September 12, 1996

Mr. Mark Ader
United States Environmental Protection Agency
1200 Sixth Avenue, ECL-115
Seattle, WA 98101

Re: Contract No. 68-W6-0008, Technical Direction Document No. 96-03-0023
Madras Airport Preliminary Assessment

Dear Mr. Ader

Enclosed please find the Preliminary Assessment (PA) report completed for the Madras Airport site located in Madras, Oregon. Results of the PA indicate the groundwater pathway to be the pathway of greatest potential impact to receptors.

This Technical Direction Document will remain open to address comments to this report. If you have any questions regarding this PA, please call me at 206/624-9537.

Sincerely,

ECOLOGY AND ENVIRONMENT, INC.

Jeffrey Fowlow,
Project Leader

cc: Gary Sink, EPA, Region 10 (letter only)
William Carberry, E & E, Seattle (letter only)

MADRAS AIRPORT

TDD: 96-03-0023

Contract No: 68-W6-0008

September 1996

REGION X

START

SUPERFUND TECHNICAL ASSESSMENT & RESPONSE TEAM

Prepared for:

EPA

Office of Environmental Cleanup
Region X

MARK ADER
TASK MONITOR

Prepared by:

ecology and environment, inc.
Seattle, Washington (206) 624-9537
International Specialists in the Environment

JEFFREY FOWLOW
PROJECT MANAGER

DRAFT
PRELIMINARY ASSESSMENT
MADRAS AIRPORT
MADRAS, OREGON

START REGION X

Contract No. 68-W6-0008
Technical Direction Document No. 96-03-0023

September 1996

Prepared By:

ECOLOGY AND ENVIRONMENT, INC.
1500 First Interstate Center
999 Third Avenue
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Prepared For:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DRAFT
PRELIMINARY ASSESSMENT
MADRAS AIRPORT
MADRAS, OREGON

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1.0 INTRODUCTION

Ecology and Environment, Inc., (E & E) has been tasked by the U.S. Environmental Protection Agency (EPA) to provide technical support for completion of a Preliminary Assessment (PA) at the Madras Airport site in Madras, Oregon. E & E completed PA activities under Technical Direction Document No. 96-03-0023, issued under EPA Region X Superfund Technical Assessment and Response Team (START) Contract Number 68-W6-0008. The specific goals for the Madras Airport PA identified by EPA are presented below:

- Determine the potential threat to public health or the environment posed by the site;
- Determine the potential for a release of hazardous constituents into the environment; and
- Determine the potential for placement of the site on the National Priorities List.

Completion of the PA included reviewing existing site information, collecting receptor information within the range of site influence, conducting a site visit, and determining regional characteristics. This document includes a discussion of background site information (Section 2); a discussion of migration/exposure pathways and potential receptors (targets) (Section 3); and a list of pertinent references (Section 4).

2.0 SITE BACKGROUND

2.1 SITE LOCATION

Site Name:	Madras Airport aka United States Army, Madras Army Air Field
CERCLIS ID No.:	OR2570090017
Location:	Cherry Road Madras, Oregon 97741
Latitude:	44°39'53" North
Longitude:	121°08'49" West
Legal Description:	Sections 26, 27, 28, 33, 34, 35, T10S, R13E
Site Owner:	City of Madras 216 N.W. "B" Street Madras, OR 97741-1685 (541) 475-2622 Jefferson County 75 S.E. "C" Street Madras, OR 97741 (541) 475-2449 (former owner: United States Army)
Site Operator:	City of Madras 216 N.W. "B" Street Madras, OR 97741-1685 (541) 475-2622 Jefferson County 75 S.E. "C" Street Madras, OR 97741 (541) 475-2449

Site Contact:

Mr. Don Mobley, Airport Manager
Mobley Aviation
2028 N.W. Airport Way
Madras, OR 97741
(541) 475-6947

Mr. Gerald Breazeale, Public Works Director
City of Madras
216 N.W. B Street
Madras, OR 97741-1685
(541) 475-2622

2.2 SITE DESCRIPTION

The Madras airport is an active facility occupying approximately 2,098 acres 2 miles northwest of the City of Madras, Jefferson County, Oregon (Figure 2-1). The facility is comprised of several runways and buildings (Figure 2-2). A total of six businesses conducting a variety of airport-related activities operate at the site. These businesses include one wing-tip manufacturer, two maintenance shops, one flight school, and two aerial pesticide applicators. Approximately eight people are employed at the businesses and some businesses also are used as residences (Breazeale 1996; Mobley 1996).

The airport is located on relatively flat terrain which slopes approximately 10 feet per mile to the northwest. Several sewage disposal ponds are located on the western portion of the site. The site appears to be drained by Campbell Creek which originates in the center of the site and flows intermittently in a northwesterly direction approximately five miles to its confluence with the Deschutes River. Residential housing is located within one mile of the airport in all directions (USGS 1963).

The airport is managed by Don Mobley and administered by Gerald Breazeale for the City of Madras. The airport is owned by the City of Madras (City) and Jefferson County (County). The site was formerly owned by the United States Army and was ceded to the City and County in 1948 through a Quit Claim deed (Harrell 1991). Light industrial and warehouse properties are located southeast of the airport. In general, land surrounding the site is privately owned.

