	µg/L
Selenium, Total	485.00	01147	7782492	µg/L
Selenium, Total Recoverable	226.00	00981	7782492	µg/L
Sencore	379.01	81408	21087649	µg/L
Sevin	294.01	77700	63252	µg/L
Siduron	429.00	38548	1982496	µg/L
Silica (SIO2)	227.00	00992	7631869	µg/L
Silicate	497.00	00958		mg/L
Silver, Dissolved	495.00	01075	7440224	µg/L
Silver, Total	234.00	01077	7440224	µg/L
Silver, Total Recoverable	228.00	01079	7440224	µg/L
Simazine	430.00	39055	122349	µg/L
Simetryn	431.00	39054	1014706	µg/L
Sodium Absorption Ratio	501.00	00931	7440235	SAR
Sodium Chlorate	229.00	00726	7775099	µg/L
Sodium, Total	450.00	00929	7440235	mg/L
Solids, Total Dissolved	247.03	70300		µg/L
Solids, Total Suspended	496.01	74016		mg/L
Specific Conductance (Field)	502.00	00094		µmhos/cm
Specific Conductance @ 25C (LAB)	151.00	00095		µmhos/cm
Specific Conductance(fIELD)	449.00	00094		µmhos/cm

CAS NO should be read as follows. From Right: 1 digit, dash, 2 digits, dash (ie 1774-85-0).

APPENDIX D: CHEMICAL DICTIONARY
01/27/93

COMP_NAME	JHK_NO	STORET_NO	CAS_NO	UNITS
Stirofos	432.00	38877	961115	µg/L
Strontium-90	625.00	13501	10098972	pCi/L
Styrene	74.00	77128	100425	µg/L
Sulfate, Total	230.00	00945	14808798	mg/L as SO4
Sulfide, Total	231.00	00745	18496258	mg/L
Sulfite, Total	232.00	00740	14265453	mg/L as SO3
Sumitol	428.02	38542	26259450	µg/L
Supracide	374.01	78879	950378	µg/L
Surfactants	233.00	03581		mg/L
Surflan	396.01	78884	19044883	µg/L
Surrog: 1,2-Dichloroethane-d4	460.00			%
Surrog: 1,4-Bromofluorobenzene	187.00			
Surrog: 1-Bromo-2-floroethane	157.00			
Surrog: 2-Chlorophenol-d4 (spike)	565.00	95978		
Surrog: 2-Fluorobiphenyl	479.00			
Surrog: 2-Fluorophenol	480.00			
Surrog: 4-Chloroaniline-d4	566.00			
Surrog: Dibutylchlorendate (spike)	567.00			
Surrog: Fluorene-d10 (spike)	568.00			
Surrog: Nitrobenzene-d5	474.00			
Surrog: Phenol-d5	526.00			
Surrog: Pyrene-d10 (spike)	377.00			
Surrog: Toluene-d8	458.00			%
Surrog: p-Terphenyl-d14	525.00			
Sutan	290.01	81410	2008415	µg/L
Swep	433.00	38555	918189	µg/L
Systox	325.01	39560	8065483	µg/L
T3	236.00	78166		µg/L
T4	237.00	51489		µg/L
TCE	80.01	39180	79016	µg/L
TDS	247.01	70300		µg/L
TEPP	435.00	39620	107493	µg/L
TFH	462.01			
TKN	249.01	00625	17778880	mg/L as N
TOC	250.01	00680	7440440	µg/L
TOS (Calculated)	245.00			
TPH	461.01	46116	14280309	mg/L
TPN, Total Persulfate Nitrogen	580.01		7727540	µg/L
TSS	496.00		74016	mg/L
Tebuthiuron	190.00		34014181	µg/L
Tedion	434.00	39808	116290	µg/L
Temik	274.01	39053	116063	µg/L
Temperature, 0 C	238.00	00010	0	C
Temperature, 0 F	239.00	00011	0	F
Terbacil	204.00		5902152	µg/L
Terbuthylazine	436.00	38559	5915413	µg/L
Terbutryn	437.00	38887	886500	µg/L

CAS NO should be read as follows. From Right: 1 digit, dash, 2 digits, dash (ie 1774-85-0).

