

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

In the Matter of Remedial Action by:)
KITTITAS COUNTY) AGREED ORDER
DEPARTMENT OF PUBLIC WORKS)
No. DE 94TC-C4222

TO: Greg Gifford, P.E.
Public Works Director/County Engineer
Kittitas County - Department of Public Works
205 West Fifth Avenue, Room 108
Ellensburg, Washington 98926

I.

Jurisdiction

This Agreed Order ("Order") is issued pursuant to the authority of Revised Code of Washington (RCW) 70.105D.050(1).

II.

Findings of Fact

The Department of Ecology (Ecology) makes the following Findings of Fact, without admission of such facts by Kittitas County.

2.1 The Ellensburg Municipal Airport (Bowers Field) is owned by Kittitas County and is located at 1101 Bowers Road within Section 24, Township 18 North, Range 18, E.W.M., in Ellensburg, Washington.

2.2 Mr. Ron V. Mitchell operates Midstate Aviation, an aerial applicator of agricultural chemicals. Midstate Aviation has operated out of the current site at Bowers Field for over 30 years, as of 1993.

2.3 Rinsing of Midstate Aviation aircraft/equipment used for aerial application of agricultural chemicals took place at the washdown pad and the rinsate was discharged to soil.

2.4 Investigation(s) by Ecology in 1988 revealed high concentrations of the herbicides Simazine and Atrazine as well as the organophosphate pesticide Disulfoton in the soil.

2.5 Further investigations by Ecology in 1989 revealed high concentrations of the herbicide Dinoseb, DDT, DDE and pentachlorophenol in the soil. Groundwater may potentially also be affected, one water sample taken during October 1989 revealed the presence of DDT, DDE and Dinoseb.

III.

Ecology Determinations

3.1. Kittitas County is an "owner or operator" as defined in RCW 70.105D.020(6) of a "facility" as defined in RCW 70.105D.020(3).

3.2. Ron V. Mitchell is an "owner or operator" as defined in RCW 70.105D.020(6) of a "facility" as defined in RCW 70.105D.020(3).

3.3. The facility is known as Midstate Aviation and is located at 1101 Bowers Road in Ellensburg, Washington 98926.

3.4. The substances found at the facility as described above are "hazardous substances" as defined in RCW 70.105D.020(5).

3.5. Based on the presence of these hazardous substances at the facility and all factors known to Ecology, there is a release or threatened release of hazardous substances from the facility, as defined in RCW 70.105D.020(10).

3.6. By letter dated March 18, 1992, Ecology notified Kittitas County of its status as a "potentially liable person" under RCW 70.105D.040 after notice and opportunity for comment.

3.7. By letter dated March 18, 1992, Ecology notified Ron V. Mitchell of his status as a "potentially liable person" under RCW 70.105D.040 after notice and opportunity for comment.

3.8. Pursuant to RCW 70.105D.030(1) and 70.105D.050, Ecology may require potentially liable persons to investigate or conduct other remedial actions with respect to the release or threatened release of hazardous substances, whenever it believes such action to be in the public interest.

3.9. Based on the foregoing facts, Ecology believes the remedial action required by this Order is in the public interest.

IV.

Work to be Performed

Based on the foregoing Facts and Determinations, it is hereby ordered that Kittitas County take the following remedial actions and that these actions be conducted in accordance with Chapter 173-340 WAC unless otherwise specifically provided for herein.

4.1. Kittitas County will perform the Remedial Investigation/Feasibility Study ("RI/FS") actions set forth and described in the attached Scope of Work and Schedule. The Scope of Work for the RI/FS is attached to the Order as Exhibit A. The schedule is attached as Exhibit B. Exhibit A and Exhibit B are incorporated by the reference and are integral and enforceable parts of this Order.

The RI/FS will collect, develop and evaluate sufficient information regarding the site to enable the selection of a cleanup action under WAC 173-340-360. The RI/FS will be implemented to meet the requirements of WAC 173-340-350.

4.2. Kittitas County will develop and submit to Ecology for approval a Quality Assurance/Quality Control (QA/QC) Plan in accordance with Ecology Guidelines and Specifications for Preparing Quality Assurance Project Plans (May 1991), Exhibit C. Exhibit C is incorporated by this reference and is an integral and enforceable part of this Order. No sampling associated with this Order may be conducted prior to Ecology approval of the QA/QC Plan.

4.3. Results from sampling shall be provided to Ecology's project coordinator upon receipt from the laboratory.

4.4. In accordance with WAC 173-340-840(5), ground water sampling data shall be submitted according to Exhibit D: SITE DESCRIPTION AND SAMPLE DATA SUBMITTAL REQUIREMENTS. These submittals shall be provided to Ecology as required under the schedule established in provision 2, above.] Exhibit D is

incorporated by this reference and is an integral and enforceable part of this Order.