2.3 SITE OPERATIONS AND WASTE CHARACTERISTICS

The Madras Airport originally served as a US Army air base during World War II. Following the war, the Army filed a Quit Claim deed and ceded the property to the City of Madras and Jefferson County, Oregon, who still own the property. The city and county lease space to private businesses. Aerial photographs from 1951 to 1985 appear to indicate that the airport was used

mostly as a base for aerial pesticide applicators and for maintenance and fuel stations that service them (Lockheed 1992).

Based on information available from the site file, interviews with the current property owner and operator, and direct observations during the site visit, it is assumed that the contaminants of concern at the site primarily are petroleum compounds spilled during refueling operations, and various pesticides which were applied, spilled, and/or discharged to the ground surface. A spill of polychlorinated biphenyls (PCBs) reportedly occurred during the removal of transformers while the site was under Army ownership (EPA 1994), but the report or location of the spill could not be confirmed in the Army Corps of Engineers site file or through personal communications (Davis 1996).

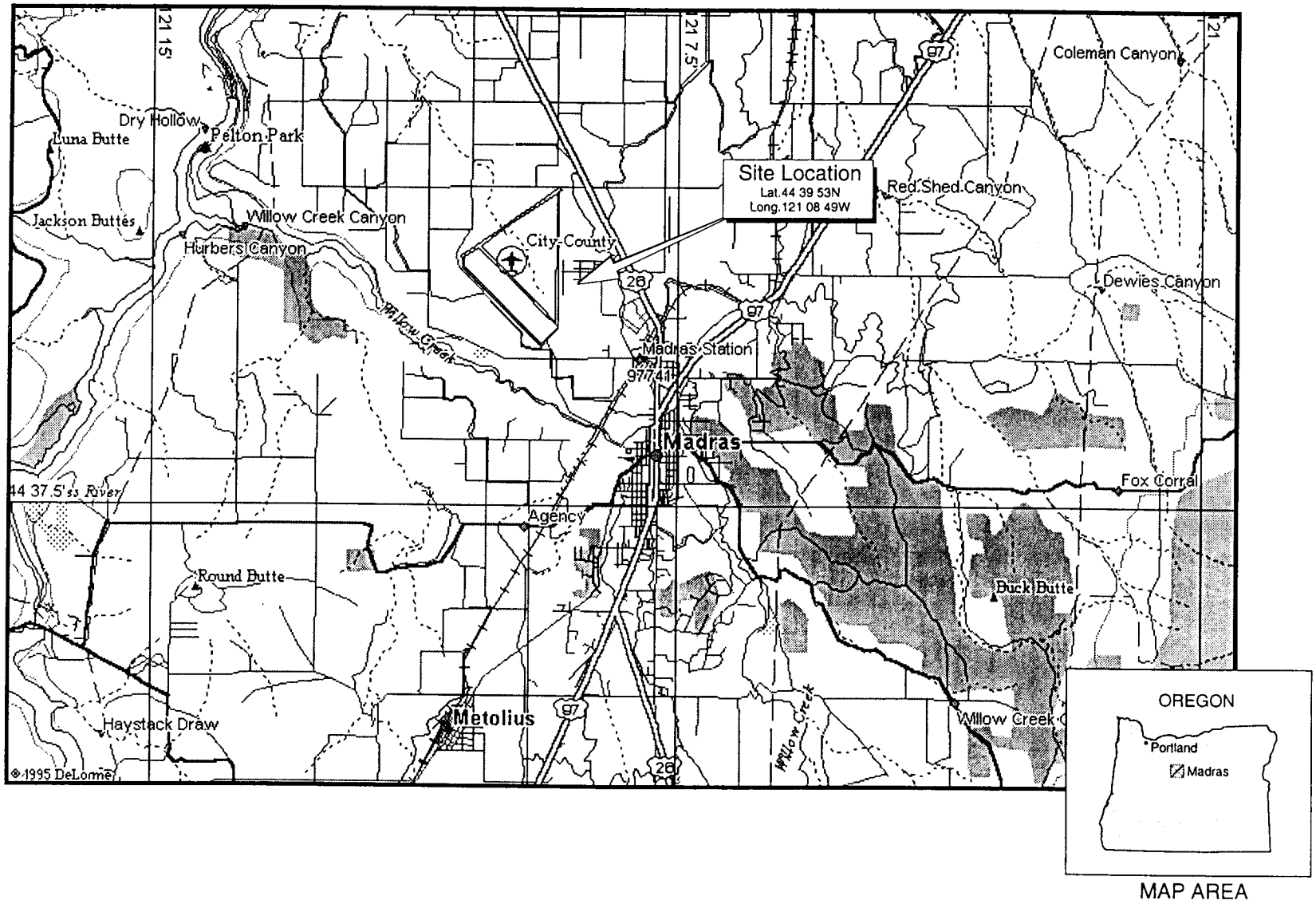
A file review and survey of the aerial photographs from 1951, 1956, 1961, 1968, 1979, 1982, and 1985 shows many changes to the airport over the 34-year span. Several areas of concern have been interpreted from the photographs and are represented on Figure 2-2. Other ground disturbances have been identified and variously described as "light" or "dark-toned area(s)", "unidentified depressions" or "mounds", "ground scar(s)", "graded area(s)", and "disturbed ground". No additional information regarding these features exists and no hazardous substances were observed in these areas during the site visit.

