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AGRICULTURE INDUSTRIES INC.

SCHROPP RANCH

3880 MOUNTAIN HOUSE ROAD, BYRON

ALAMEDA COUNTY, CALIFORNIA

Site Assessment and
Phased Remediation Work Plan

Submitted to:
Alameda County Department
of Environmental Health

June, 1992

Mary Jane Wilson
Registered Environmental Assessor
State of California No. REA-00050
Expiration Date: 06/30/93

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State of California No.1224
Expiration Date: 06/30/93

0137.0010.007

TABLE OF CONTENTS

EXHIBITS

Exhibit 1	Site Plan Map
Exhibit 2	Environmental Site Assessment and Remediation Steps

APPENDICES

Appendix I	WZI Soil and Water Sample Protocol
Appendix II	Health and Safety Plan

1.0 INTRODUCTION

1.1 Executive Summary

The Schropp Ranch is located approximately five miles south of the City of Byron in eastern Alameda County, California. Soil and groundwater contamination have been identified on the property by surface and subsurface investigations during a preliminary site assessment investigation. The assumed source of contamination is from unpermitted agriculture operations and one 550 gallon gasoline tank.

Limited exploratory trenching has been conducted to ascertain the general limits of near surface soil contamination in the vicinity of the former underground storage tank. Hydrocarbon contaminated soil was removed from the area of the former tank location during exploratory excavation. The contaminated soil was stockpiled and covered with visqueen.

Because of the health risks associated with exposure to gasoline, the U. S. Environmental Protection Agency (EPA) has set levels of acceptability for soil and water contamination. The proximity of domestic and agricultural wells means remediation of the soil and water are necessary to mitigate the potential impacts to the nearby receptors.

1.2 Proposed Action

Agriculture Industries proposes to finish the Site Assessment and to implement a Phased Soil and Groundwater Remediation Plan for Schropp Ranch. Exhibit 1 depicts the site layout on Schropp Ranch. Exhibit 2 depicts the standard procedures and methods used to complete site assessment and remediation action plans. The horizontal and vertical extent of contaminated soil will be determined by excavation. Contaminated soil will be excavated and stockpiled under visqueen sheets. Gasoline contaminated soil will be remediated by aeration technique in accordance with Bay Area Air Quality Management District (BAAQMD) Guidelines. The excavation will extend approximately three to four feet

below the top of the water table to a maximum depth of about 32 feet below grade. Water that collects in the bottom of the excavation will be pumped into holding tanks by a submersible pump. This water will be tested for Total Petroleum Hydrocarbons - Gasoline (TPH-G) and Benzene, Toluene, Ethylbenzene and Xylene (BTEX) and then treated with carbon filtration. Local water wells in the immediate vicinity of the excavation, specifically at the Mountain House School and Schropp Ranch will be sampled as outlined above. We anticipate abandonment of the water well located at Schropp Ranch and connection of the domestic water supply for the ranch house to public sources. WZI will drill between 4 and 5 monitoring wells to establish the lateral and vertical extent of groundwater contamination. All monitoring wells will be sampled on a quarterly basis for BTEX and TPH-G.

This Work Plan outlines the methods used to accomplish the above tasks.

2.0 SITE ASSESSMENT SOIL EXCAVATION

2.1 Excavation Design

Contaminated soil excavation will be conducted according to Alameda County Public Works Department and/or Uniform Building Code (UBC) Chapter 70 guidelines. It is estimated that the excavation may reach a maximum depth of 32 feet. It is anticipated that the pit will have at least two levels at about 10 to 12 and 20 to 22 feet below current ground surface where equipment will be able to excavate material to a maximum depth of approximately 32 feet. The sidewalls of these levels will be graded to 1.5:1 slopes.

2.2 Field Determination Regarding Contamination

A California State Certified Engineering Geologist will supervise the separating and stockpiling of the clean and contaminated soil, as well as record encountered geologic and contamination conditions as observed in the field.

The field determination regarding the presence/absence of contamination will be based on visual sample inspection for the presence of staining, odor and Organic Vapor Meter (OVM) readings. The presence of odor and staining in conjunction with positive OVM readings will be used to establish the presence of contamination in soil samples from the excavation. Determination of the absence of contamination in a soil sample will be based on absence of odor, absence of staining and OVM readings in the range of background values. Background OVM readings will be established at the top of the excavation above the depth of five feet.

2.3 Sample Collection

Soil samples will be collected from the base of the excavation or side walls if the excavation is in contact with groundwater. Samples will be analyzed for BTEX, and TPH-G utilizing EPA Method 8020. In addition, analysis for lead will be made.

Soil samples will be collected from the excavation as follows:

1. **Remove approximately one inch of soil from the immediate surface area where the sample is to be taken.**
2. **Drive a thin-walled stainless steel or brass cylinder into soil.**
3. **No head space should be present in the cylinder once the sample is collected.**
4. **Cover the ends with aluminum foil and plastic caps.**
5. **Seal with duct tape.**
6. **Label the tubes with waterproof ink and cover the labels with clear plastic tape.**
7. **Store the tubes in an ice chest with dry ice until delivery to the laboratory.**
8. **Prepare a complete sample inventory and Chain of Custody documents for the samples.**
9. **Deliver the samples to the laboratory with Chain of Custody documents and analyze in less than 14 days.**

Samples from working faces of the excavation walls and floor will be collected and analyzed until non-detection levels of BTEX, TPH-G and lead are achieved.

