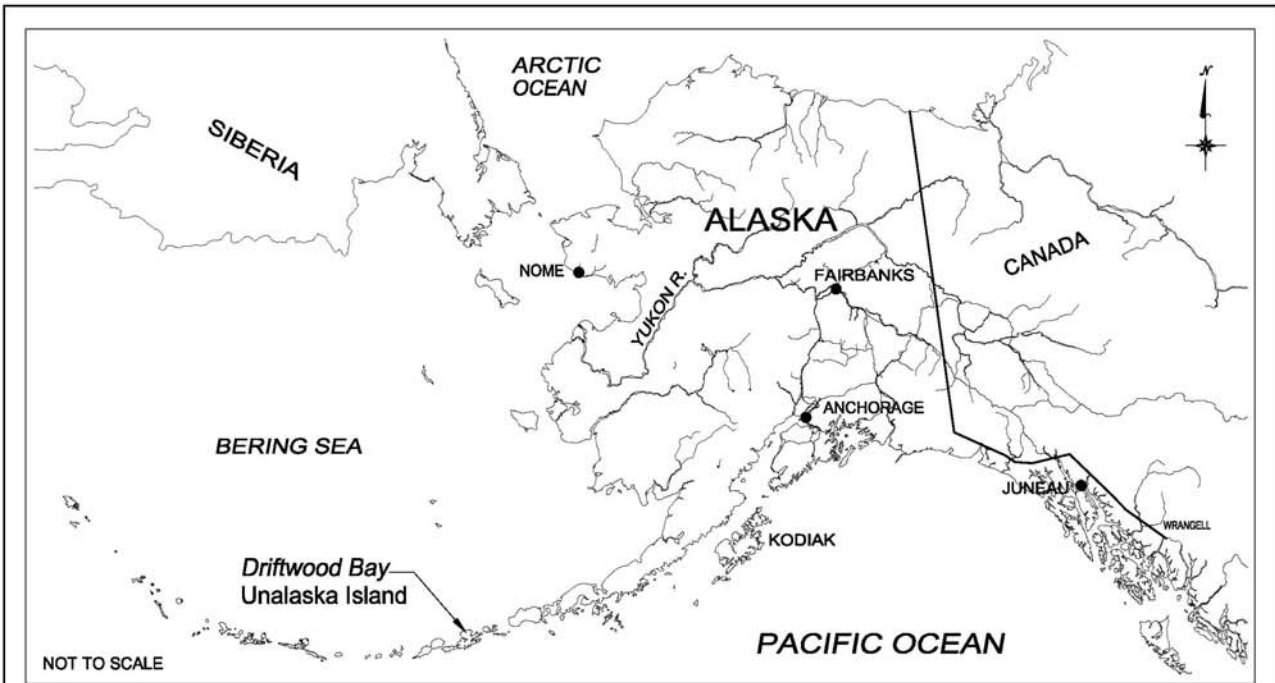




# Driftwood Bay RRS

## Facility History

- ❖ Initially one of 18 Distant Early Warning (DEW) Line stations constructed in Alaska. Made operational in 1961.
- ❖ Originally known as White Alice Communications Systems (WACS) facilities, the Alaska Air Command re-designated WACS facilities as RRSs in 1969.
- ❖ Driftwood Bay RRS was deactivated in 1977 and all facility buildings and structures were demolished or removed in 1991.