V.

Terms and Conditions of Order

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

5.2. Public Notices RCW 70.105D.030(2)(a) requires that, at a minimum, this Order be subject to concurrent public notice. Ecology shall be responsible for providing such public notice and reserves the right to modify or withdraw any provisions of this Order should public comment disclose facts or considerations which indicate to Ecology that the Order is inadequate or improper in any respect.

5.3. Remedial Action Costs Kittitas County shall pay to Ecology costs incurred by Ecology pursuant to this Order. These costs shall include work performed by Ecology or its contractors for investigations, remedial actions, order preparation, Oversight and administration. For work performed prior to June 30, 1994 the amount of \$54,360.08 shall be paid to Ecology within 30 days of the effective date of this order. For work commencing on July 1, 1994 Ecology costs shall include costs of direct activities and support costs of direct activities as defined in WAC 173-340-550 (2), and interest charges for delayed payments, as defined in WAC 173-340-550 (4).

Kittitas County shall 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 description 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 an itemized statement of costs will result in interest charges.

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5.4. Designated Project Coordinators The project coordinator for Ecology is:

Mark Peterschmidt
Department of Ecology - CRO
106 South 6th Avenue
Yakima, Washington 98902-3387

The project coordinator for Kittitas County is:

Greg Gifford, P.E.
Kittitas County, Department of Public Works
205 West Fifth, Room 108
Ellensburg, Wa. 98926

The project coordinator(s) shall be responsible for overseeing the implementation of this Order. To the maximum extent possible, communications between Ecology and Kittitas County, and all documents, including reports, approvals, and other correspondence concerning the activities performed pursuant to the terms and conditions of this Order, shall be directed through the project coordinator(s). Should Ecology or Kittitas County change project coordinator(s), written notification shall be provided to Ecology or Kittitas County at least ten (10) calendar days prior to the change.

5.5. Performance All work performed pursuant to this Order shall be under the direction and supervision, as necessary, of a professional engineer or hydrogeologist, or similar expert, with appropriate training, experience and expertise in hazardous waste site investigation and cleanup. Kittitas County shall notify Ecology as to the identity of such engineer(s) or hydrogeologist(s), and of any contractors and subcontractors to be used in carrying out the terms of this Order, in advance of their involvement at the Site. Kittitas County shall provide a copy of this Order to all agents, contractors and subcontractors retained to perform work required by this Order and shall ensure that all work undertaken by such agents, contractors, and subcontractors will be in compliance with this Order.

Except where necessary to abate an emergency situation, Kittitas County shall not perform any remedial actions at Midstate Aviation outside that required by this Order unless Ecology concurs, in writing, with such additional remedial actions.

5.6. Access Ecology or any Ecology authorized representative shall have the authority to enter and freely move about 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 Order; reviewing the progress in carrying out the terms of this Order; conducting such tests or collecting samples as Ecology or the project coordinator may deem necessary; using a camera, sound recording, or other documentary type equipment to record work done pursuant to this Order; and verifying the data submitted to Ecology by Kittitas County. By signing this Agreed Order, Kittitas County agrees that this Order constitutes reasonable notice of access, and agrees to allow access to the Site at all reasonable times for purposes of overseeing work performed under this Order. Ecology shall allow split or replicate samples to be taken by Kittitas County during an inspection unless doing so interferes with Ecology's sampling. Kittitas County shall allow split or replicate samples to be taken by Ecology and shall provide seven (7) days notice before any sampling activity.

5.7. Public Participation Kittitas County shall prepare and/or update a public participation plan for the site. Ecology shall maintain the responsibility for public participation at the site. Kittitas County shall help coordinate and implement public participation for the site.

5.8. Retention of Records Kittitas County shall preserve in a readily retrievable fashion, during the pendency of this Order and for ten (10) years from the date of completion of the work performed pursuant to this Order, all records, reports, documents, and underlying data in its possession relevant to this Order. Should any portion of the work performed hereunder be undertaken through contractors or agents of Kittitas County, then Kittitas County agrees to include in their contract with such contractors or agents a record retention requirement meeting the terms of this paragraph.

5.9. Dispute Resolution Kittitas County may request Ecology to resolve disputes which may arise during the implementation of this Order. Such requests shall be in writing and directed to the signatory, or his/her successor(s), to this Order. Ecology resolution of the dispute shall be binding and final. Kittitas County is not relieved of any requirement of this Order during the pendency of the dispute and remains responsible for timely compliance with the terms of the Order unless otherwise provided by Ecology in writing.

5.10. Reservation of Rights/No Settlement This Agreed Order is not a settlement under Chapter 70.105D RCW. Ecology's signature on this Order in no way constitutes a covenant not to sue or a compromise of any Ecology rights or authority. Ecology will not, however, bring an action against Kittitas County to recover remedial action costs paid to and received by Ecology under this Agreed Order. In addition, Ecology will not take additional enforcement actions against Kittitas County to require those remedial actions required by this Agreed Order, provided Kittitas County complies with this Agreed Order.