After all contaminated dirt has been removed from the subsurface the excavation will be backfilled with clean fill material and compacted to 90 percent field density.

2.4 On-Site Health and Safety

WZI Inc. personnel and all on-site contractors will comply with all of WZI's health and safety procedures (Appendix II). Based on the data developed during previous investigations at Schropp Ranch, the WZI Safety Manager and Project Geologist have designed this project as a Level D site assessment for the purposes of protective equipment and clothing. Hard hats and chemically resistant boots will be worn at all times on the site. Half-mask respirators fitted with organic vapor cartridges will be available on-site for each individual. A Site Safety Plan for field investigations which contains the names and telephone number of emergency response personnel, locations of nearby hospitals and fire stations will be available on-site. A discussion of potential chemical hazards will also be included in the Site Safety Plan. All field personnel will be familiarized with the Site Safety Plan and be required to possess an Occupational Safety and Health Administration (OSHA) approved 40 hour training certification. WZI personnel are trained in basic first aid and a first aid kit will be available on-site in case of an emergency. At least one on-site WZI Inc. employee will be trained in CPR. Before beginning work each morning, a Safety Meeting will be held with contractors to explain on-site safety precautions and emergency response. A written record of each meeting signed by those attending will be kept by the site manager.

Air quality around the excavation will be monitored continually with an OVM. During excavation, OVM readings will be taken at the excavation/ground surface interface and at the backhoe operator's chest level. If the OVM reading remains at 10 parts per million (ppm) for a prolonged period of time around the excavation the backhoe operator will be required to don an organic vapor respirator.

A "hot zone" will be established around the excavation site to limit non-essential personnel from entering the work area. Good housekeeping will also be practiced at all times while on-site.

3.0 SITE ASSESSMENT GROUNDWATER EVALUATION

3.1 Evaluation of Existing Wells

The local domestic water well at Schropp Ranch and Mountain House School will be evaluated for completion methodology, lithology penetrated, relationship to local hydrogeologic environment, and relationship to contaminated groundwater. Samples will be collected and analyzed for BTEX and TPH(G). Depending upon the results of the samples taken from the domestic water wells, samples may be obtained from select intervals to establish the vertical extent of groundwater contamination. Correlation of geology from the well logs in conjunction with mapped sidewall geology from the excavation will help to determine the hydrogeologic nature of the site.

Data collection and determination of groundwater gradient from adjacent wells to a radius of one-half mile will be made.

3.2 Monitoring Well Program

A series of four or five monitoring wells or more will be drilled and completed to a depth of 45 feet. Two or four inch PVC casing will be used as appropriate. Soil samples will be taken in accordance with Tri-Regional Guidelines.

Cross sections will be constructed from all wells to allow review of the lab analyses of the samples within the penetrated hydrogeologic framework. A map which graphically depicts the known vertical and horizontal limits of the hydrocarbon plume will be prepared and evaluated.

Upon analysis of the water wells, geophysical logs and other pertinent data will be integrated within one-half mile of the site, including those off-site wells used to establish the water gradient. A report will be prepared summarizing the field activities, the collection of data and the analysis of any groundwater contamination found beneath the site.

3.3 Water Sampling

All water sampling will be collected according to guidelines outlined in the Leaking Underground Fuel Tank (LUFT) Manual (1989) and as in the WZI Water Sampling Protocol (Appendix I). Groundwater samples will be collected in a sterile container for analysis and submitted to a local State Certified lab for analysis.

4.0 SOIL REMEDIATION PLAN

4.1 Soil Remediation Tasks Description

The following section describes the site specific tasks that must be accomplished to remediate the soils by aeration. To complete site remediation, the gasoline affected soils must be excavated and separated from the unaffected soils. Gasoline affected soils will be transported to the treatment area, and clean soils will be stockpiled adjacent to the excavation. Authority to Construct and Permit to Operate will be obtained from the BAAQMD. The following is an estimated chronology of tasks to be accomplished including design criteria.

1. **The total volume of soil to be excavated has been estimated to be between 25,000 to 40,000 cubic yards, 8,000 cubic yards of which may be 100 ppm or greater TPH. Because of varying subsurface conditions, unequal distribution of gasoline and poorly sorted soils, the amount of soil containing gasoline fuel in excess of 100 ppm may vary. The excavation at Schropp Ranch shall extend to a depth of approximately 40 feet.**

2. **Excavated material will be field screened using an OVM and separated into clean, low level contaminated soil (<1,000 ppm) and high level contaminated (>1,000 ppm) soil. The OVM will be calibrated from a spiked soil sample containing 100 ppm gasoline. All soil with concentrations less than 10 ppm (ppm) gasoline will be considered clean and stockpiled separately on-site. All soil with concentrations greater than 10 ppm gasoline will be transported to the soil aeration treatment site.**

3. **At the treatment site, the contaminated soil will be spread on a 10-mil reinforced polyethylene sheet to a maximum depth of two feet. A berm (eight inches in height, minimum) shall be incorporated around this material using clean soil from the excavation and incorporating the plastic sheeting to prevent runoff from the treatment area.**

4. **Soil will be aerated by disking once per week. WZI will monitor the effectiveness and level of treatment through periodic sampling of the soil. Sampling will consist of collecting one sample from each quadrant of the aeration treatment area or as required by the BAAQMD.**

5. **It is anticipated that five to ten acres of land will be needed for treatment. This number will depend on the depth of the spread out soil (one to two feet) and the ultimate volume of material excavated.**

6. **When laboratory results indicate that agency compliance has been met according to Tri-Regional Guidelines (TPH less than 100 ppm), official site closure approval will be requested from Alameda County. After agency approval is granted, the soil will be spread out on the property along dirt roads or disposed of in an approved manner.**

4.2 Soil Aeration Health Risk

Agriculture Industries proposes to treat volatile organic compounds (VOC) contaminated soil from one underground fuel storage tank by excavation and on-site aeration under restrictions outlined in the Engineering Policy for Volatile Organic Compound Emissions from Decontamination of Soil for the BAAQMD. All necessary permits will be obtained from the BAAQMD prior to beginning excavation and/or aeration.