Seven other areas on airport property were identified during an aerial photographic analysis of the site conducted by the Lockheed Engineering and Science Company in conjunction with a Resource Conservation and Recovery Act (RCRA) closure plan submitted on behalf of the City and County (TEC 1986). A description of these seven areas, arranged chronologically, is summarized below.

- "Suspected pesticide waste disposal area": On the 1951 photograph, approximately 20,000 square feet of stained soil was identified north of the northern-most hangar. The area is presently overlain by a cement washdown pad. No evidence of contamination was present during the site visit.

- "Stained areas": On the 1956 f approximately 1,000 square feet of stained soil was identified near the fueling stations. This staining is attributed to fuel spills and is, therefore, exempt from CERCLA investigation.

- "Possible spillage": On the 1968 photograph, approximately 900 square feet of soil identified in the vicinity of a pesticide applicator aircraft. No signs of contamination were observed during the site visit.



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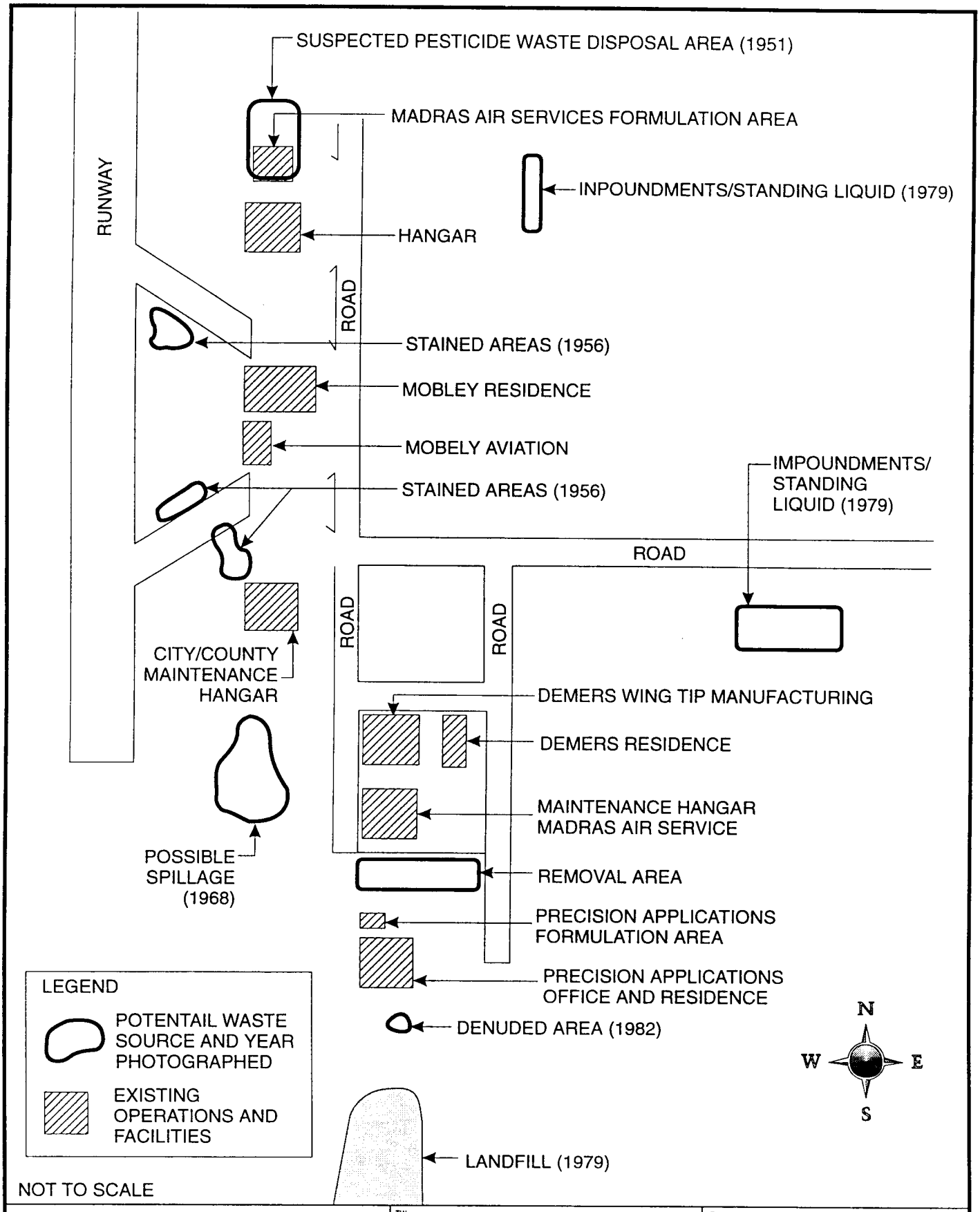
MADRAS AIRPORT
MADRAS, OREGON