Ecology reserves the right, however, to require additional remedial actions at the Site should it deem such actions necessary.

Ecology also reserves all rights regarding the injury to, destruction of, or loss of natural resources resulting from the releases or threatened releases of hazardous substances from Midstate Aviation.

In the event Ecology determines that conditions at the Site are creating or have the potential to create a danger to the health or welfare of the people on the Site or in the surrounding area or to the environment, Ecology may order Kittitas County to stop further implementation of this Order for such period of time as needed to abate the danger.

5.11. Transference of Property No voluntary or involuntary conveyance or relinquishment of title, easement, leasehold, or other interest in any portion of the Site shall be consummated by Kittitas County without provision for continued implementation of all requirements of this Order and implementation of any remedial actions found to be necessary as a result of this Order.

Prior to transfer of any legal or equitable interest Kittitas County may have in the Site or any portions thereof, Kittitas County shall serve a copy of this Order upon any prospective purchaser, lessee, transferee, assignee, or other successor in such interest. At least thirty (30) days prior to finalization of any transfer, Kittitas County shall notify Ecology of the contemplated transfer.

5.12. Compliance with Other Applicable Laws All actions carried out by Kittitas County pursuant to this Order shall be done in accordance with all applicable federal, state, and local requirements.

VI.

Satisfaction of this Order

The provisions of this Order shall be deemed satisfied upon Kittitas County's receipt of written notification from Ecology that Kittitas County has completed the remedial activity required by this Order, as amended by any modifications, and that all other provisions of this Agreed Order have been complied with.

VII.

Enforcement

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

- A. The Attorney General may bring an action to enforce this Order in a state or federal court.
- B. The Attorney General may seek, by filing an action, if necessary, to recover amounts spent by Ecology for investigative and remedial actions and Orders related to the Site.
- C. In the event Kittitas County refuses, without sufficient cause, to comply with any term of this Order, Kittitas County will be liable for:
 - (1) up to three times the amount of any costs incurred by the state of Washington as a result of its refusal to comply; and

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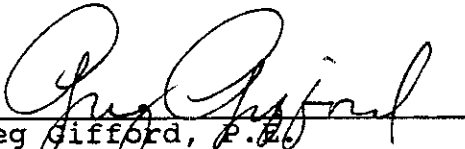
(2) civil penalties of up to \$25,000 per day for each day it refuses to comply.

D. This Order is not appealable to the Washington Pollution Control Hearings Board. This Order may be reviewed only as provided under Section 6 of Chapter 70.105D RCW.

Effective date of this Order: AUG 2 1994

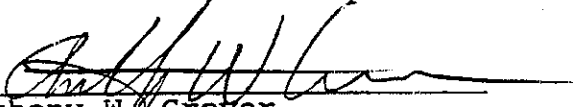
Kittitas County

By


Greg Gifford, P.E.
Public Works Director
County Engineer
Kittitas County

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

By


Anthony W. Grover
Section Manager
Toxics Cleanup Program
Central Regional Office

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Approved as to form:
David G. Poirer
Kittitas County Prosecuting Attorney

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Exhibit A

SCOPE OF WORK

REMEDIAL INVESTIGATION/FEASIBILITY STUDY

FOR THE

BOWERS FIELD - MIDSTATE AVIATION SITE

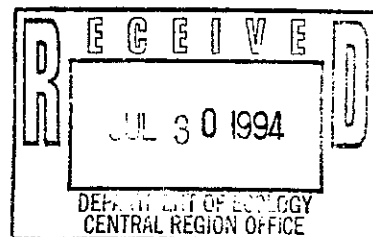
PREPARED FOR:

**KITTITAS COUNTY
STATE OF WASHINGTON
ELLENSBURG, WASHINGTON**

PREPARED BY:

**ENVIROGEN, INC.
4100 QUAKERBRIDGE ROAD
LAWRENCEVILLE, NEW JERSEY**

JULY, 1994



1.0 INTRODUCTION

ENVIROGEN, INC., (CONTRACTOR) is pleased to submit this Scope of Work (Scope) for the Remedial Investigation/Feasibility Study (RI/FS) phase of the Bowers Field - Midstate Aviation (Site) cleanup. This Scope presents tasks to be conducted by the CONTRACTOR in performing the RI/FS as directed by the State of Washington Department of Ecology (ECOLOGY).