5.0 WATER REMEDIATION PLAN

5.1 Water Extraction and Treatment

Groundwater will be extracted from the soil excavation and pumped into a 20,000 gallon holding tank. Filtration of the water will be accomplished prior to placement in the tank.

Granular activated carbon filtration provides an economically feasible and practical means for water pollution control. The effluent quality of an activated carbon system is strongly influenced by the:

- **Influent Waste Stream Characteristics**
- **Contact Time**
- **Carbon Medium Used**

Each of these factors are discussed in detail below:

Influent Waste Stream Characteristics

Influent waste stream characteristics that affect treatment include pH, turbidity and any other unidentified organic material. The absorption rate of organics increases with decreasing pH of water. Absorption is very poor when the pH is greater than nine. When filtering turbid water, suspended solids plug pore openings, occlude porosity, and reduce the surface area of the carbon resulting in decreased efficiency. The adverse effects of treating turbid water in the carbon filtration system may be reduced by first treating the water in a gravity separator and then passing it through an in-line filter as determined by the contractor.

Rates and Carbon Medium

The size of the carbon medium used affects the rates of absorption. Finer grades enhance the rate of absorption by increasing the number of pore openings thereby reducing the contact time. However, fine grades may reduce efficiency of the system by trapping sediment and closing off pore openings.

The proposed treatment system is designed to reduce benzene levels in groundwater to less than 0.5 parts per billion (ppb) at Schropp Ranch. This will be accomplished in four steps which include pumping water from the excavated pit, removing sediment, treating the water with a carbon filtration system and returning the water to the aquifer. The cycle will be repeated until contaminant levels are less than 0.5 ppb benzene established by the Central Valley Regional Water Quality Control Board. The following is a chronology of tasks to be accomplished including design criteria.

- **A pit will be excavated in the contaminated zone to an approximate depth of 40 feet. Allowing for a seasonal groundwater rise of five feet during the summer months, a minimum of two feet of water should be present in the pit. The area surrounding the pit where water treatment operations will be conducted will be sloped toward the pit, prohibiting any spillage from flowing off-site. Aquifer withdrawal will be done by placing an inlet pipe within the excavated pit. The inlet pipe will be screened and wrapped in geofabric. Water will be pumped intermittently from the pit into the gravity separator.**

- **A gravity separator will be installed upstream of the carbon filter units to ensure the filters do not become clogged with sediment. The gravity settling unit will be equipped with a set of erect and hanging baffles to trap floating hydrocarbons and sediments. The gravity separator will be designed with an overflow rate of 150 gpd/ft^2. Alternative configurations utilizing slating baffles and/or in-line filters for silt removal will be reviewed for performance if submitted by the contractor.**

- **Downstream of the gravity separator an additional pump will be required to deliver flow through the carbon filters. A valve will regulate pump flow to ensure the carbon filters are not pressurized in excess of manufacturer's recommendations.**

- **Two to four carbon filters will be placed in series after the pump. We anticipate using Calgon 200 pound units with a minimum 20 minute contact time. However, the contact time may be varied if on-site bench tests indicate water treatment is enhanced by a longer or shorter contact time.**

  Each 200 pound filtration unit will contain Calgon Filtrasorb 300 or equal to minimize porosity occlusion. The treated effluent will be stored in a holding tank, pending laboratory results. If the stored effluent does not meet Central Valley Regional Water Quality Control Board maximum contaminant levels (MCL) the treatment cycle will be repeated until the water is in compliance. After use, carbon canisters and carbon will be disposed of properly.

5.2 Discharge

NPDES

After the MCL is met, the water will be discharged into an unlined, upgradient trench on the property where it will be allowed to infiltrate or it will be applied to the soil remediation pile to assist in keeping moisture content at appropriate levels.

5.3 Contaminant Monitoring

Samples of water will be obtained from the holding tank and submitted for TPH analysis. After set up of the initial treatment process (i.e. the number of reiterations to achieve the MCL is established) effluent monitoring will occur on an as needed basis during the remediation period or as required by Alameda County Department of Environmental Health and/or the California Regional Water Quality Control Board. In addition to monitoring effluent, the groundwater will be monitored on a quarterly basis. Groundwater samples will be obtained from a down gradient monitoring well. This will ensure all groundwater moving off-site is in compliance with the established MCL.