APPENDIX D: CHEMICAL DICTIONARY
01/27/93

COMP_NAME	JHK_NO	STORET_NO	CAS_NO	UNITS
Tetrachloroethene	75.00	34475	127184	µg/L
Tetrachloroethylene	75.04	34475	127184	µg/L
Tetrachloromethane	51.01	32102	56235	µg/L
Tetrachlorophenol	438.00	81849	25167833	µg/L
Tetrachlorvinphos	581.00	38877	961115	
Tetradifon	434.01	39808	116290	µg/L
Tetraethyldiphosphate	435.01	39620	107493	µg/L
Tetrahydrofuran	241.00	81607	109999	µg/L
Thallium, Dissolved	522.00	01057	7440280	µg/L
Thallium, Total	523.00	01059	7440280	µg/L
Thallium, Total Recoverable	242.00	00982	7440280	µg/L
Thiophanate	439.01	78880	23564069	µg/L
Thiosulfate	243.00			
Tin, Dissolved	513.00	01100	7440315	µg/L
Tin, Total	512.00	01102	7440315	µg/L
Tin, Total Recoverable	468.00	00983	7440315	µg/L
Titanium	469.00	01150	7440326	µg/L
Toluene	76.00	34010	108883	µg/L
Topsin-MR	439.00	78880	23564069	µg/L
Total BTEX	478.00	34103		µg/L
Total BTX	72.00	34103	n/a	µg/L
Total Dissolved Solids (residue)	247.00	70300		µg/L
Total Filterable Residue	247.02	70300		µg/L
Total Organic Halides	503.00	70353		µg/L
Total Organics	486.00	81299		µg/L
Total Solids	253.00	70297		Kg/100Gal
Total Solids	252.00	70318		%
Total Trihalomethanes	494.00	82080		µg/L
Toxaphene	255.00	39400	8001352	µg/L
Treflan	443.01	81284	1582098	µg/L
Triadimefon	440.00	38892	43121433	µg/L
Trichlorobenzoic acid	551.00	50317		
Trichloroethene	80.00	39180	79016	µg/L
Trichloroethylene	80.02	39180	79016	µg/L
Trichlorofluoromethane	83.00	34488	75694	µg/L
Trichloromethane	54.01	32106	67663	µg/L
Trichlorophon	340.01	39014	52686	µg/L
Trichlorotrifluoroethane	3.02	81611	26523648	µg/L
Trichlorotrinitrobenzenes,Total	258.00			
Tricyclazole, Water, Whole	641.00	38902	41814782	µg/L
Trifluralin	443.00	81284	1582098	µg/L
Trimethyl Benzenes, Total	444.00	78136	25551137	µg/L
Trimethyl phosphate	626.00		512561	µg/L
Trinitrobenzenes, Total	259.00			
Triphenyl phosphate (Water, Whole)	569.00	77881	115866	µg/L
Trithion	297.01	39786	786196	µg/L
Tritium	627.00	07000	10028178	pCi/L

CAS NO should be read as follows. From Right: 1 digit, dash, 2 digits, dash (ie 1774-85-0).

APPENDIX D: CHEMICAL DICTIONARY
01/27/93

COMP_NAME	JHK_NO	STORET_NO	CAS_NO	UNITS
Turbidity(Lab)	260.00	82079		NTU
UDMH	261.00	81314	57147	mg/L
Vanadium (Dissolved)	262.00	10085	7440622	
Velpar	360.01	38815	51235042	µg/L
Vernam	445.01	82200	1929777	µg/L
Vernolate	445.00	82200	1929777	µg/L
Vinyl acetate	81.00	77057	108054	µg/L
Vinyl chloride	82.00	39175	75014	µg/L
Vinyl trichloride	4.01	34511	79005	µg/L
Vinylbenzene	74.01	77128	100425	µg/L
Volatile Dissolved Solids	263.00			
Volatile Organic Compounds	487.00		78733	mg/L
Xylene Isomers, M+P, Whole Water	578.00		85795	µg/L
Xylene Isomers, O+P, Whole Water	32.00		80353	µg/L
Xylene, m-	67.00	77134	108383	µg/L
Xylene, o-	77.00	77135	95476	µg/L
Xylene, p-	475.00	77133	106423	µg/L
Xylenes, Total	201.00	34020	1330207	µg/L
Zinc, Dissolved	504.00	01090	7440666	µg/L
Zinc, Total	507.00	01092	7440666	µg/L
Zinc, Total Recoverable	264.00	01094	7440666	µg/L
Zineb	447.00	38912	12122677	µg/L
Ziram	446.00	38917	137304	µg/L
Zolone	412.01	81291	2310170	µg/L
Zytron	336.01	81285	299854	µg/L
a-BHC	265.00	39337	319846	µg/L
a-Endosulfan	266.01	34361	959988	µg/L
alpha-BHC	265.03	39337	319846	µg/L
alpha-Benzene hexachloride	265.01	39337	319846	µg/L
alpha-Chlordane	530.00	39348	5103719	µg/L
alpha-Endosulfan	266.00	34361	959988	µg/L
alpha-Lindane	265.02	39337	319846	µg/L
b-BHC	267.00	39338	319857	µg/L
b-Endosulfan	268.00	34356	33213659	µg/L
beta-BHC	267.03	39338	319857	µg/L
beta-Benzene hexachloride	267.01	39338	319857	µg/L
beta-Endosulfan	268.01	34356	33213659	µg/L
beta-Lindane	267.02	39338	319857	µg/L
cis-1,2-Dichloroethene	326.00	77093	156592	µg/L
cis-1,2-Dichloroethylene	326.01	77093	156592	µg/L
cis-1,3-Dichloropropene	56.00	34704	10061015	µg/L
cis-1,3-Dichloropropylene	56.01	34704	10061015	µg/L
d-BHC	269.00	34259	319868	µg/L
delta-BHC	269.03	34259	319868	µg/L
delta-Benzene hexachloride	269.01	34259	319868	µg/L

CAS NO should be read as follows. From Right: 1 digit, dash, 2 digits, dash (ie 1774-85-0).