Figure 2-1
SITE LOCATION MAP

0 1mi 2mi
SCALE: 1" = 2 miles

Drawn By:	Date	TDD/Job No.	Dwg. No.
MRE	06-10-96	96-03-0023	KJ0100



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Title: MADRAS AIRPORT MADRAS, OREGON

Figure: Figure 2-2
MADRAS AIRPORT SITE MAP

Drawn By:	Date	TDD/Job No.	Dwg. No.
MRE	8-7-96	96-03-0023	KJ0100

- "Impoundment/Standing liquid": On the 1979 photograph, two areas were identified: an approximately 3,000 square foot area in the north-central portion of the site; and an approximately 18,000 square foot area in the eastern portion of the site. These areas have never been sampled and there is no data to suggest that hazardous contamination is present. No constructed impoundments or standing liquids were observed during the site visit.

- "Landfill": On the 1979 photograph, a landfill was identified along the south border of the property and extending offsite to the south. The landfill encompasses approximately 166,000 square feet. No surficial expressions of contamination were observed during the site visit.

- "Denuded area": On the 1982 photograph, an area also described in 1985 photograph as "possible spill", along southern border of the site, covering approximately 2,500 square feet. Vegetation did not appear significantly different than surrounding areas during the site visit.

- "Removal area": From TEC (1986), an approximately 20,000 square foot area where pesticide-contaminated soils were identified. These soils were excavated and removed to a landfill in 1990. Due to the previous removal, this area is excluded as a potential source of contamination.

Based on best professional judgement and documentation of historical use of the site, three of the seven potential sources of contamination will be considered further: the suspected pesticide waste disposal area identified in the 1951 photograph; the possible spillage identified in the 1968 photograph; and the denuded area identified in the 1982 photograph. All three areas are suspected pesticide disposal areas. The types and concentrations of pesticides discharged to the ground surface will be assumed based on analytical data collected by ODEQ and a consultant for the City and County during their investigations from 1986 to 1992. For the purposes of this PA, it is assumed that DDT, which has also been previously detected as the degradation product DDE, and endosulfan I and II, which was the primary contaminant of concern during the 1990 removal, are the primary contaminants suspected at the three spill locations.

Two pesticide application companies presently are in operation at the Madras Airport. Madras Air Services, owned and operated by Mr. Jim Demers, operates its pesticide formulation and discharge and aircraft washdown in the northern portion of the property. Formulation, discharge, and washdown take place on a cement pad which is sloped to a sump in the center. Liquid which collects in the center sump drains through a metal grate into a polyethylene tank. The collected liquids are then pumped out of the tank and reused in pesticide formulations. It is unknown if incompatibilities of product intended use are considered when rinse waters and pesticide rinsates are reused in subsequent formulations. The polyethylene tank and cement pad is underlain by plastic sheeting.

Madras Air Services stores its chemicals in two locked truck trailers south of the cement pad. No soil staining was observed in the vicinity of the cement pad.

Precision Applications is another pesticide application company owned and operated by Mr. Paul Jensen. The Precision Applications compound is on the southern edge of the airport property. All formulations, discharges, and aircraft washdowns occur on a cement pad/sump collection system similar in function to the Madras Air Services system. No soil staining was apparent during the site visit. Both Madras Air Services and Precision Applications operate maintenance hangars. Mr. Jensen reported that solvents used to clean parts are collected in the sump of a parts washer and reused until ineffective. Ineffective solvents and solvent sludges are removed and burned in a burn barrel. Mr. Jim Demers reported that no solvents were used in his hangar. Solvents also are used at the county-operated maintenance hangar. Mr. Mobley reported that solvents are recycled in a closed tank and replaced when necessary by a commercial supplier who removes the spent solvent and replenishes the tank with new solvent.

Mr. "Ace" Demers, Jim Demers' father, owns and operates a wing tip manufacturing shop in the central area of the airport property. The only hazardous substances reportedly used in this shop is acetone to clean resins out of paint brushes. Spent acetone is dumped into 55-gallon steel drums and plastic 5-gallon buckets on site where it evaporates leaving the resin to harden in the drums and buckets. Once the resin in the drums and buckets is completely solidified, they are disposed in a landfill.

2.4 SITE INVESTIGATIONS

Environmental investigations at the Madras Airport appear to have been focused on operations at the pesticide applicators in the south area of the site. The EPA site file reflects that several Oregon Department of Environmental Quality (ODEQ) investigations and EPA Resource Conservation and Recovery Act (RCRA) inspections have occurred at the site.