2.0 BACKGROUND

The Site is an airport owned by Kittitas County located at 1101 Bowers Road, Ellensburg, Washington. Crop dusting operations performed out of the airport have resulted in soil contamination at the Site. Various pesticides and herbicides used in crop dusting were apparently released during loading and washing activities at the airport. These compounds have contaminated surface and subsurface soils. Pesticides and herbicides have been detected above regulatory limits at the facility. Dinoseb (2-sec-butyl-4,6-dinitrophenol), the most prevalent contaminant, is a nitroaromatic compound formerly used as an agricultural herbicide on potatoes and other legumes. It is a RCRA-listed waste bearing a P020 waste code.

Regulatory agencies have determined that surface soils have been contaminated and suspect ground water has been impacted also. ECOLOGY has determined these compounds to be hazardous substances. Remedial investigation activities are being conducted under an agreed order.

In November 1992, Science Applications International Corporation (SAIC) conducted an initial site characterization. The results of the SAIC investigation indicated that soil contaminated with Dinoseb existed at the site in the upper 0.5 ft. of soil in the area west of the former concrete wash pad (Figure 1). Dinoseb concentrations ranged from a low of 0.2 mg/kg to a high of 292 mg/kg with an approximate average concentration of 50 mg/kg. The purpose of locating Dinoseb contaminated soil was to evaluate, through an E.P.A. Superfund Innovative Technology Evaluation (SITE) demonstration, a new microbial remediation technique developed and implemented by J.R. Simplot (SIMPLOT) and ENVIROGEN.

In June 1993, ENVIROGEN conducted additional soil sampling under and to the south of the former concrete wash pad. Dinoseb concentrations ranged from a low of 2 mg/kg to a high of 67 mg/kg. The sampling results indicate that the soil contamination is primarily located in the area under and to the west of the former concrete wash pad (Figure 1).

During the period of June through August 1993, an evaluation of the SIMPLOT process was conducted through the E.P.A. SITE program using soil from the areas identified by SAIC and ENVIROGEN. Results of SAIC samples from the process in July and August 1993, indicate concentrations of Dinoseb had decreased from an average initial concentration of 28 mg/kg to non-detect levels (i.e. less than 0.15 mg/kg).

3.0 OBJECTIVE AND PROJECT APPROACH

The objective of this RI/FS Scope will be to assess the extent of Dinoseb, Simazine, Atrazine, and Disulfoton, (which shall be referred to herein as Herbicides/ Pesticides) in both the soil and ground water at the site, assess risks to human health and environment posed by the contamination, identify action and cleanup goals, develop potential remedial actions, and to evaluate alternative remedial actions as to their potential effectiveness in achieving the cleanup goals for the site. The completed work will result in the submittal of a Remedial Investigation (RI)/Feasibility Study (FS) Report. The E.P.A. SITE Demonstration results will be included as an appendix. Due to the success of the E.P.A. SITE Demonstration, the SIMPLOT process will be the potential responsible party (PRP) preferred method for soil remediation at the site.

The RI and FS will be conducted concurrently in task oriented steps as described below:

- **Task One, Facility History**, part of the RI, includes facility research and preparation of the Facility History Report.

- **Task Two, Project Planning,** includes preparation of the Scope, Sampling and Analysis Plan, Health and Safety Plan, and Community Relations Plan. The Sampling and Analysis Plan includes the Quality Assurance Project Plan and the Field Sampling Plan.
- **Task Three, Alternative Screening,** part of the FS, identifies applicable cleanup technologies. This task includes preparation of the Pre-Investigation Screening of Cleanup Alternatives Report.
- **Task Four, Facility Investigation,** part of the RI, characterizes the site geology, site hydrogeology, and contaminant source. It also identifies potential migration pathways and potential receptors. This task includes preparation of the Facility Investigation Report.
- **Task Five, Treatability Investigation,** part of the RI, conducts bench and/or pilot studies to determine the applicability of a technology or technologies to the facility conditions. This Task has already been largely completed under the E.P.A. SITE Program but is included here for completeness. The E.P.A. SITE demonstration report, will be incorporated as an appendix to the RI/FS report, will serve as the Bench Testing/Pilot Study Report.
- **Task Six, Remedial Investigation Reporting,** the final part of the RI is the preparation of the Remedial Investigation Report. All field and analytical data collected is presented in the RI report.
- **Task Seven, Feasibility Study Reporting,** the final part of the FS, is the preparation of the Feasibility Study Report presenting an evaluation of alternatives based on such criteria as technical feasibility, effectiveness, regulatory acceptance, environmental effects, cost, and others.

4.0 CONCEPTUAL APPROACH

The following discussion outlines the conceptual approach, by task, for the RI/FS to be conducted at the Site.

Task 1.0 Facility History

The CONTRACTOR will collect and review all readily available background data pertinent to the remediation of the site and will prepare a draft Facility History Report. This report will include, at a minimum, the following information (subject to availability):

- Facility background information including maps (as specified by WAC 173-340-840(4)), photographs, history of ownership and operations, identification of previous spills and/or releases, and a description of any previous or current construction activities at the site.
- Nature and extent of known contamination based on previous assessments.
- Any interim or emergency measures which have been or are being undertaken at the facility. At this time, the PRP does not anticipate that interim or emergency measures will be necessary prior to completion of the RI/FS.