APPENDIX D: CHEMICAL DICTIONARY
01/27/93

COMP_NAME	JHK_NO	STORET_NO	CAS_NO	UNITS
delta-Lindane	269.02	34259	319868	µg/L
g-BHC	357.00	39340	58899	µg/L
gamma-BHC (Lindane)	357.04	39340	58899	µg/L
gamma-Benzene hexachloride	357.03	39340	58899	µg/L
gamma-Chlordane	529.00	39065	5103742	µg/L
gamma-Lindane	357.02	39340	58899	µg/L
m-Diethylbenzene	549.01	77348	141935	µg/L
m-Dimethylbenzene	67.04	77134	108383	µg/L
m-Xylene	67.03	77134	108383	µg/L
meta-Xylene	67.02	77134	108383	µg/L
n-Butylbenzene	539.00	78483	104518	µg/Kg
n-Octacosane	390.00	78116	630024	µg/L
n-Propylbenzene	393.00	77224	103651	µg/L
o,p'-DDT	270.00	39305	789026	µg/L
o,p'-TDE	271.00	39315	53190	µg/L
o-Chloronitrobenzene	628.00		88732	µg/L
o-Chlorophenol	24.01	34586	95578	µg/L
o-Diethylbenzene	548.01	77340	135013	µg/L
o-Dimethylbenzene	77.03	77135	95476	µg/L
o-Phenylenediamine	629.00	73628	106503	µg/L
o-Toluidine	630.00	77142	95534	µg/L
o-Xylene	77.01	77135	95476	µg/L
ortho-Xylene	77.04	77135	95476	µg/L
p,a,a,a-Tetrachlorotoluene	632.00			µg/L
p,p'-DDD	208.02	39360	72548	µg/L
p,p'-DDE	209.02	39365	72559	µg/L
p,p'-DDT	210.02	39370	50293	µg/L
p,p'-TDE	272.00	39360	72548	µg/L
p-Chloro-m-cresol	31.02	34452	59507	µg/L
p-Chloronitobenzene	631.00		100005	µg/L
p-Cresol	35.01	77146	106445	µg/L
p-Diethylbenzene	550.01	77345	105055	µg/L
p-Dimethylbenzene	475.04	77133	106423	µg/L
p-Isopropyltoluene	538.00	77356	99876	µg/L
p-Nitroaniline	36.01	73278	100016	µg/Kg
p-Nitrophenol	37.01	34646	100027	µg/L
p-Xylene	475.02	77133	106423	µg/L
pH	448.00	00400		std. units
para-Xylene	475.01	77133	106423	µg/L
propyzamide	419.02	39080	23950585	mg/Kg
sec-Butylbenzene	543.00	78485	135988	µg/Kg
tert-Butylbenzene	537.00	78448	98066	µg/Kg
trans-1,2-Dichloroethene	78.00	34546	156605	µg/L
trans-1,2-Dichloroethylene	78.01	34546	156605	µg/L
trans-1,3-Dichloropropene	79.00	34699	10061026	µg/L
trans-1,3-Dichloropropylene	79.01	34699	10061026	µg/L
269	338.40			

CAS NO should be read as follows. From Right: 1 digit, dash, 2 digits, dash (ie 1774-85-0).

APPENDIX E: LABORATORY QUALIFIERS

LIST OF QUALIFIERS FOR NUMERIC RESULTS

REMARK CODE	DEFINITION
B	Analyte is found in the blank as well as the sample, indicated possible/probable blank contamination.
J	Estimated value; not accurate.
M	Presence of material verified but not quantified
U or K	Compound was analyzed for but not detected. The associated numerical value is the sample quantitation detection limit.
UJ	Compound was analyzed for but not detected. The number is the estimated minimum detection limit.
C	The value is one of, or the sum of both, Benzo (b) Fluoranthene and Benzo (k) Fluoranthene.
X	Many background organisms.
H	Over holding time. Analysis run.
G	Improper container.
Z	Sample low due to interfering substance.
D	Sample high due to interfering substance.
IS	Interfering Substance.
P	Greater than (>).
A	Less than (<).
LMX	Lab Matrix Number.
LBK	Lab Blank Number.

APPENDIX E CONTINUED:

Data Qualifier Definitions

For the purpose of this document the following code letters and associated definitions are provided:

dr	- dry weight
wt	- wet weight
R	- The data are unusable (compound may or may not be present). Resampling and reanalysis is necessary for verification.
N	- Presumptive evidence of presence of material.
NJ	- Presumptive evidence of the presence of the material at an estimated quantity.
UJ	- The material was analyzed for, but was not detected. The sample quantitation limit is an estimated quantity.

The reviewer may determine that qualifiers other than those used in this document are necessary to describe or qualify the data. In these instances, it is the responsibility of each reporting entity to thoroughly document/explain the qualifiers used and notify Ecology prior to submition of data packages.

APPENDIX F: COUNTY FIPS CODES

WASHINGTON

001	ADAMS
003	ASOTIN
005	BENTON
007	CHELAN
009	CLALLAM
011	CLARK
013	COLUMBIA
015	COWLITZ
017	DOUGLAS
019	FERRY
021	FRANKLIN
023	GARFIELD
025	GRANT
027	GRAYS HARBOR
029	ISLAND

031	JEFFERSON
033	KING
035	KITSAP
037	KITTITAS
039	KLICKITAT
041	LEWIS
043	LINCOLN
045	MASON
047	OKANOGAN
049	PACIFIC
051	PEND OREILLE
053	PIERCE
055	SAN JUAN
057	SKAGIT
059	SKAMANIA
061	SNOHOMISH
063	SPOKANE
065	STEVENS
067	THURSTON
069	WAHKIAKUM
071	WALLA WALLA
073	WHATCOM
075	WHITMAN
077	YAKIMA

CHAPTER 58.20

WASHINGTON COORDINATE SYSTEM

Section

58.20.010. United States plane coordinate adopted—Zones.
58.20.020. Designation of system by zones.
58.20.030. X and Y coordinates.
58.20.040. Tract in both zones, how described.
58.20.050. Zones defined.
58.20.060. Recording coordinates—Conditions.
58.20.070. Use of term limited.
58.20.080. United States survey to prevail.
58.20.090. Construction of chapter.
58.20.110. Definitions.
58.20.120. System designation—Permitted uses.
58.20.130. Plane coordinates adopted—Zones.
58.20.140. Designation of system—Zones.
58.20.150. Designation of coordinates—"N" and "E".
58.20.160. Tract in both zones—Description.
58.20.170. Zones—Technical definitions.
58.20.180. Recording coordinates—Control stations.
58.20.190. Conversion of coordinates—Metric.
58.20.200. Term—Limited use.
58.20.210. United States survey prevails—Conflict.
58.20.220. Real estate transactions—Exemption.
58.20.900. Severability—1945 c 168.
58.20.901. Severability—1989 c 54.