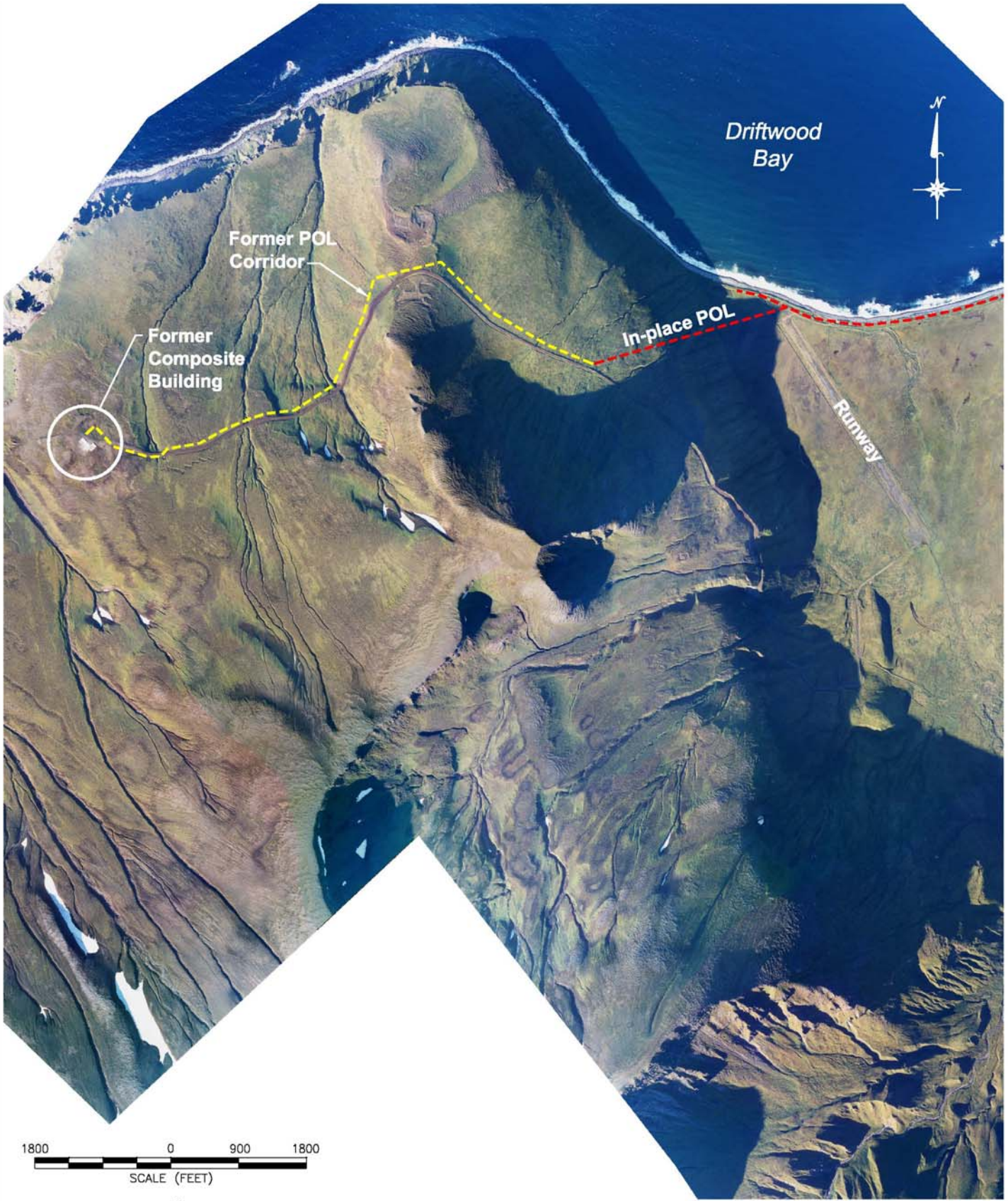


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DATE: 12 SEPT 2005
JOB NO: 20077.043.056
FILE: Duncan-Driftwoods5.dwg
DRAWN BY: S. JOHNSON