The CONTRACTOR will submit the Facility History Draft Report to ECOLOGY for review and subsequent distribution to Kittitas County regulatory authorities by the CONTRACTOR.

Task 2.0 Project Planning

Based on the facility history review, the CONTRACTOR will provide all planning necessary to effectively conduct the RI/FS. Attached is the schedule of events for

implementation of the RI/FS by the Contractor. Three documents will be prepared by the CONTRACTOR to be used throughout the RI/FS. The three documents are:

- **Work Plan** - The Work Plan will be composed of two plans, the Quality Assurance Project Plan (QAPP) and the Field Sampling Plan. The QAPP will define the data quality objectives and provide the specific procedures for field data collection and laboratory analysis to be employed during the RI/FS to ensure quality data. The Field Sampling Plan will be a detailed description of the sampling methods, protocols, location, and associated analytical methods to be used during the RI/FS. The Sampling and Analysis Plan should identify data gaps from previous investigations.
- **Health and Safety Plan** - The Health and Safety Plan will describe the potential hazards represented by site conditions and planned field work, protection measures and field procedures to be followed by workers at the site.
- **Public Participation Plan** - This plan will describe the methods to be used for informing the public of site activities and the results of the RI/FS. The CONTRACTOR is responsible for contact with the public regarding the plan and any associated public forum activities.

These three plans will be supplied to ECOLOGY for approval prior to the initiation of field work. Distribution of these documents will be to Kittitas County regulatory authorities. These three plans are intended to be living documents. The CONTRACTOR will revise and update the plans as necessary to account for changing conditions during the RI/FS process. Revisions, after field work has begun, shall receive prior approval by ECOLOGY before proceeding with work affected by the planned deviation to the plan.

Task 3.0 Alternative Screening

The CONTRACTOR will identify potential cleanup action technologies that may be used on-facility or off-facility, including remediation, treatment, containment, and/or disposal of contamination. The CONTRACTOR will prepare a Pre-Investigation Screening of Cleanup Alternative Draft Report. This report will include remediation, treatment and disposal options which could potentially be used at the site. All criteria used in the development of the options will be included. A Pre-Investigation Screening of Cleanup Alternatives Draft Report will be prepared and submitted to ECOLOGY for review.

Task 4.0 Facility Investigation

The CONTRACTOR will characterize soil and ground water at the facility and identify actual or potential contaminant migration pathways (Environmental Setting and Pathway Characterization); define the source (Source Characterization); define the degree and extent of contamination (Contaminant Characterization); identify actual or potential receptors (Potential Receptor Identification); and assess risks posed to receptors by the facility (Risk Assessment).

The five parts of the facility investigation as briefly described above will be conducted concurrently as necessary to reduce time and costs in conducting the investigation. All facility investigation work will be focused on the soil and ground water contamination resulting from Herbicide/Pesticide spills in the vicinity of the former concrete wash pad as described in Section 2.0 of this document. A Facility Investigation Draft Report will be prepared and submitted to ECOLOGY for review and subsequent distribution to County regulatory authorities by the CONTRACTOR.

Task 4.1 Environmental Setting and Pathway Characterization

The Environmental Setting and Pathway Characterization will include, at a minimum, collection of information regarding the hydrogeology, geology, surface water (streams and impoundments), climate, and meteorology at the facility. This information will be used to supplement and verify existing information.

Sub Task 4.1.1 - Regional and Site-Specific Hydrogeology and Geology

The CONTRACTOR will collect existing data from literature references regarding the regional and site-specific geologic and hydrogeologic characteristics affecting ground water flow beneath the site. Since little site-specific ground water quality data is currently available, the CONTRACTOR will install three shallow screened monitoring wells. The locations of the monitoring wells are shown in Figure 1. These locations were selected based on the assumed ground water flow direction (southwest), based on the local surface topographic features. Location of wells may change based on soil sampling analytical results. The wells will be installed in accordance with WAC 173-160. The monitoring wells will be used by the CONTRACTOR to estimate the direction of shallow ground water flow and collect ground water samples (described in Sub Task 4.3.1).

The boreholes for the monitoring wells will be drilled using the air rotary drilling methods as described in Driscoll (1986). The boreholes for the two inch monitoring wells will be advanced to a maximum depth of twenty feet. The borehole will be approximately 6.25 inch diameter. Drill cuttings from the borings will be analyzed in the field by GC. Soil samples for laboratory analysis will not be collected during the well installation.