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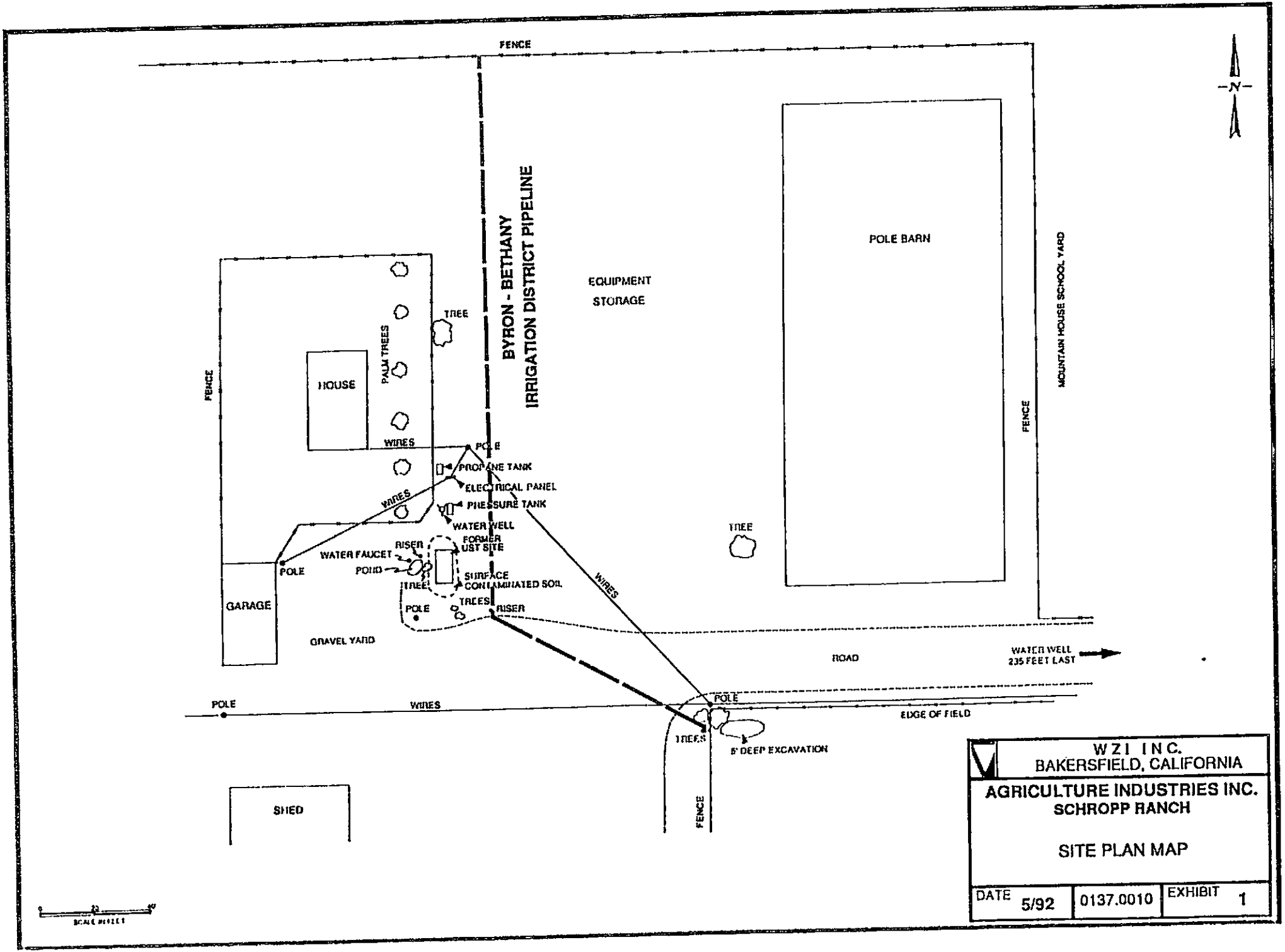

WZI INC.
BAKERSFIELD, CALIFORNIA

AGRICULTURE INDUSTRIES INC.
SCHROPP RANCH

SITE PLAN MAP

DATE		EXHIBIT
5/92	0137.0010	1

PHASE I PRELIMINARY SITE ASSESSMENT

REVIEW AVAILABLE DATA
- Site Use History
- Geology
- Hydrology
- Climatology and Air Quality
- Land Use
- Natural Resources and Biota
- Previous Regulatory and Enforcement Actions

CONDUCT INITIAL PROBLEM ANALYSIS
- Contamination Sources
- Contaminated Areas
- Nature of Contamination
- Potential Migration Pathways
- Potential Receptors
- Potential Human Health Concerns
- Potential Environmental Concerns
- Potential Remedial Technologies and Alternatives

DEFINE INVESTIGATION PROGRAM
- Waste, Soil, Water, Air Sampling, and Analysis
- Bench- and Pilot-Scale Tests
- Endangerment Assessment
- Data Management
- Quality Assurance / Quality Control
- Health and Safety Requirements
- Schedule

DEFINE FEASIBILITY STUDY PROGRAM
- Potential Technologies
- Potential Alternatives
- Required and Special Analysis Criteria
- Required and Special Analysis Methodologies
- Schedule

PREPARE WORK PLAN

Remedial Investigation
- Site History Description
- Description of Present Understanding of Nature and Extent of Contamination
- Description of Previous Agency Actions
- Sampling Plan
- Analysis Plan
- Data Management Plan
- Endangerment Assessment Plan
- Bench- and Pilot-Scale Tests Plan
- Quality Assurance/Quality Control Plan
- Health and Safety Plan
- Report Description
- Remedial Investigation Schedule

Feasibility Study
- Potential Remedial Technologies
- Potential Remedial Alternatives
- Alternatives Analysis and Comparison Plan
- Report Description
- Feasibility Study Schedule