WESTLAW Electronic Research

See WESTLAW Electronic Research Guide following the Preface.

58.20.010. United States plane coordinate adopted—Zones

The system of plane coordinates which has been established by the United States coast and geodetic survey for defining and stating the positions or locations of points on the surface of the earth within the state of Washington is hereafter to be known and designated as the "Washington coordinate system of 1927".

For the purpose of the use of this system the state is divided into a "north zone" and a "south zone".

The area now included in the following counties shall constitute the north zone: Chelan, Clallam, Douglas, Ferry, Island, Jefferson, King, Kitsap, Lincoln, Okanogan, Pend Oreille, San Juan, Skagit, Snohomish, Spokane, Stevens, Whatcom, and that part of Grant lying north of parallel 47° 30' north latitude.

The area now included in the following counties shall constitute the south zone: Adams, Asotin, Benton, Clark, Columbia, Cowlitz, Franklin, Garfield, that part of Grant lying south of parallel 47° 30' north latitude, Grays Harbor, Kittitas, Klickitat, Lewis, Mason, Pacific, Pierce, Skamania, Thurston, Wahkiakum, Walla Walla, Whitman and Yakima.

Enacted by Laws 1945, ch. 168, § 1. Amended by Laws 1989, ch. 54, § 1.

Repeal

This section is repealed July 1, 1990, by Laws 1989, ch. 54, § 22. See, then, § 58.20.130.

Historical and Statutory Notes

Laws 1989, ch. 54, § 1, in the first paragraph, inserted the date of the coordinate system.

Source: RRS § 10726a.

Cross References

Recording co-ordinates, see § 58.20.060.
United States survey to prevail, see § 58.20.080.

Library References

Boundaries ⇐1.
WESTLAW Topic No. 59.
C.J.S. Boundaries § 1 et seq.

58.20.020. Designation of system by zones

As established for use in the north zone, the Washington coordinate system of 1927 shall be named, and in any land description in which it is used it shall be designated, the "Washington coordinate system of 1927, north zone".

As established for use in the south zone, the Washington coordinate system of 1927 shall be named, and in any land description in which it is used it shall be designated, the "Washington coordinate system of 1927, south zone".

Enacted by Laws 1945, ch. 168, § 20. Amended by Laws 1989, ch. 54, § 2.

Repeal

This section is repealed July 1, 1990, by Laws 1989, ch. 54, § 22. See, then, § 58.20.140.

Historical and Statutory Notes

Laws 1989, ch. 54, § 2, throughout the section, inserted the date of the coordinate system.

Source: RRS § 10726b.

Cross References

Definition of zones, see § 58.20.050.
Washington co-ordinate system defined, see § 58.20.070.

Library References

Boundaries ⇐1, 2.
WESTLAW Topic No. 59.
C.J.S. Boundaries § 1 et seq.

58.20.030. X and Y coordinates

The plane coordinates of a point on the earth's surface, to be used in expressing the position or location of such point in the appropriate zone of this system, shall consist of two distances, expressed in feet and decimals of a foot. One of these distances, to be known as the "x-coordinate", shall give the position in an east-and-west direction; the other, to be known as the "y-coordinate", shall give the position in a north-and-south direction. These coordinates shall be made to depend upon and conform to the coordinates, on the Washington coordinate system of 1927, of the triangulation and traverse stations of the United States coast and geodetic survey within the state of Washington, as those coordinates have been determined by the said survey.
Enacted by Laws 1945, ch. 168, § 3. Amended by Laws 1989, ch. 54, § 3.

Repeal

This section is repealed July 1, 1990, by Laws 1989, ch. 54, § 22. See, then, § 58.20.150.

Historical and Statutory Notes

Laws 1989, ch. 54, § 3, inserted the date of the coordinate system.

Source:
RRS § 10726c.

Library References

Boundaries ⇐1, 2.
WESTLAW Topic No. 59.
C.J.S. Boundaries § 1 et seq.

58.20.040. Tract in both zones, how described

When any tract of land to be defined by a single description extends from one into the other of the above coordinate zones, the positions of all points on its boundaries may be referred to either of said zones, the zone which is used being specifically named in the description.
Enacted by Laws 1945, ch. 168, § 4.

Repeal

This section is repealed July 1, 1990, by Laws 1989, ch. 54, § 22. See, then, § 58.20.160.

Historical and Statutory Notes

Source:
RRS § 10726d.

Library References

Boundaries ⇐1, 10.
WESTLAW Topic No. 59
C.J.S. Boundaries §§ 1 et seq., 24.

58.20.050. Zones defined

For purposes of more precisely defining the Washington coordinate system of 1927, the following definition by the United States coast and geodetic survey is adopted:

The Washington coordinate system of 1927, north zone, is a Lambert conformal projection of the Clarke spheroid of 1866, having standard parallels at north latitudes 47° 30′ and 48° 44′, along which parallels the scale shall be exact. The origin of coordinates is at the intersection of the meridian 120° 50′ west of Greenwich and the parallel 47° 00′ north latitude. This origin is given the coordinates: x = 2,000,000 feet and y = 0 feet.