The boreholes will be completed through the outer casing as single-cased monitoring wells using the methods described in ASTM (1990b). The monitoring wells will be constructed of 2-inch I.D., schedule 40 polyvinyl chloride (PVC) pipe with square profile thread-flush joints. The monitoring wells will have 5 ft. of 2-inch I.D.,

schedule 40 PVC machine-slotted screen with square profile thread-flush joints. A slot size will be utilized which will retain 90% of the artificial filter pack. Allowances will be made for seasonal fluctuations in the placement and length of the screened interval. The end cap will be a PVC sand point (for improved casing centering within well bore) and will be hand slotted at the tip of the cap.

The artificial filter pack will consist of well rounded, uniform, washed silica sand and will be placed from the bottom of the borehole to one or two feet above the top of the screened interval. The water in the monitoring well will be lightly surged prior to placement of a bentonite seal to assist the sand in settling into place.

After surging the well, a two feet bentonite seal will be constructed from 3/8-inch bentonite pellets placed on top of the filter pack and hydrated. The remaining annular space from the top of the bentonite seal to within one foot of the land surface will be filled with grout which will be tremied into place.

A road grade flush mount will be placed over the well head and concreted into place. The flush mount will be bolted down, leak resistant utilizing a Buna-N "O" ring seal and will have a minimum eight inch skirt. A lockable expansion plug will be placed on the well head and secured with a key padlock. Monitoring wells will be constructed according to the applicable laws and regulations established by local, state, and federal government authorities.

After the monitoring wells are constructed, the wells will be developed to remove fines from the filter pack by mechanical surging with a surge block as described by Driscoll (1986). The surging will be continued until the extracted ground water is relatively clear with few fines. The ground water produced during this development procedure will be retained, tested and either treated for disposal on-site or drummed for transfer to a suitable facility.

After the monitoring wells have been installed, fully developed, and allowed to recover (minimum of 24 hours), the water level in each of the monitoring wells will be measured. The Top of Casing (TOC) and Ground Level (GL) of the monitoring well

will be surveyed to an accuracy of ± 0.01 inch and referenced to a benchmark. From these data the shallow ground water flow direction can be estimated.

A field log will be maintained which documents field observations and sample descriptions. The encountered soils will be classified according to grain sized distribution (texture) using the Unified Soil Classification System (USCS) described in ASTM Method F2488-90 (1990a)

All equipment used to install the monitoring wells will be decontaminated prior to arrival to the site and prior to use at any boring location. All cuttings, well development and decon water resulting from the creation of the boreholes will be retained, tested and either treated for disposal on-site or drummed for transfer to a suitable disposal facility.

Sub Task 4.1.2 - Surface Water and Sediment

Information regarding the location, elevation, stream flow, velocity, depth, width, and drainage patterns of surface water will be collected. Site-specific surface elevations will be surveyed to develop a conceptual drainage pattern for the site. Water and sediment samples will be collected from surface waters which are located within 1/4 mile, such that they may receive drainage from the site.

Sub Task 4.1.3 - Meteorologic

Information regarding the seasonal climatic and meteorological data from the past ten (10) year period will be collected from the airports records and other existing sources of data. No field measurements will be made to collect further climatic and meteorological data.

Task 4.2 Source Characterization

The CONTRACTOR will collect and present data available from currently existing literature references regarding the physical, chemical, migration, dispersal, and degradation parameters of the Herbicides and Pesticides being addressed. Due to the difficulty and probable non-existence of evidence, the CONTRACTOR will, on a coincident basis with the specific studies listed, limit any investigation to ascertain the original source of these Herbicides and Pesticides or the original quantity of Herbicides and Pesticides released.

Task 4.3 Contaminant Characterization

The CONTRACTOR will collect and analyze soil samples to gain analytical data on background conditions. Potential Dinoseb contamination will be characterized in ground water, soil, surface water/sediment, and subsurface gas/air emissions. Herbicide and Pesticide spills in the vicinity of the former concrete wash pad will be characterized. The ground water investigation will be limited to the installation and sampling of three shallow monitoring wells. If contamination is detected, a thorough ground water investigation will be proposed. The CONTRACTOR will define the extent, origin, direction, and rate of movement of contaminants through the various pathways as described below.

Sub Task 4.3.1 - Ground Water

The CONTRACTOR will collect ground water samples from the newly installed monitoring wells for analysis at an ECOLOGY accredited off-site laboratory. Prior to collecting the samples from each monitoring well, each monitoring well will be purged by Teflon bailer or sampling pump. The monitoring wells will be purged until the temperature, conductivity, and pH of the ground water in the monitoring well stabilize to within 10% over at least two (2) successive well volumes, not to exceed five (5) well volumes, as described in E.P.A. (1985). All equipment placed downhole in the monitoring wells will be thoroughly decontaminated as per the Sampling and Analysis Plan prior to and after use. The ground water produced during the purging procedure

will be retained, tested and either treated for disposal on-site or drummed for transfer to a suitable facility as soon as possible.