In May 1984, ODEQ collected one soil sample from an existing pesticide washdown disposal area located on airport property between parcels leased by Madras Air Services and Precision Applications. Analytical results of the soil sample indicated the presence of 10 herbicides and 14 pesticides in the sample (TEC 1986). The herbicides were not on the EPA's "P" list and were, therefore, not considered hazardous. P,P,-DDE, present at a concentration of 11.7 milligrams per kilogram (mg/kg) (TEC 1986), was reportedly a result of spraying completed by the U.S. Army while it was owner and, thus, not attributable to the pesticide applicators (EPA 1996). Two other pesticides were present, Endosulfan I and Endosulfan II, at concentrations of 4.8 mg/kg and 4.6 mg/kg, respectively (TEC 1986). Because Endosulfan I and Endosulfan II are "P" listed substances

and it was decided that future investigations in preparation of a site closure would be based on concentrations of these compounds (TEC 1986). Based on the presence of those hazardous constituents, the city (Jefferson County was added as a potentially responsible party later) was issued a Notice of Violation dated September 24, 1984. The city was requested to submit a closure/post-closure plan to ODEQ by November 1, 1984 (ODEQ 1989).

In March 1985, ODEQ issued the city a Notice of Violation and Intent to Assess Civil Penalty alleging that the city operated a hazardous waste collection, storage, treatment or disposal site without a license (ODEQ 1989). The city subsequently applied for and received several extensions of the deadline for completion of a closure plan (TEC 1986).

From December 1986 to February 1988, ODEQ received several closure plans from the City of Madras. ODEQ found the draft proposals to contain "technical limitations".

In April 1987, a RCRA inspection performed by EPA and ODEQ resulted in additional requirements for the city regarding site and hazard characterization. Another RCRA inspection in July 1988 found that, among other things, the city was in violation of 40 CFR 265 for failure to monitor groundwater at disposal facilities.

In April 1989, the analytical results of soil sampling in the wash down area south of Madras Air Services facility completed by ODEQ and the city's consultant detected several additional pesticides and herbicides. As a result, the herbicides MCPA, Dichloroprop, and 2,4-D, and the pesticides P,P-DDD, P,P-DDT, Methoxychlor, and Parathion are identified as contaminants at the site (TEC 1990).

In August 1989, a Stipulation and Consent Order (No. HW-CR-89-37) was signed by representatives of ODEQ, the City of Madras, and Jefferson County. The Order required the City and County to conduct and complete an investigation of the pesticide disposal area, and to achieve a "clean closure" of the area if hazardous constituents were found to exist.

From October 29 to November 1, 1990, 400.32 tons of contaminated soil was removed from the site to a hazardous waste landfill in Arlington, Oregon. Based on analysis of confirmation soil samples, TEC proposed that remaining soil was within acceptable health hazard levels. However, analysis of samples of a small lens of water that was encountered during the excavation showed levels of 2,4-D and MCPA at concentrations of 11,000 ug/L and 8,700 ug/L, respectively (TEC 1992).

In May 1991, a RCRA inspection was conducted resulting in the recommendation not to allow clean closure of the site until the source of the water lens was taken into account (Long 1991).

In August 1991, the City of Madras Public Works Department installed an

"impenetrable barrier", consisting of new surfacing, curbs, trenches, and plastic sheeting, to prevent the migration of water from the active Madras Air Services facility, north of the excavation area, to the area which underwent soil removal.

In September 1991, soil samples of the excavated area and chemical mixing/storage areas at the Madras Air Services and Precision Applications parcels were collected and submitted for analysis by City and ODEQ personnel. Analytical results indicated no hazardous constituents remained or were below the health safety level standards adopted in the closure plan. With ODEQ approval, the excavation site was backfilled.

A November 1991 RCRA Facility Assessment report identified three potential Solid Waste Management Units (SWMUs): the surface impoundment (the disposal area where excavation took place); the Madras Air Services parcel immediately north of the surface impoundment, and the Precision Applications parcel immediately south of the surface impoundment. Based on the removal activity and subsequent analytical results of the soil samples collected on the 3 parcels, the report recommended that no further action be required at the site and that a closure certification be accepted and approved for the facility.

In August 1992, ODEQ granted clean closure for the airport site (ODEQ 1992).

In March 1995, EPA removed the facility from the Federal Facilities Docket because the Madras Airport Facility is not federally-owned, the RCRA program accepted clean closure of the site, and a waiver was granted from post-closure permitting requirements (EPA 1995).