The Washington coordinate system of 1927, south zone, is a Lambert conformal projection of the Clarke spheroid of 1866, having standard parallels at north latitudes 45° 50′ and 47° 20′, along which parallels the scale shall be exact. The origin of coordinates is at the intersection of the meridian 120° 30′ west of Greenwich and the parallel 45° 20′ north latitude. This origin is given the coordinates: x = 2,000,000 feet and y = 0 feet.

The position of the Washington coordinate system of 1927 shall be as marked on the ground by triangulation or traverse stations established in conformity with the standards adopted by the United States coast and geodetic survey for first-order and second-order work, whose geodetic positions have been rigidly adjusted on the North American datum of 1927, and whose coordinates have been computed on the system herein defined. Any such station may be used to establish a survey connection with the Washington coordinate system of 1927.
Enacted by Laws 1945, ch. 168, § 5. Amended by Laws 1989, ch. 54, § 4.

Repeal

This section is repealed July 1, 1990, by Laws 1989, ch. 54, § 22. See, then, §§ 58.20.170, 58.20.180.

Historical and Statutory Notes

Laws 1989, ch. 54, § 4, throughout the section, inserted the date of the coordinate system; and, in the second paragraph, in the second sentence, substituted "parallel" for "meridian".

Source: RRS § 10726e.

Library References

Boundaries ⇐25.
WESTLAW Topic No. 59.
C.J.S. Boundaries § 61.

58.20.060. Recording coordinates—Conditions

No coordinates based on the Washington coordinate system of 1927, purporting to define the position of a point on a land boundary, shall be presented to be recorded in any public land records or deed records unless such point is within one-half mile of a triangulation or traverse station established in conformity with the standards prescribed in RCW 58.20.050: *Provided*, That said one-half mile limitation may be modified by a duly authorized state agency to meet local conditions.

Enacted by Laws 1945, ch. 168, § 6. Amended by Laws 1989, ch. 54, § 5.

Repeal

This section is repealed July 1, 1990, by Laws 1989, ch. 54, § 22. See, then, § 58.20.180.

Historical and Statutory Notes

Laws 1989, ch. 54, § 5, inserted the date of the coordinate system.

Source: RRS § 10726f.

Library References

Boundaries ⇐25.
WESTLAW Topic No. 59.
C.J.S. Boundaries § 61.

58.20.070. Use of term limited

The use of the term "Washington coordinate system of 1927" on any map, report of survey, or other document, shall be limited to coordinates based on the Washington coordinate system of 1927 as defined in this chapter.

Enacted by Laws 1945, ch. 168, § 7. Amended by Laws 1989, ch. 54, § 6.

Repeal

This section is repealed July 1, 1990, by Laws 1989, ch. 54,

Historical and Statutory Notes

Laws 1989, ch. 54, § 6, inserted the date of the coordinate system in two places.

Source: RRS § 10726g.

Library References

Boundaries ⇐2.
WESTLAW Topic No. 59.
C.J.S. Boundaries § 4.

58.20.080. United States survey to prevail

Whenever coordinates based on the Washington coordinate system of 1927 are used to describe any tract of land which in the same document is also described by reference to any subdivision, line or corner of the United States public land surveys, the description by coordinates shall be construed as supplemental to the basic description of such subdivision, line, or corner contained in the official plats and field notes filed of record, and in the event of any conflict the description by reference to the subdivision, line, or corner of the United States public land surveys shall prevail over the description by coordinates.

Enacted by Laws 1945, ch. 168, § 8. Amended by Laws 1989, ch. 54, § 7.

Repeal

This section is repealed July 1, 1990, by Laws 1989, ch. 54, § 22. See, then, § 58.20.210.

Historical and Statutory Notes

Laws 1989, ch. 54, § 7, inserted the date of the coordinate system.

Source: RRS § 10726h.

Library References

Boundaries ⇐25.
WESTLAW Topic No. 59.
C.J.S. Boundaries § 61.

58.20.090. Construction of chapter

Nothing contained in this chapter shall require any purchaser or mortgagee to rely on a description, any part of which depends exclusively upon the Washington coordinate system of 1927.

Enacted by Laws 1945, ch. 168, § 9. Amended by Laws 1989, ch. 54, § 8.

Repeal

This section is repealed July 1, 1990, by Laws 1989, ch. 54,

Historical and Statutory Notes

Laws 1989, ch. 54, § 8, inserted the date of the coordinate system. Source: RRS § 10726i.

Library References

Boundaries ⇐1, 25.
WESTLAW Topic No. 59.
C.J.S. Boundaries §§ 1 et seq., 61.

58.20.110. Definitions

Unless the context clearly requires otherwise, the definitions in this section apply throughout RCW 58.20.110 through 58.20.220 and 58.20.901:

(1) "Committee" means the interagency federal geodetic control committee or its successor;

(2) "GRS 80" means the geodetic reference system of 1980 as adopted in 1979 by the international union of geodesy and geophysics defined on an equipotential ellipsoid;

(3) "National geodetic survey" means the national ocean service's national geodetic survey of the national oceanic and atmospheric administration, United States department of commerce, or its successor;

(4) "Washington coordinate system of 1927" means the system of plane coordinates in effect under this chapter until July 1, 1990, which is based on the North American datum of 1927 as determined by the national geodetic survey of the United States department of commerce;

(5) "Washington coordinate system of 1983" means the system of plane coordinates under this chapter based on the North American datum of 1983 as determined by the national geodetic survey of the United States department of commerce.

Enacted by Laws 1989, ch. 54, § 9.

58.20.120. System designation—Permitted uses

Until July 1, 1990, the Washington coordinate system of 1927, or its successor, the Washington coordinate system of 1983, may be used in Washington for expressing positions or locations of points on the surface of the earth. On and after that date, the Washington coordinate system of 1983 shall be the designated coordinate system in Washington. The Washington coordinate system of 1927 may be used only for purposes of reference after June 30, 1990.