SUBMIT WORK PLAN TO CLIENT FOR REVIEW

SUBMIT WORK PLAN TO AGENCY FOR APPROVAL

PHASE II COMPREHENSIVE SITE ASSESSMENT

CONDUCT FIELD INVESTIGATION

CONDUCT LABORATORY ANALYSIS

CONDUCT BENCH- AND PILOT-SCALE TESTING

CONDUCT OFFICE ANALYSIS

PREPARE PROBLEM ASSESSMENT REPORT

SUBMIT DRAFT REPORT TO CLIENT FOR REVIEW

SUBMIT REPORT TO AGENCY FOR APPROVAL

PHASE III REMEDIATION FEASIBILITY STUDY

SCREEN POTENTIAL REMEDIAL TECHNOLOGIES

SCREEN POTENTIAL REMEDIAL ALTERNATIVES

ANALYZE AND COMPARE REMEDIAL ALTERNATIVES

SELECT RECOMMENDED REMEDIAL ACTION

PREPARE PROPOSED REMEDIATION PLAN

SUBMIT DRAFT TO CLIENT FOR REVIEW

SUBMIT PLAN TO AGENCY FOR APPROVAL

PHASE IV IMPLEMENTATION REMEDIAL ACTION PLAN

DEVELOP REMEDIAL ACTION PLAN
- Conduct Necessary Engineering Studies
- Prepare Engineering Plans and Specifications
- Develop Final Cost Estimate

SUBMIT TO CLIENT FOR REVIEW

SUBMIT REMEDIAL ACTION PLAN TO AGENCY FOR APPROVAL

SOLICIT, EVALUATE BIDS AND SELECT CONTRACTOR(S)

IMPLEMENT REMEDIAL ACTION PLAN

SUBMIT PROGRESS REPORTS TO AGENCY

SUBMIT FINAL PROGRESS REPORT TO AGENCY AND OBTAIN APPROVAL

INITIATE LONG-TERM, REMEDIAL CARE PROGRAM, IF REQUIRED (MONITORING, MAINTENANCE, ETC.)

WZI INC.
BAKERSFIELD, CALIFORNIA

AGRICULTURE INDUSTRIES INC.
SCHROPP RANCH
ENVIRONMENTAL SITE ASSESSMENT
REMEDIATION STEPS

DATE			EXHIBIT
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APPENDIX I

WZI SOIL AND WATER SAMPLE PROTOCOL

APPENDIX I

WZI SOIL AND WATER SAMPLE PROTOCOL

Soil Sampling with Drill Rig

A two and one-half split spoon sampler fitted with three (3) six inch stainless steel or brass sample tubes will be used to collect samples. In each borehole, samples will be collected at five foot intervals at a predetermined depth. After drilling to each sampling depth, the sampling apparatus will be inserted into the hollow auger and driven into the undisturbed soil beneath the borehole.

Upon recovery, the lower two (2) sample tubes, designated A and B, will be sealed by covering with aluminum foil, capping with plastic and sealing with cloth tape. This sample recovery method minimizes head space in the sample tubes. The samples will then be stored on ice pending delivery to a certified laboratory for chemical analysis and accompanied by appropriate Chain of Custody documents. The material in the third tube and in the sample "shoe" will be examined and described, then discarded. Sample descriptions will include lithology, moisture content, fossil content, and odor. Samples will also be checked with an Organic Vapor Meter (OVM). Lithologic logs for each borehole will be compiled utilizing the sample descriptions.

The sample will be washed with a non-phosphate cleaner and double rinsed with water after each use. Auger flights will be steam cleaned after drilling each borehole. This will assure that contamination is not transferred to other boreholes. The cleaning will take place on established cleaning sites and the effluent will be contained.

Uncontaminated boreholes (as determined by OVM filed tests) will be backfilled with the same material or cuttings extracted from the hole during drilling after placing five feet of bentonite in the bottom of the hole. Boreholes found to have contaminated soil will be

backfilled with a cement and sand slurry containing no more than five percent bentonite. The cuttings from these holes will be placed in U. S. Environmental Protection Agency (EPA) approved, 55 gallon barrels with lids, stored on-site pending laboratory analysis and disposed of at an approved facility if necessary, with the appropriate Chain of Custody documents. Within 30 days a mitigation report will be submitted to the Department of Environmental Health Services which will include three (3) remediation methods. The report will be signed by a Registered Geologist or a Registered Civil Engineer.

Water Sampling

All equipment that is used in a monitoring well for purging, sampling or depth measurement shall be decontaminated by steam cleaning or a TSP wash and triple rinse procedure prior to use and before reusing when purging or sampling.

1. Start at the furthest up gradient well and work down gradient. When contamination is suspected, sample the clean wells first.

2. Obtain access to well and check well head for damage or tampering.

3. Measure depth to groundwater and calculate well volume.

4. Check and record pH, temperature and conductivity.

5. Purge a minimum of three to five well volumes, cleaning the bailer between runs. The purging rate should not be so great as to dry the well or have the formation water cascade down the casing. If purging causes the well to be pumped dry allow it to recharge for up to 24 hours prior to sampling. If it does not recharge within 24 hours, it is considered a dry well.

6. Dump or pump purged water directly into barrels on-site and hold for proper disposal.

7. After purging check and record pH, temperature and conductivity every ten minutes until they stabilize. Stability is indicated by having two consecutive measurements within 0.5 units of pH, within 2 °F for temperature and within five percent for conductivity.