UNITED STATES AIR FORCE  
**DRIFTWOOD BAY SITE LOCATION**  
 DRIFTWOOD BAY  
 UNALASKA ISLAND, ALASKA



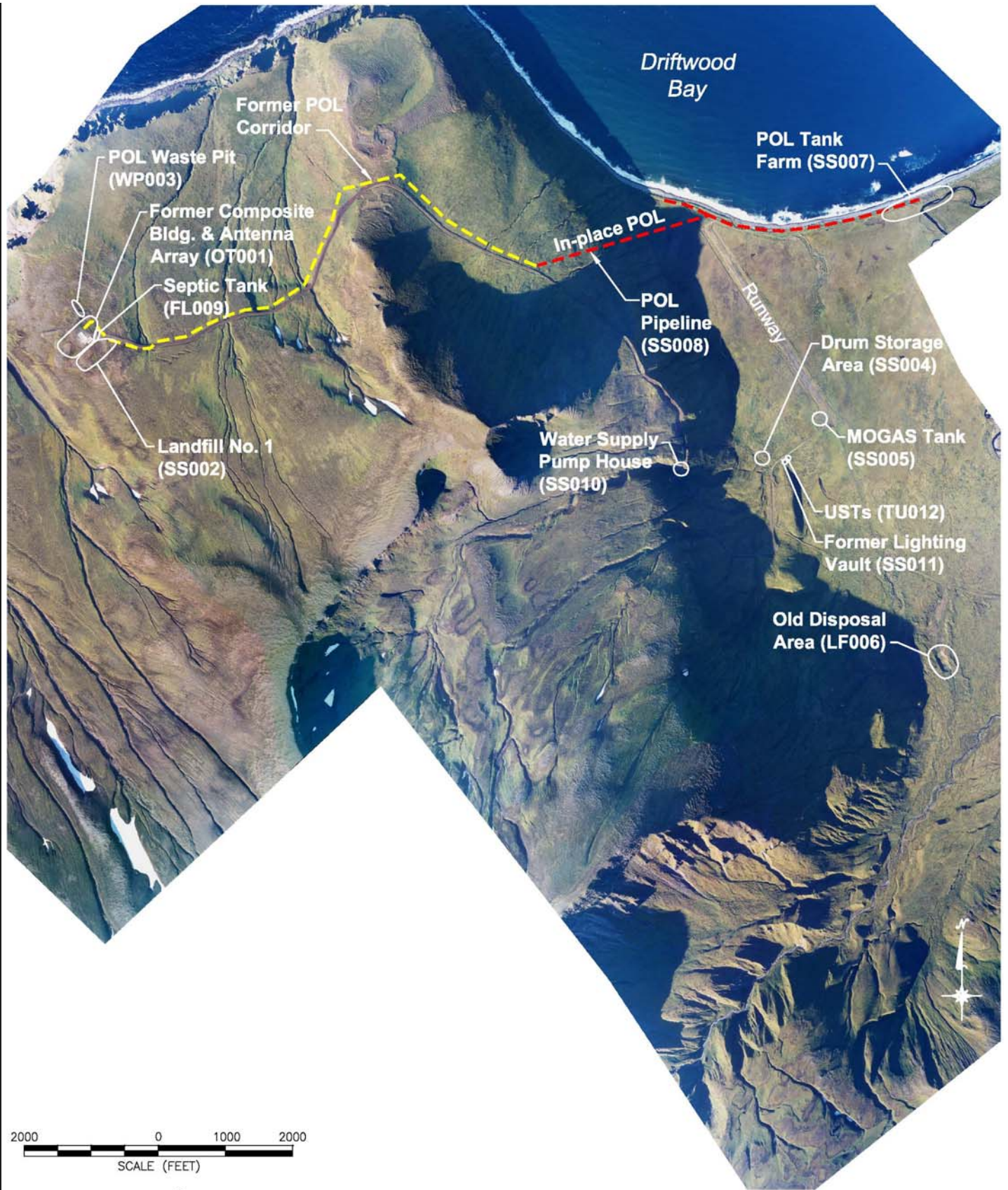


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DATE: 12 SEPT 2005
PROJ. NO.: 20077.043.056
FILE: Duncan-Driftwood5.dwg
DRAWN BY: S. JOHNSON

**UNITED STATES AIR FORCE**  
**DRIFTWOOD BAY**  
**GENERAL FACILITY FEATURES**  
 DRIFTWOOD BAY  
 UNALASKA ISLAND, ALASKA





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DATE: 12 SEPT 2005  
 PROJ. NO.: 20077.043.056  
 FILE: Duncan-Driftwood5.dwg  
 DRAWN BY: S. JOHNSON

UNITED STATES AIR FORCE  
**DRIFTWOOD BAY IRP SITES**  
 DRIFTWOOD BAY  
 UNALASKA ISLAND, ALASKA



# Driftwood Bay (Looking South)



# Driftwood Bay Valley (Looking North)



# Driftwood Bay Valley and Road to the Former Composite Building (Looking South)



# Driftwood Bay RRS Demographics

- ❖ Dutch Harbor, the closest community to Driftwood Bay RRS, is located approximately 13.5 miles to the southeast.
- ❖ There are no individual residents within 13.5 miles of the former facility.
- ❖ The Air Force currently owns the land under a Public Land Order.
- ❖ The land occupied by the former RRS is overfilled by both the Aleut Corporation and the Ounalashka Corporation.
- ❖ The land surrounding the facility is part of the Alaska Maritime National Wildlife Refuge.
- ❖ Potential Archaeological sites along coast.