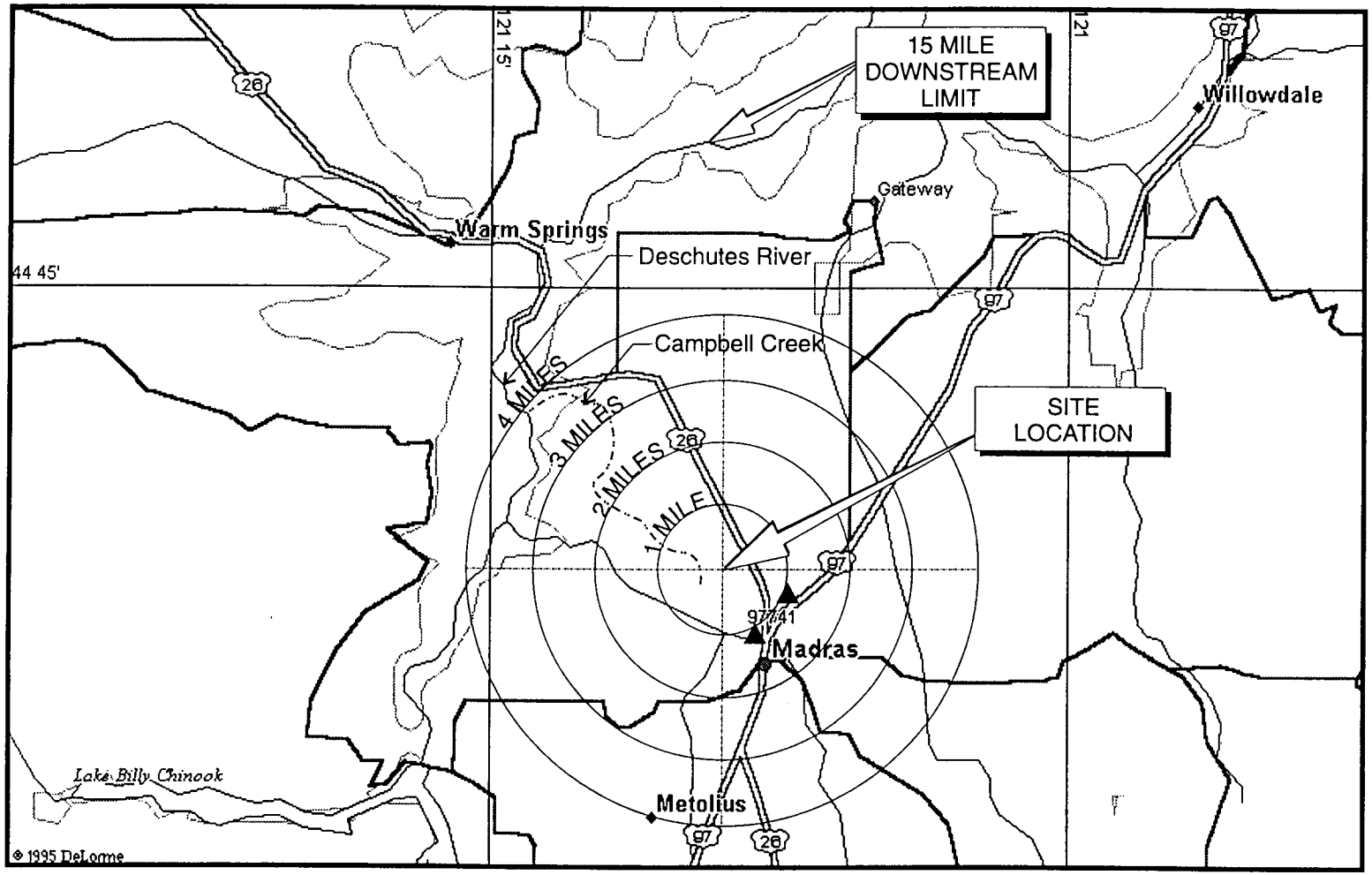
3.0 MIGRATION/EXPOSURE PATHWAYS AND TARGETS

The following sections describe migration/exposure pathways and potential targets within the site's range of influence (Figure 3-1).

3.1 GROUNDWATER MIGRATION PATHWAY

The site and the City of Madras are located in the high lava plains of central Oregon. The stratigraphic sequences consist of thin, open textured, subophitic to intergranular olivine basalt flows grading laterally through breccia and tuff into tuffaceous sedimentary rocks of Pliocene-Miocene age, approximately 4 to 7 million years old (Walker and MacLeod 1991).

Trenching on site, which took place as a result of the soil removal activity, revealed that only 2 to 3 feet of soil overlies bedrock. The top 3 feet of bedrock consisted of interbeds of basalt and sandstone averaging approximately 0.5 feet thick. The wells logs on record with the Oregon Department of Water Resources indicate that a pattern of volcanic and sedimentary rocks is consistent to a depth of greater than 800 feet. During installation of the 3 City of Madras wells, the depths at which groundwater was first encountered ranged from 361 feet to 404 feet, with depth to static water level averaging 294 feet. Production is listed as 200 to 300 gpm for the municipal wells. However, there may be areas where a shallower aquifer exists. A log for one well 3 miles east of the site is producing 60 gpm at 24 feet depth. No wells are located on airport property (Breazeale 1996). All water used on site is purchased from the Deschutes Valley Water District (DVWD). The source of the water for the DVWD is at Opal Springs approximately 11 miles southwest of the site (Office of Water Master, District 11). The City of Madras currently owns and operates 2 wells, both of which are between 1 and 2 miles from the site (Figure 3-1). Well #3 is a standby well, which augments the supply from the DVWD during times of high usage. Well #2 is used as an emergency backup supply. Another well, Well #1, has been abandoned (Braezaele 1996).



▲ = CITY OF MADRAS WELLS

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MADRAS AIRPORT
MADRAS, OREGON

0 1.3mi 2.6mi
SCALE: 1" = 2.6 miles (approx.)