8. Pour samples from bailer directly into sample bottles. For bottles without preservation - rinse cap and bottle two to three times with well water and fill keeping the head space to a minimum. For bottles with a preservative DO NOT RINSE just fill and maintain a minimum head space.

9. Place samples in cooler with "dry ice" or "blue ice" for transportation to the laboratory.

10. Deliver samples to the laboratory the same day of sampling, whenever practical. If next day delivery is necessary, the samples are to be kept refrigerated at 39 °F (4 °C) overnight and delivered to the laboratory the following morning.

11. A "Chain of Custody Document" will accompany the samples at all times.

12. Repeat depth measurements, and record values.

13. Secure well head.

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APPENDIX II

HEALTH AND SAFETY PLAN

APPENDIX II

SITE HEALTH AND SAFETY PLAN

I. GENERAL INFORMATION

Client:	*Agriculture Industries, Inc.*
Project Number:	*0137.0010/Schropp Ranch*
Project Manager:	*Stephen G. Muir*
Health and Safety Officer:	*Patrick O. Dunn Jr.*
Site Safety Officer:	*Stephen G. Muir*
Health and Safety Plan Prepared by:	*Stephen G. Muir/Patrick O. Dunn Jr.*
Issue Date:	*February 25, 1992*
Effective Period:	*180 days*

II. SCOPE AND APPLICATION

The provisions of this Health and Safety Plan (HSP) are based upon an evaluation of known and/or suspected site contamination only, and are designed to minimize health and safety hazards of site activities as described in the Scope of Work. If during the course of site work new chemical contamination is discovered, or additional site activities not described in the Scope of Work become necessary, all work shall stop pending an evaluation of the new information and appropriate modification of this Plan. The Health and Safety Officer shall direct this evaluation.

III. HEALTH AND SAFETY ORGANIZATION

Minimum qualifications, duties, and responsibilities of all site personnel:

Project Manager

Hazardous Waste Field Investigation Experience
Knowledge of Work Plan Procedures and Equipment
Knowledge of Standard Site Safety Procedures and Equipment
Training (40 Hour, 3 Day Site Specific)
Respirator Fit Tested and Trained

Health and Safety Officer

Trained Health and Safety Professional or Equivalent
Site Safety Experience In Hazardous Waste Field Investigations
Knowledge of Work Plan Procedures and Equipment
Knowledge of Standard Site Safety Procedures and Equipment
Training (40 Hour, 3 Day Site Specific)
Respirator Fit Tested and Trained

Site Safety Officer

Site Safety Experience in Hazardous Waste Field Investigations
Knowledge of Work Plan Procedures and Equipment
Knowledge of Standard Site Safety Procedures and Equipment
Air Monitoring Instrument Calibration and Use
Respiratory Protective Equipment Maintenance and Use
Training (40 Hour, 3 Day Site Specific, CPR, First Aid)
Respirator Fit Tested and Trained

Project Personnel

Training (40 Hour, 3 Day Site Specific, 8 Hour Refresher)

Respirator Fit Tested and Trained

Air Monitoring Instrument Calibration

IV. SITE DESCRIPTION AND CHARACTERISTICS

Site Description:

3880 Mountain House Road, Alameda County, California. Ranch shop area in rural area site is flat. A school is present 400 feet east of proposed excavation site.

Topographic Map Attached:	_____ yes	_X_ no	Attached to Work Plan
Location Map Attached:	_____ yes	_X_ no	Attached to Work Plan

V. WORK PLAN

Objectives:

Exploratory trenching to determine if gasoline contaminated soil is present. Minor amounts of contaminated soil will be excavated and stockpiled if found.

Tasks:

1. *Preparation of Phase I Investigation*
2. *Preparation of Work and Health and Safety Plan*
3. *Exploratory Trenching*

VI. HAZARD EVALUATION

Known and/or Suspected Chemical Contaminants on the Site:

Name	CAS #	PEL	IDLH	Health Effects
Gasoline	*8006619*	*300 ppm*	*5,000 ppm*	*Central Nervous System*
(Benzene)	*71432*	*1 ppm*	*5,000 ppm*	*Central Nervous System - Cancer*
(Toluene)	*108883*	*100 ppm*	*5,000 ppm*	*Central Nervous System*
(Xylenes)	*1330207*	*100 ppm*	*5,000 ppm*	*Central Nervous System*

Chemical Hazards:

Toxic _X_ Ignitable _X_ Corrosive _____ Reactive _____

Medical or Biological Waste _____

Forms of Chemical Hazards:

Solid _X_ Dust _X_ Fiber _____ Fume _____

Liquid _____ Vapor _X_ Gas _____

Special Characteristics:

i.e. shock sensitive or explosives: _____ yes _X_ no

Explain:

Possible Gasoline Contaminated Soil

Physical Agents:

Radiation _____ Noise _X_ Heat Stress _____

Describe:

Noise around heavy equipment.

Safety Hazards:

Heavy equipment operations.
Trenching cave-ins.

Anticipated Hazards by Job Task:

Task		Chemical Hazards	Physical Agents	Safety Hazards
1.	*Phase I Investigation*	*None*	*None*	*None*
2.	*Work Plan Preparation*	*None*	*None*	*None*
3.	*Exploratory Trenching*	*Gasoline*	*Soil and Vapor, Noise*	*Heavy Equipment, Trenching Cave-Ins*

VII. SITE STANDARD OPERATING PROCEDURES

A. Personal Protective Equipment (PPE)

WZI Inc. follows the standard U. S. Environmental Protection Agency (EPA) personal protective equipment convention for all hazardous waste field work, described as follows:

Level A PPE

Full encapsulating chemical protective suit, positive pressure demand self-contained breathing apparatus, disposable Tyvek coveralls as the undergarment.