The samples will be analyzed for Herbicides and Pesticides (including Dinoseb, Simazine, Atrazine, and Disulfoton) by E.P.A. Method 8150 and 8080, Volatiles by E.P.A. Method 8240, and Semivolatiles by E.P.A. Method 8270 and metals. Should the ground water samples indicate that the aquifer has been impacted, a workplan will be prepared to delineate the ground water impact.

Sub Task 4.3.2 - Soil

Previous investigations by SAIC and ENVIROGEN have sufficiently delineated the Herbicides/Pesticides in the unsaturated soils from land surface to one foot below land surface (bls). The CONTRACTOR will investigate the soils located from one ft. bls to one ft. below the water table surface which is expected to be at approximately six ft. bls.

The CONTRACTOR will investigate the soils by digging ten test pits to a depth of up to eight ft. to collect information regarding the distribution of Herbicide and Pesticide contamination from within the saturated and unsaturated soils. The approximate locations of the ten test pits are shown on Figure 1. Soil samples will be collected from the test pits for on-site and off-site analysis. Starting at one foot, soil samples will be collected at one to two foot intervals depending on pit location. The soil sample will be split, with one-half of the sample screened in the field by a Gas Chromatograph (the HNu Model 311 GC) for Herbicide and Pesticide screening. The other half of the soil sample will be placed in a one liter glass jar and held for possible subsequent analysis.

The split samples with the highest and lowest concentrations of Herbicides/Pesticides, as determined from the on-site analysis, from each test pit will be sent to a laboratory for analysis. The samples will be prepared and shipped as described in the Sampling and Analysis Plan. The split samples sent for off-site analysis will be analyzed for Chlorinated Herbicides and Pesticides (including Dinoseb,

Simazine, Atrazine, and Disulfoton) by E.P.A. Method 8150 and 8080 and metals analysis for barium and selenium,

Sub Task 4.3.3 - Surface Water and Sediments

The CONTRACTOR will collect samples from all bodies of surface water which are located within the identified extent of ground water and soil contamination. From each body of surface water identified, water samples and sediment samples will be collected. The water and sediment samples will be sent to a State of Washington, Department of Ecology certified off-site laboratory to be analyzed for Chlorinated Herbicides (including Dinoseb, Simazine, Atrazine, and Disulfoton) by E.P.A. Method 8150. Should the water and sediment samples indicate that the surface water body has been impacted above regulatory limits, a workplan will be prepared to delineate the water and sediment impact.

Sub Task 4.3.4 - Subsurface Gas and Air Emissions

The CONTRACTOR will collect vapor samples from the unsaturated subsurface and the atmospheric air from within the Herbicides/Pesticides contaminated area as determined by the activities described in Sub Task 4.3.2. Five soil gas samples will be collected from the unsaturated subsurface by soil probe. The soil probe will consist of a disposable stainless steel vapor probe tip inserted into the subsurface to a depth from three to five feet bls and connected to the surface by Teflon tubing. A portable air sampling pump connected to the Teflon tubing will withdraw the soil vapor sample into a carbon Orbo tube. The two atmospheric air samples will be collected by pulling an air sample with a portable air sampling pump into a carbon Orbo tube.

The soil vapor and atmospheric air samples will be sent to a laboratory for analysis. The samples will be prepared and shipped as described in the Sampling and Analysis Plan. The samples will be analyzed for Herbicides and Pesticides (including Dinoseb, Simazine, Atrazine, and Disulfoton) by E.P.A. Method 8150 and 8080.

Task 4.4 Potential Receptor Identification

The CONTRACTOR will identify the potential receptors as based on information collected during the Environmental Setting and Pathway Characterization and the Contaminant Characterization. This identification will consider local ground water (within a one mile radius) and surface water uses (within a three mile radius), land use (within a half mile radius), human access, presence of endangered or threatened species near the facility, and the migration potential of the contaminant.

Task 5.0 Treatability Investigation

ENVIROGEN has assessed the applicability of the SIMPLOT Process to the facility conditions under the E.P.A. SITE Program. The E.P.A. SITE Program Report will be incorporated into the Remedial Investigation Draft Report as an appendix to the RI/FS Report.

Task 6.0 Remedial Investigation Reporting

The CONTRACTOR will prepare a Remedial Investigation (RI) Draft Report based on the information collected during the implementation of Tasks 1.0, 4.0, and 5.0. This report will include all information collected, including but not limited to, field notes, field test results, historical documents, geological logs, maps, etc. The RI Report will also include all analysis and evaluations completed including, but not limited to, laboratory reports, a description of the conceptual hydrogeologic model and the estimated impact of site contamination to potential receptors. The Remedial Investigation Report will be submitted to ECOLOGY and to Kittitas County regulatory authorities by the CONTRACTOR.