Enacted by Laws 1989, ch. 54, § 10.

58.20.130. Plane coordinates adopted—Zones

The system of plane coordinates which has been established by the national geodetic survey for defining and stating the positions or locations of points on the surface of the earth within the state of Washington is designated as the "Washington coordinate system of 1983."

For the purposes of this system the state is divided into a "north zone" and a "south zone."

The area now included in the following counties shall constitute the north zone: Chelan, Clallam, Douglas, Ferry, Island, Jefferson, King, Kitsap, Lincoln, Okanogan, Pend Oreille, San Juan, Skagit, Snohomish, Spokane, Stevens, Whatcom, and that part of Grant lying north of parallel 47° 30' north latitude.

The area now included in the following counties shall constitute the south zone: Adams, Asotin, Benton, Clark, Columbia, Cowlitz, Franklin, Garfield, that part of Grant lying south of parallel 47° 30' north latitude, Grays Harbor, Kittitas, Klickitat, Lewis, Mason, Pacific, Pierce, Skamania, Thurston, Wahkiakum, Walla Walla, Whitman and Yakima.

Enacted by Laws 1989, ch. 54, § 11.

Historical and Statutory Notes

Source:
Former § 58.20.010.

58.20.140. Designation of system—Zones

As established for use in the north zone, the Washington coordinate system of 1983 shall be named, and in any land description in which it is used it shall be designated, the "Washington coordinate system of 1983, north zone."

As established for use in the south zone, the Washington coordinate system of 1983 shall be named, and in any land description in which it is used it shall be designated, the "Washington coordinate system of 1983, south zone."

Enacted by Laws 1989, ch. 54, § 12.

Historical and Statutory Notes

Source:
Former § 58.20.020.

58.20.150. Designation of coordinates—"N" and "E"

"N" and "E" shall be used in labeling coordinates of a point on the earth's surface and in expressing the position or location of such

point relative to the origin of the appropriate zone of this system, expressed in meters and decimals of a meter. These coordinates shall be made to depend upon and conform to the coordinates, on the Washington coordinate system of 1983, of the horizontal control stations of the national geodetic survey within the state of Washington, as those coordinates have been determined, accepted, or adjusted by the survey.
Enacted by Laws 1989, ch. 54, § 13.

Historical and Statutory Notes

Source:
Former § 58.20.030.

58.20.160. Tract in both zones—Description

When any tract of land to be defined by a single description extends from one into the other of the coordinate zones under RCW 58.20.130, the positions of all points on its boundaries may be referred to either of the zones, the zone which is used being specifically named in the description.
Enacted by Laws 1989, ch. 54, § 14.

Historical and Statutory Notes

Source:
Former § 58.20.040.

58.20.170. Zones—Technical definitions

For purposes of more precisely defining the Washington coordinate system of 1983, the following definition by the national geodetic survey is adopted:

The Washington coordinate system of 1983, north zone, is a Lambert conformal conic projection of the GRS 80 spheroid, having standard parallels at north latitudes 47° 30′ and 48° 44′, along which parallels the scale shall be exact. The origin of coordinates is at the intersection of the meridian 120° 50′ west of Greenwich and the parallel 47° 00′ north latitude. This origin is given the coordinates: E = 500,000 meters and N = 0 meters.

The Washington coordinate system of 1983, south zone, is a Lambert conformal conic projection of the GRS 80 spheroid, having standard parallels at north latitudes 45° 50′ and 47° 20′, along which parallels the scale shall be exact. The origin of coordinates is at the intersection of the meridian 120° 30′ west of Greenwich and the parallel 45° 20′ north latitude. This origin is given the coordinates: E = 500,000 meters and N = 0 meters.

Historical and Statutory Notes

Source:
Former § 58.20.050.

58.20.180. Recording coordinates—Control stations

Coordinates based on the Washington coordinate system of 1983, purporting to define the position of a point on a land boundary, may be presented to be recorded in any public land records or deed records if the survey method used for the determination of these coordinates is established in conformity with standards and specifications prescribed by the interagency federal geodetic control committee, or its successor. These surveys shall be connected to monumented control stations that are adjusted to and published in the national network of geodetic control by the national geodetic survey and such connected horizontal control stations shall be described in the land or deed record. Standards and specifications of the committee in force on the date of the survey shall apply. In all instances where reference has been made to such coordinates in land surveys or deeds, the scale and sea level factors shall be stated for the survey lines used in computing ground distances and areas.

The position of the Washington coordinate system of 1983 shall be marked on the ground by horizontal geodetic control stations which have been established in conformity with the survey standards adopted by the committee and whose geodetic positions have been rigorously adjusted on the North American datum of 1983, and whose coordinates have been computed and published on the system defined in RCW 58.20.110 through 58.20.220 and 58.20.901. Any such control station may be used to establish a survey connection with the Washington coordinate system of 1983.
Enacted by Laws 1989, ch. 54, § 16.

Historical and Statutory Notes

Source:
Former §§ 58.20.050, 58.20.060.

58.20.190. Conversion of coordinates—Metric

Any conversion of coordinates between the meter and the United States survey foot shall be based upon the length of the meter being equal to exactly 39.37 inches.
Enacted by Laws 1989, ch. 54, § 17.

58.20.200. Term—Limited use

The use of the term "Washington coordinate system of 1983" on any map, report of survey, or other document, shall be limited to

coordinates based on the Washington coordinate system of 1983 as defined in this chapter.
Enacted by Laws 1989, ch. 54, § 18.