Level B PPE

Positive pressure-demand self-contained breathing apparatus or supplied-air respirator in positive pressure mode, 5 minute escape bottle worn at the hip, chemical protective suit (permeable Tyvek or impermeable coated Tyvek or Saranex coveralls for splash hazards), chemical protective gloves, inner surgical gloves, chemical protective boots with steel toe and steel shank, hard hat.

Level C PPE

Full face or half face air purifying respirator, chemical protective suit (permeable or impermeable coated Tyvek or Saranex coveralls for splash hazards), chemical protective gloves, inner surgical gloves, chemical protective boots with steel toe and steel shank, hard hat, safety glasses if half face respirator is worn.

Level D PPE

Tyvek coveralls, hard hat, steel toed, steel shank work boots, safety glasses, work gloves.

PPE required for each job task depends on the chemical and physical hazards expected of that task, as described above. The following PPE ensembles are assigned to project tasks:

Task		Assigned PPE Ensemble
1.	*Phase I Investigation*	*N/A*
2.	*Work Plan Preparation*	*N/A*
3.	*Exploratory Trenching*	*Level D*

B. Site Control

Initial Site Entry

The WZI Project Manager shall arrange an initial site briefing with the WZI Health and Safety Officer (HSO). Based on the information provided in this initial site briefing and on the nature of magnitude of known or suspected site contaminants and the work plan tasks, the HSO shall determine initial site entry procedures and shall specify them below. It is the responsibility of the Site Safety Officer (SSO) to implement these procedures and direct proper site entry.

Personal Protective Equipment (PPE) ensemble for personnel to wear during initial site entry:

Level D with respirator available. Respirator shall be half mask with organic vapor cartridges (color-coded black and gray)

If Level C PPE is required for initial site entry, then all personnel MUST carry a 5 minute escape air bottle.

Initial Site Entry Procedures:

Level D PPE and as outlined below. Air monitoring with portable photoionization detector (OVM).

Prior to entering the site, the SSO shall calibrate the portable direct-reading air monitoring instruments upwind from site in an uncontaminated area.

The SSO shall then determine background readings for all air monitoring instruments in this same upwind, off-site, uncontaminated area.

The SSO shall record the instrument calibration procedures and results and all background readings in the Site Safety Log Book.

All personnel must enter the site from an upwind position if possible.

C. Work Zones

At the beginning of each work shift the WZI SSO shall perform initial air monitoring with portable direct-reading instruments to identify the area(s) on-site where gas and vapor contamination is present.

Based on these initial air monitoring readings, the SSO shall establish discrete work zones as follows:

Exclusion Zone or "Hot" Zone

The Exclusion Zone or "Hot" Zone shall be defined as follows:

1. Wherever portable direct-reading air monitoring instruments register anything above the background readings established upwind off-site in uncontaminated areas.

2. If portable direct-reading air monitoring instruments read background throughout the site, the exclusion zone shall be defined around the area(s) of known or suspected chemical contamination, or where drilling, excavation, soil sampling, or other invasive activity is to be performed.

Decontamination Zones

The SSO shall establish a decontamination corridor adjacent to and upwind from identified exclusion zones. The SSO shall set up both equipment and personnel decontamination areas outlined under "Decontamination Procedures" below.

Support Zone

The SSO shall establish support zones upwind from the decontamination corridor where all portable direct-reading air monitoring instruments read background, at a distance of at least 20 meters from the exclusion zone.

The support zone shall be established such that support personnel may observe all personnel in the exclusion zone at all times.

If personnel must enter trenches or other excavations, a "buddy" shall remain near the excavation to maintain visual contact ("line of sight") with the personnel inside the excavation at all times. The SSO shall develop and teach all site personnel a system of hand signals that will enable the "buddy" to indicate to support zone personnel that an emergency exists inside the excavation.

The SSO shall monitor the area at least every 15 minutes with the portable direct-reading air monitoring instruments to detect any changes in gas or vapor contaminant dispersion on-site. In addition, the Action Levels and corresponding Actions as described in the HSP shall be followed.

If the wind changes direction and/or gas, vapor, or dust contamination moves into the established decontamination or support zones in concentrations that exceed permissible Action Levels established by the HSP, then the SSO shall direct site personnel to move the support zone to the new upwind area, confirming the absence of gas or vapor contamination with the portable direct-reading air monitoring instruments.

D. Air Monitoring

Direct-Reading Air Monitoring Instruments

The follow direct-reading instruments are available for field work (check all that apply):

Organic Gases and Vapors:

Thermo Environmental Organic Vapor Meter (OVM)	X
HNu Photoionizer	_____
Photovac Microtip	_____
Foxboro Organic Vapor Analyzer	_____
Colorimetric Detector Tubes	X

Inorganic Gases:

Hydrogen Sulfide Detector _____
Hydrogen Cyanide Detector _____

Combustible Gases, Vapors, and Oxygen Detector

Combination Combustible Gas / Oxygen Detector, (calibrated to the combustible gas or vapor expected).