Task 7.0 Feasibility Study Reporting

The CONTRACTOR will prepare a Feasibility Study (FS) Draft Report evaluating the feasibility and effectiveness of implementing alternative cleanup actions according to WAC 173-340-360(4) regarding cleanup technology preference for evaluating alternative cleanup options. The alternative cleanup actions will be evaluated based on the following items:

- Technical Feasibility
- Overall protection of human health and the environment
- Compliance with ARARs
- Reduction of toxicity, mobility, or volume of the contaminant through treatment
- Cost Efficiency
- Short-term effectiveness
- State acceptance
- Community acceptance
- Long-term effectiveness and permanence

The preferred cleanup action from this evaluation will be recommended to ECOLOGY for approval. In addition to the reports described above, the CONTRACTOR will prepare a monthly letter report summarizing activities completed during the previous month, activities to be completed during the next month, sampling activities and analytical results. The CONTRACTOR will attach to the monthly reports, the results of significant phases of the Remedial Investigation that were completed since the previous monthly report.

ATTACHMENTS

8.0 REFERENCES

- American Society for Testing and Materials (ASTM). 1990a. Standard Practice for Description and Identification of Soils (Visual-Manual Procedures). D2488-90, (Vol. 4.08), ASTM, Philadelphia, PA.
- American Society for Testing and Materials (ASTM). 1990b. Standard Practice for Design and Installation of Ground Water Monitoring Wells in Aquifers. D5092-90, ASTM, Philadelphia, PA.
- American Society for Testing and Materials (ASTM). 1991. Standard Test Method for (Field Procedure) Instantaneous Change in Head (Slug Tests) for Determining Hydraulic Properties of Aquifers. D4044-91, ASTM, Philadelphia, PA.
- American Society for Testing and Materials (ASTM). 1993. Draft Standard Guide for the Use of Hollow-Stem Augers for Geoenvironmental Exploration and Installation of Subsurface Water-Quality Monitoring Devices. D18.21 Ballot 93-03, April 28. ASTM, Philadelphia, PA.
- Bouwer, H., and Rice, R.C. 1976. "A Slug Test for Determining Hydraulic Conductivity of Unconfined Aquifers with Completely or Partially Penetrating Wells", Water Resources Research, Vol. 12, No. 3, pp. 423-428.
- Bouwer, H. 1989a. "The Bouwer-Rice Slug Test - An Update", Ground Water, Vol. 27, No. 3, pp. 304-309.
- Bouwer, H. 1989b. "Discussion of The Bouwer-Rice Slug Test - An Update", Ground Water, Vol. 27, No. 5, pp. 715.
- Driscoll, F.G. 1986. Groundwater and Wells, 2nd edition, Johnson Filtration Systems, Inc., St. Paul, MN, 1089 pp.

Environmental Protection Agency. 1985. Practical Guide for Ground-Water Sampling.
EPA/600/2-85/104.

Project Schedule

It is estimated that the project schedule will follow the timetable presented below.

TASK	COMPLETION DATE
• Submit RIWP to Ecology	4-15-94
• Submit HASP and Sampling and Analysis Plan (SAP)	4-22-94
• Ecology Review SAP and HASP	5-18-94
• Submit PP Plan and Revised Scope	5-27-94
• Ecology Review of Scope and PP Plan	
• Review Ecology Edits/Incorporate	6-3-94
• Receive notification and prep. for field activities	6-5-94
• Perform field activities	6-13-94
• Wait on analytical results	7-4-94
• Review analytical data and review remedial alternatives	7-11-94
• Prep. Draft RI Report Prep. Draft FS Report	7-25-94
• Submit RI Report to County - Review	8-5-94
• Incorporate County Comments/Edits	8-8-94
• Submit to Ecology Review and Comments	8-10-94
• Submit Final RI Report to Ecology Submit Final FS Report	8-24-94

CHAIN LINK FENCE

EXCLUSION ZONE

14 ft

MW-1

CHAIN LINK FENCE

STORAGE PLATFORM

CONTAMINATED AREA

FORMER CONCRETE WASH PAD AREA

DRAIN

LABORATORY

DECONTAMINATION ZONE

GW-2

MW-3

MW-2

GW-3

LEGEND:

WELL LOCATIONS

MONITORING WELL LOCATIONS

SOIL EXCAVATION PIT - SOIL SAMPLE LOCATION

EXCAVATION PIT-SOIL SAMPLE LOCATION WITH ONE FOOT SAMPLING INTERVAL

SOIL GAS SAMPLE LOCATION



PROPOSED SAMPLE LOCATIONS

MIDSTATE AVIATION
BOWERS FIELD
ELLENSBURG, WASHINGTON

REMEDIATION SERVICES GROUP

DATE	DATE	DATE
4/11/01	4/11/01	4/11/01
PROJECT NO.	PROJECT NO.	PROJECT NO.
47029	47029	47029
FIGURE 1		