Historical and Statutory Notes

Source:
Former § 58.20.070.

58.20.210. United States survey prevails—Conflict

Whenever coordinates based on the Washington coordinate system of 1983 are used to describe any tract of land which in the same document is also described by reference to any subdivision, line or corner of the United States public land surveys, the description by coordinates shall be construed as supplemental to the basic description of such subdivision, line, or corner contained in the official plats and field notes filed of record, and in the event of any conflict the description by reference to the subdivision, line, or corner of the United States public land surveys shall prevail over the description by coordinates.
Enacted by Laws 1989, ch. 54, § 19.

Historical and Statutory Notes

Source:
Former § 58.20.080.

58.20.220. Real estate transactions—Exemption

Nothing contained in this chapter shall require any purchaser or mortgagee to rely on a description, any part of which depends exclusively upon the Washington coordinate system of 1927 or 1983.
Enacted by Laws 1989, ch. 54, § 20.

Historical and Statutory Notes

Source:
Former § 58.20.090.

58.20.900. Severability—1945 c 168

If any provision of this chapter shall be declared invalid, such invalidity shall not affect any other portion of this chapter which can be given effect without the invalid provision, and to this end the provisions of this chapter are declared to be severable.
Enacted by Laws 1945, ch. 168, § 10.

Repeal

This section is repealed July 1, 1990, by Laws 1989, ch. 54, § 22. See, then, § 58.20.901.

Library References

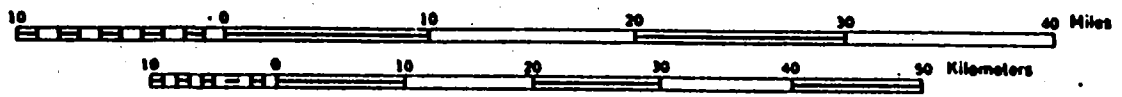
Statutes ⇐64(2).
WESTLAW Topic No. 361.
C.J.S. Statutes § 96 et seq.

58.20.901. Severability—1989 c 54

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.
Enacted by Laws 1989, ch. 54, § 21.

HYDROLOGIC UNIT MAP—1974
STATE OF WASHINGTON

Scale 1:500,000
1 inch equals approximately 8 miles



Datum is mean sea level

Compiled, edited, and published by the Geological Survey. 1927 North American datum
Lambert conformal conic projection based on standard parallels 33° and 45°

LEGEND

or village

oundary shown for towns over 5,000 population

SOURCE DATA

U. S. Dept. of the Interior—Geological Survey topographic maps
U. S. Dept. of the Army—A. M. S. 1:250,000 scale maps

BASE MAP
Drainage modified 1974

POPULATION KEY

SEATTLE.....more than 100,000
YAKIMA.....25,000 to 100,000
Olympia.....5,000 to 25,000
Ritzville.....1,000 to 5,000
Concrete.....less than 1,000
Populations indicated by size of letters

COMPILED IN 1961
EDITION OF 1962

AVAILABLE UPON REQUEST FROM TOXICS CLEANUP PROGRAM

118°

INTERIOR—GEOLOGICAL SURVEY, RESTON, VIRGINIA—1978

WA

For sale by U.S. Geological Survey
Denver, Colo. 80225 and Reston, Va. 22092. price $1.25

APPENDIX I

February 17, 1993

Addressee's Name
Address
City, State Zip

Dear Addressee:

Re: Toxics Cleanup Program Database Material

Thank you for implementing our format for your digital data submittals. By adopting some common formats, we can more easily and quickly review your data and so enhance the cleanup process for all of us.

I have enclosed a diskette which contains all the files you'll need to adopt our format. The environmental data storage files are designed for water, soil, and sediment data. These files are in a dBase format and have a DBF extension. You will also find a WordPerfect file on your diskette with a TCP extension. The table below describes the function of each of the files contained on the diskette.

FILE NAME	EXPLANATION
SITE_DES.DBF	The *Site Description File* contains location, construction, and other descriptive information about the sampling site.
FIELD_SA.DBF	The *Field Sample File* contains site-specific field sampling information. It is sample and site specific. Each sampling event is recorded individually.
LAB_SAMP.DBF	The *Laboratory Sample File* contains laboratory analysis information for all analytes.
DATAHDR.TCP	The *Data Header File* contains a narrative explanation of the Site Description File, Field Sample and the Laboratory Sample File.
CHEMDIC.DBF	The *Chemical Dictionary File* contains a alphabetical listing of chemicals with CAS numbers and Toxics Cleanup Program coding.

Please submit Quality Assurance/Quality Control (QA/QC) data, such as method blank and trip blank results, as part of your QA report rather than as part of this data set.

Good luck on your project. If you need help don't hesitate to call or write. My phone number is [Your Telephone Number SCAN and off-SCAN]

Sincerely,

[Your Name, Title]
Toxics Cleanup Program

[INITIALS:secretary's initials]
Enclosure

IN THE SUPERIOR COURT OF THE STATE OF WASHINGTON
IN AND FOR THE COUNTY OF YAKIMA

STATE OF WASHINGTON, DEPARTMENT OF ECOLOGY, Plaintiff, v. CASCADE NATURAL GAS CORPORATION AND YAKIMA COUNTY, Defendants.	No. 98 2 01173 3 **COMPLAINT**

Plaintiff State of Washington, Department of Ecology ("Ecology") alleges as follows:

I. DESCRIPTION OF ACTION

1. This action is brought on behalf of Ecology, to lodge a settlement agreement (Consent Decree) for remedial action at a facility where there has been releases or threatened release of hazardous substances. The facility, or "Site", is located at 512 East Decatur Avenue, Sunnyside, Washington, and is referred to as Cascade Natural Gas.