Figure 3-1
SITE RANGE OF INFLUENCE

Drawn By:	Date	TDD/Job No.	Dwg. No.
MRE	8-7-96	96-03-0023	KJ0100

Table 3-1 WELL INFORMATION		
Identification	**Depth (feet below ground-surface)**	**Pumping Capacity (gallons per minute)**
City of Madras Well #2	451	300
City of Madras Well #3	477	200

The capacity of the DVWD service to the City of Madras could not be determined via personal contacts with City officials (Breazeale 1996). As a conservative estimate, it is assumed that the entire population of the City of Madras is served by the wells, when they are in use. Populations using groundwater for drinking water are summarized in Table 3-2.

Table 3-2 GROUNDWATER DRINKING WATER POPULATION WITHIN A 4-MILE RADIUS			
Distance (Miles)	**Well Identification**	**Well Population**	**Total Population per Distance Ring**
0 - 1/4		0	0
1/4 - 1/2		0	0
1/2 - 1		0	0
1 - 2	City of Madras Well #2 City of Madras Well #3	2,335 2,335	4,670
2 - 3		0	0
3 - 4		0	0
Total			4,670

Groundwater is used to irrigate commercial food crops. The site is not in a wellhead protection area (EPA 1996).

3.2 SURFACE WATER MIGRATION PATHWAY

The airport is drained by Campbell Creek, an intermittent stream. Campbell Creek flows approximately five miles northwest to its confluence with the Deschutes River. The Deschutes River flows approximately 80 miles to its confluence with the Columbia River which discharges to the Pacific Ocean. The Deschutes River's average annual flow is approximately 5,194 cubic feet per

second as measured at river mile 100.1 (USGS 1987). A second stream, Willow Creek, is located approximately 1/2 mile southwest of the site, however, it has been determined from topographic maps, interviews, and the site visit that a probable point of entry from the site to this stream does not exist (USGS 1993). The nearest probable point of entry from a source at the site to surface water (i.e., Campbell Creek) is approximately 2,100 feet (USGS 1993).

The 2-year, 24-hour rainfall event for the area of the site is 1.2 inches (NOAA 1973). The mean annual total precipitation in the area of the site is 12.14 inches (USDA 1979). The upgradient drainage area of the site is estimated from a topographic map to be 1,000 acres (USGS 1993). Soils at the site are classified as Madras sandy loam (SCS 1958; TEC 1987). Surface water runoff is slow (SCS 1958). Water erosion is negligible, but wind erosion may occur in places (SCS 1958). The Madras sandy loam is approximately 8 to 14 inches deep at the site and in underlain by a layer of medium brown sandy clay silt approximately 6 inches thick (TEC 1987). This material is underlain by light brown sandy clay approximately 2 inches thick which is underlain by very light brown "durapan" (TEC 1987). Basalt is encountered at approximately 2 feet bgs (TEC 1987).

The Deschutes River, located within 15 miles downstream of the site, is used for recreational boating and fishing (EPA 1996). No surface water intakes are located within 15 miles downstream of the site (EPA 1996). A total of 9,138 pounds of fish are caught from the Deschutes River annually (EPA 1996).

The Federally-threatened and State-threatened Bald eagle (*haliaeetus leucocephalus*) is known to be present within five miles of the site (EPA 1996). It is expected that this eagle forages along the Deschutes River within 15 miles downstream of the airport. No other Federally- or State-listed species are known to occur within 15 miles downstream of the site (EPA 1996). It is estimated from National Wetland Inventory maps that 10 miles of wetland river frontage exist along Campbell Creek and that an additional 4.5 miles of wetland river frontage exist along the Deschutes River within 15 miles downstream of the site (USF&WS 1995b; USF&WS 1995a).

3.3 SOIL EXPOSURE PATHWAY

Six businesses are located at the airport. A total of eight people work at the businesses. Of these workers, four reside in homes adjacent to the businesses or in living quarters within the businesses (Breazeale 1996). Three businesses (a pesticide applicator, the wing-tip manufacturer, and a maintenance shop) are located within 200 feet of the removal area. Four people reside at these three businesses. The airport is not fenced and is accessible to the public. No terrestrial sensitive environments are known to occur at the site. Table 3-3 provides population figures for people residing within 1 mile of the site.

Table 3-3 POPULATIONS WITHIN A 1-MILE RADIUS	
Distance Ring	**Population**
0 - 1/4 mile	8
1/4 - 1/2 mile	14
1/2 - 1 mile	41
Total	63

Source: EPA 1996.

3.4 AIR MIGRATION PATHWAY

One of the aerial pesticide applicators is the nearest regularly occupied building to an area of potential concern. This business also contains a residence and is located approximately 150 feet from the removal area. Ten people work at the airport, including four people that reside in businesses at the airport. One additional person resides at the airport (the wife of the flight school operator). A total of 5,730 people reside within 4 miles of the site (EPA 1996).