Ionizing Radiation

Geiger-Mueller counter capable of detecting alpha, beta, and gamma radiation.

U. S. EPA Direct-Reading Air Monitoring Instrument Action Levels and Actions for Hazardous Waste Operations

Monitoring Results (Action Level)	Action
Total Organic Vapors:	
0 ppm or "background" (BG)	Level D PPE
Above BG to 5 ppm breathing zone	Level C PPE
5-500 ppm breathing zone	Level B PPE
500-1000 ppm breathing zone	Level A PPE
>1000 ppm breathing zone	Evacuate

Inorganic Gases (H2S, HCN)

Background to 5 ppm breathing zone	Level D PPE
5-40 ppm breathing zone	Level B PPE
>40 ppm breathing zone	Level A PPE or evacuate

Flammable Gases and Vapors

Background	Level D PPE
BG-20% LEL	Level D PPE if methane; evacuate if organic vapors also read > 1000 ppm .
>20% LEL	Ventilate below 20% LEL; stop work if unsuccessful

Oxygen

19.5%-21%	Level D or Level C PPE
<19.5%	Level B PPE

Radiation

Background	Continue work
Two times background	Stop work. Call Environmental Health Department. Monitor area thoroughly. Call HSO.

Site Specific Air Monitoring Equipment and Procedures

Air Monitoring Instrument	Contaminants	Where Monitored	Frequency of Monitoring	Action Level	Action
HNu, OVM or Microtip Photoionizer	Organic Vapors				
Foxboro OVA	Organic Vapors				
Combustible Gases Indicator	Combustible Gases and Vapors and Oxygen				
Hydrogen Sulfide Detector	Hydrogen Sulfide				
Colorimetric Tubes	Organic and Inorganic Gases and Vapors				
Radiation Detector	Ionizing Radiation				
Other					

Special Air Sampling Procedures:

None.

E. Site Safe Work Practices

1. *Daily Safety Meeting*
2. *On-Site Health and Safety Monitoring*
3. *All trenches shall be sloped at or beyond the angle of repose.*

F. Trenching and Excavation Safety Procedures

G. Decontamination

Personnel

Personnel will wear Tyvek garments and gloves. These will be disposed of on-site.

Equipment

1. *Wash down on-site and rinse with clean water.*

H. Procedures for Disposal of Wastes and Derived Materials

1. *All waste water and soil will be placed on contaminated soil pile and covered.*

I. Site Safety Meetings

Before beginning site work the SSO shall conduct a site safety meeting to discuss the following:

the tasks to be performed;

the safe work practices to be followed to minimize exposure to chemical and physical agents and to minimize accidents

The SSO shall document the date, time, and attendance of all site safety meetings together with a short description of the topics discussed in Appendix A of this Plan.

J. Prohibited Activities and Work Limitations

- **No eating, drinking, smoking, or chewing of tobacco**
- **Enter exclusion zones with a buddy at all times**
- **No "Hot Work" - Welding, Cutting, Grinding without permission from SOS (Hot Work Permit)**
- **Daylight hours only**

K. Health and Safety Equipment and Materials

Respirators
Coated or Uncoated Tyvek
Chemical Protective Gloves
Duct Tape
Safety Glasses
Hard Hat
Steel-Toed Steel Shank Chemical Protective Boots
Decontamination Materials
Drinking Water and Cups
Folding Table and Chairs
Parasol
Clock
Walkie Talkies
First Air Kit
Blue Ice
ABC Fire Extinguishers
Emergency Alarm Equipment

L. Record Keeping

Site Safety Log

- Site Conditions
- Work Progress
- Air Monitoring Instrument Readings
- Air Monitoring Instrument Calibration

Personnel Training Documentation

Respirator Fit Testing Records

VIII. MEDICAL SURVEILLANCE

All site employees must be enrolled in a medical surveillance program if they meet any of the following conditions: (Title 8 CCR 5192(f))

1. If an employee is or may be exposed at or above the Cal-OSHA Permissible Exposure Limit (PEL) (or to other published exposure limits if a PEL doesn't exist for a specific chemical) or 30 days or more pear year, without regard to the use of respirators;

2. If any employee wears a respirator for any part of any day for 30 days or more per year;

3. If an employee becomes, injured, ill, or develops signs or symptoms due to possible overexposure involving hazardous substances or health hazards from an emergency response or hazardous waste operation.

IX. SPILL CONTAINMENT PLAN

Not Applicable

X. EMERGENCY CONTINGENCY PLAN

Attach Map Showing Evacuation Route from Site to Nearest Hospital *Attached*

Emergency Telephone Numbers

Ambulance	*911*
Fire	*911*
Police	*911*
WZI Office	*(605) 326-1112*

Emergency Alarm and Communication Procedures

1. *Hand signals shall be developed before site work begins to communicate at a distance in noisy areas.*
2. *Radio communication with emergency teams.*

Emergency evacuation and equipment shutdown procedures must be developed, understood, and rehearsed by all site personnel before project work begins.

Emergency Evacuation Procedures

1. *Shut all equipment down.*
2. *Evacuate site upwind.*
3. *Meet at safety point.*
4. *Determine status of personnel.*
5. *Advise authorities/WZI as appropriate.*

XI. APPROVALS

Health and Safety Plan Prepared by:

Name	Signature	Date

Health and Safety Plan Approved by:

WZI Project Manager	Signature	Date
WZI Health and Safety Officer	Signature	Date
WZI Site Safety Officer	Signature	Date

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