# Driftwood Bay RRS Environmental Setting

## ❖ Climate

Cold maritime climate with annual temperatures ranging from minus eight degrees Fahrenheit (°F) to 80°F. Average annual precipitation is 58 inches.

## ❖ Geology

Soil and bedrock is composed mainly of volcanic rocks associated with the Makushin Volcano, located approximately 6.5 miles southwest of the facility. Soil thickness is approximately three feet at the former composite building and greater than 20 feet in the valley. Groundwater was not encountered at the top camp area and was found a few inches below ground surface in the valley.

## ❖ Hydrology

The facility area is drained by small rivers and streams that empty into Driftwood Bay. Several seeps were noted along the coast to the east of the facility discharging the cliff face several hundred feet above sea level. There were no seeps noted within the vicinity of the facility.

# **Driftwood Bay RRS Ecological Environment**

## **Biology**

**Small mammals: the tundra vole, the shrew, the Collard Lemming, and the red fox. Introduced species: the arctic ground squirrel, the blue phased arctic fox, and the Norwegian Rat.**

**Aquatic Species: several types of salmon, halibut, rockfish, Pacific Herring, sea lions, sea otters, geese, ducks, and several other sea bird populations, as well as bald eagles.**

**Endangered species with ranges that span the vicinity of Unalaska Island: Short-tailed Albatross; Humpback, Right, and Blue Whales.**

# Stakeholders

- ❖ City of Unalaska
- ❖ Ounalashka Corporation Qawalangin Tribal Council
- ❖ Aleut Corporation (TAC)
- ❖ US Fish and Wildlife Service (Alaska Maritime National Wildlife Refuge)
  - ❖ Regional
  - ❖ Refuge Manager
  - ❖ Threatened and Endangered Species Manager
  - ❖ Real Estate
- ❖ Bureau of Land Management
  - ❖ Survey
  - ❖ Real Estate
- ❖ Alaska Department of Natural Resources
  - ❖ Mining, Land, and Water
  - ❖ Real Estate
- ❖ Army Corps of Engineers
  - ❖ Wetlands

# Regulations and Guidance

- ❖ Sites where actual/potential releases of hazardous substances at sites were result of AF activities prior to January 1984 are Environmental Restoration Account (ERA) eligible
- ❖ IRP site - all investigation work conducted under CERCLA regulations/guidance
- ❖ State

# Summary of Sites

- 12 total
  - 4 on Mountain
  - 1 POL pipeline
  - 7 in flat area near beach
- 10 Additional Points of Interest