An estimated 254 acres of wetlands are known to occur within 4 miles of the site (EPA 1996). The Federally- and State-listed threatened Bald eagle (*haliaeetus leucocephalus*) occurs within 3 to 4 miles of the site (EPA 1996; Vrilakas 1996). The Federally-listed candidate species Sessile mousetail (*myosurus sessilis*) occurs within 1 mile of the site (EPA 1996; Vrilakas 1996). In addition, the federal candidate and state sensitive-critical Bull trout (*Salvelinus confluentus*) can be located in Lake Simtustus, 3 to 4 miles from the site (Vrilakas 1996). No other sensitive environments are known to occur within 4 miles of the site. Table 3-4 provides populations and wetland acreage by distance ring within 4 miles of the site. Land used for commercial agriculture is located within 1/2 mile of the site.

Table 3-4
POPULATIONS AND WETLAND ACREAGE WITHIN A 4-MILE RADIUS

Distance (Miles)	Population	Wetland Acreage
On a source	0	0
0 - 1/4	8	5
1/4 - 1/2	14	7
1/2 - 1	41	28
1 - 2	290	35
2 - 3	2,681	100
3 - 4	2,696	77
Total	5,730	254

Source: EPA 1996; USF&WS 1995a; USF&WS 1995b, USF&WS 1995c, and USF&WS 1995d.

4.0 REFERENCE LIST

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Davis, Coby, USAF-HQ, Real Estate, 1996, Telephone conversation with Jeffrey Fowlow, Ecology and Environment, Inc., regarding report of PCB spills.

Harrell, Ernest J., Major General, USA Commanding, 1991, Findings of Fact, Defense Environmental Restoration Account, Formerly Used Defense Sites Program, Findings and Determination of Eligibility, Madras Army Airfield, Oregon, Site Number F10OR019600.

Lindeman, Monica H., 1994, Federal Facilities Site Assessment Coordinator, Memorandum to file regarding phone conversation with Coby Davis, USAF, HQ, ACC/CEPA/ECHO.

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_____, August 4, 1992 letter to Ms. JoAnne Holcomb, City Manager, City of Madras, regarding approval of clean closure report.

Tenneson Engineering Corporation (TEC), April 14, 1992, letter to Barbara Puchy, Hazardous Waste Specialist, Hazardous Waste Section, Oregon Department of Environmental Quality, regarding Madras Airport Pesticide Spill Closure Certificate.

_____, 1990, Madras Airport Pesticide Disposal Closure Plan, for the City of Madras, Work Order No. 6802.

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_____, 1995b, National Wetland Inventory map, Madras West, Oregon.

_____, 1995c, National Wetland Inventory map, Culver, Oregon.

_____, 1995d, National Wetland Inventory map, Madras East, Oregon.

U.S. Geological Survey (USGS), 1963 photorevised in 1993, 7.5 minute series topographic map, Madras West, Oregon, quadrangle.

_____, 1987, Water Resources Data, Oregon.

Vrilakas, Sue, Botanist/Data Manager, Oregon Natural Heritage Program, May 17, 1996, letter to Jeffrey Fowlow, Ecology and Environment, Inc. regarding data system search for rare, threatened, and endangered plants and animals in the Madras area.

Walker, George W. and MacLeod, Norman S., 1991, Geologic map of Oregon, Oregon Department of Geology and Mineral Industries.

ATTACHMENT A

PHOTOGRAPHIC DOCUMENTATION

PHOTOGRAPH IDENTIFICATION SHEET

Camera Serial #: Minolta X370-N **TDD #: 96-03-0023**
Lens Type: 50 mm **Site Name: Madras Airport Preliminary Assessment**

Photo No.	Date	Time	By	Description
1.1	5-10-96	1045	JK	North pesticide loading/washdown area; facing southwest.
1.2	5-10-96	1045	JK	Chemical storage area south of drain in Photo 1.1; facing south.
1.3	5-10-96	1050	JK	North pesticide washdown area: facing south.
1.4	5-10-96	1100	JK	Overview of Madras Air Service, facing south.
1.5	5-10-96	1115	JK	Drums and buckets of resin-hardened acetone south of Ace Demer's wingtip manufacturing facility; facing west.
1.6	5-10-96	1115	JK	Empty containers south of Ace Demer's facility; facing northwest.
1.7	5-10-96	1120	JK	Overview of Ace Demer's facility; facing northwest.
1.8	5-10-96	1125	JK	Oil storage area on the south end of Ace Demer's facility; facing south.
1.9	5-10-96	1130	JK	Area where soil removal occurred; facing east.
1.10	5-10-96	1135	JK	Cement berm which collects surface runoff from paved area within Ace Demer's facility; facing east.
1.11	5-10-96	1155	JK	Pesticide formulation area at Precision Applications; facing southwest.
1.12	5-10-96	1155	JK	Collection tanks for pesticide rinsate at Precision Applications; facing southwest.
1.13	5-10-96	1155	JK	Drain plumbed to collection tanks at Precision Applications; facing north.
1.14	5-10-96	1158	JK	Chemical storage shed at Precision Applications, facing south.
1.15	5-10-96	1200	JK	Stained soil at edge of cement formulation pad at Precision Applications; facing west.
1.16	5-10-96	1203	JK	Stained soil near drum at Precision Applications; facing west.
1.17	5-10-96	1205	JK	Close-up of drum near stained soil from Photo 1.16; facing north.

JK = Jennifer Kindred

ATTACHMENT B

REFERENCES