II. JURISDICTION

2. This Court has jurisdiction over this matter and these parties pursuant to RCW 70.105D, the Model Toxics Control Act ("MTCA"). This Court has jurisdiction over the subject matter and over the parties pursuant to the MTCA. Venue is properly laid in Yakima County, the location of the property at issue.

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3. Authority is conferred upon the Washington State Attorney General by RCW 70.105D.040(4)(a) to agree to a settlement with any potentially liable person, after public notice and comment, where Ecology finds the proposed settlement would lead to a more expeditious cleanup of hazardous substances in compliance with cleanup standards under RCW 70.105D.030(2)(e). Ecology has made this finding. Under RCW 70.105D.040(4)(b), such a settlement must be entered as a Consent Decree issued by a court of competent jurisdiction.

4. Ecology has determined that a release or threatened release of a hazardous substance has occurred at the Site.

5. Ecology has given notice to the Defendants, as set forth in RCW 70.105D.020(16), of Ecology's determination that the Defendants are potentially liable persons for the Site and that there has been a release or threatened release of hazardous substances at the Site.

III. PARTIES

6. Plaintiff Ecology is an agency of the State of Washington responsible under MTCA for overseeing remedial action at sites where there has been a release or threatened release of hazardous substances.

7. Defendants refer to Cascade Natural Gas Corporation (CNG), a Washington corporation and the County of Yakima (County).

IV. FACTUAL ALLEGATIONS

8. CNG has owned the Site since 1979, and CNG previously leased the site from 1969-1979.

9. The County owned the site from at least 1928 through 1955. The County operated a public works shop and equipment yard on the Site. Aerial photographs dated October 26, 1937 and July 4, 1949, during the County's ownership of the Site, show what Ecology believes to be petroleum staining of the ground in the vicinity of the underground fuel storage tanks located on the Site. Affidavits provided by past County employees who worked at the Site, and employees

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of other businesses which had occupied the Site after 1955, affirm the presence of the underground fuel storage tanks and the County's use of these tanks. Excavation and testing of soils and groundwater at the facility by CNG revealed the presence of petroleum products and volatile organic compounds in the soils in the vicinity of the stained areas in the aerial photographs.

10. CNG has voluntarily undertaken independent cleanup activities to remediate the contamination found in the on-Site soils. This independent cleanup action consisted of removing the soil contaminated by petroleum hydrocarbons to a permitted off-Site location for remediation. This activity has removed the known petroleum hydrocarbon contamination at the Site.

11. CNG and Ecology entered into an Agreed Order to conduct a remedial investigation/feasibility study ("RI/FS") of the Site. After public notice and opportunity to comment Ecology accepted the RI/FS.

12. Based upon Site specific data obtained during the remedial investigation, and an analysis of this data comparing alternative cleanup options, the RI/FS identified long-term groundwater monitoring and intrinsic bioremediation at the Site to be protective of human health and the environment. Ecology has accepted this alternative for cleanup at the Site.

13. The Consent Decree has been subject to public notice and comment under RCW 70.105D.040(4)(a), and no comments were received by Ecology.

V. CAUSE OF ACTION

14. Plaintiff realleges paragraphs 1 through 13, above.

15. Ecology has determined that there have been releases or threatened releases of hazardous substances at the Cascade Natural Gas Site, and that such releases or threatened releases pose a threat to human health and the environment.

16. Ecology alleges that the defendants are responsible for remedial action at the Site pursuant to chapter 173-340 WAC.

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17. Ecology and the defendants have entered into a Consent Decree requiring remedial action at the Site.

VI. PRAYER FOR RELIEF

WHEREAS Ecology, Cascade Natural Gas Corporation and Yakima County have voluntarily entered into a proposed Consent Decree, Ecology requests that the Court, pursuant to RCW 70.105D.040, approve and order the entry of the proposed Consent Decree. Ecology further requests that the Court retain jurisdiction to enforce the terms of the Consent Decree.

RESPECTFULLY SUBMITTED this 2nd day of April, 1998.

CHRISTINE O. GREGOIRE
Attorney General

Maia D. Bellon

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\MB10\CASCADE\COMPLAINT.DOC

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IN THE SUPERIOR COURT OF THE STATE OF WASHINGTON
IN AND FOR THE COUNTY OF YAKIMA

STATE OF WASHINGTON,
DEPARTMENT OF ECOLOGY,

Plaintiff,

v.

CASCADE NATURAL GAS CORPORATION AND YAKIMA COUNTY,

Defendants.

No. 98 2 01173 3

SUMMONS

TO: CASCADE NATURAL GAS, by and through its attorney, Thomas E. Lindley, and

TO: YAKIMA COUNTY, by and through its attorney, Terry Austin.

A lawsuit has been started against you in the above-entitled court by the State of Washington, Department of Ecology, plaintiff. Plaintiff's claim is stated in the written Complaint, a copy of which is served upon you with this Summons.

The parties have agreed to resolve this matter by entry of a Consent Decree, a copy of which is also attached. Accordingly, this Summons shall not require the filing of an Answer.

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Attorney General Office
Ecology Division
P.O. Box 40117
Olympia, WA 98504-0117
FAX (360) 438-7743

Further, all disputes arising under this cause shall be resolved under the terms of the Consent Decree.

DATED this 2nd day of April, 1998.

CHRISTINE O. GREGOIRE
Attorney General

Maia D. Bellon

MAIA D. BELLON, WSBA #24777
Assistant Attorney General

Attorneys for Plaintiff
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