# Sites Removed from ERP evaluation

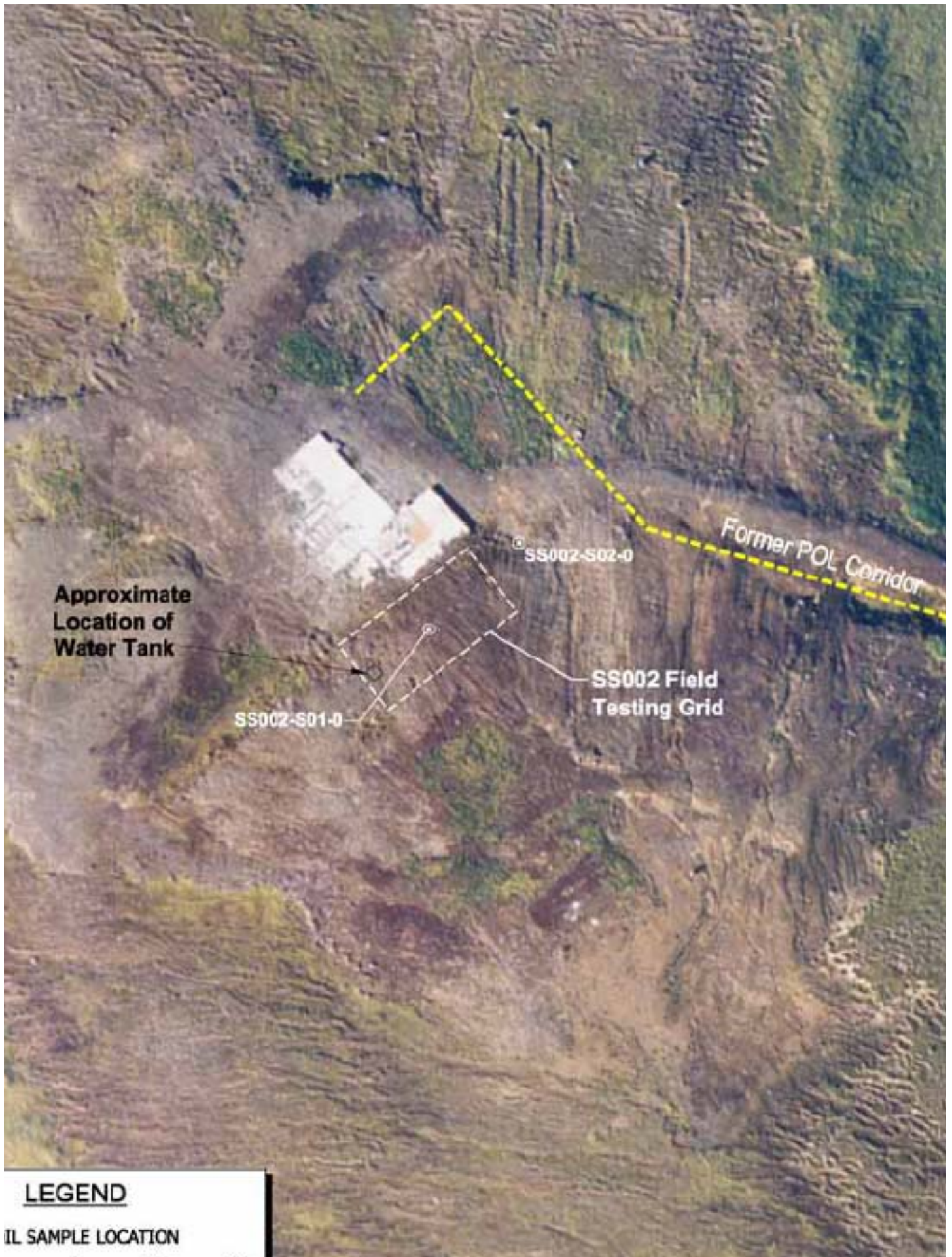
SS002 Landfill No 1

SS005 – MOGAS Tank

TU012 – Spill/Leak No. 9  
at former USTs

# SS002 – Landfill No. 1

- Landfill operated under permit
- Created under State solid waste regs after 1984, therefore not ERP eligible
- 1995 PA/SI – 1 sample collected near seepage
  - Total TPH = 16,000 mg/kg
  - DRO = 550 mg/kg
- 2000 Inspection found subsidence and surface debris
- PA/SI collected:
  - cover soil samples for field screening
  - 2 composite samples submitted for DRO/RRO, PCBs, Pest/Herbicide, metals
  - Concentrations below screening criteria



**LEGEND**

IL SAMPLE LOCATION



# SS005 – MOGAS Tank

- Alleged 2,5000 tank, likely an AST based on GW elevation
- PA/SI did not find, covered all likely locations
- Soil field screened with PID using 25' grid spacing over 225' x 50'
- One surface soil sample collected from likely tank location and 2 groundwater samples submitted for DRO/RRO, GRO, VOCs, metals
- Samples taken did not have contamination
- Not considered since not evidence of contamination found



Runway



**LEGEND**

- SOIL SAMPLE LOCATION
- SURFACE WATER SAMPLE LOCATION

100 0 50 100

SCALE (FEET)

# TU012 – Spill/Leak No. 9 at former USTs

- 650' southeast of southern end of runway
- USTs and contaminated soils removed in 1991
- Four soil samples collected in PA/SI and submitted for DRO/RRO, GRO, VOCs, PAHs, and metals
- No analytes detected above screening criteria. No odor or stained soil, were observed.
- Site suitable for administrative closure without further action.

**Former Lighting  
Vault Foundation**

**TU012  
Grid**



# ADEC Method 2 Soil Criteria in mg/kg

	Ingestion	Inhalation	Migration to GW
DRO	8250	12500	230
RRO	8300	22000	9700
Lead	400	400	
PCB	1	1	1

- Arsenic background = 9.85 mg/kg  
(UCL on the mean from Amaknak  
and Unalaska Islands, 200)

# ADEC

## Groundwater/Surface Water and Sediment Criteria

- Table C – based on Drinking Water 18 AAC 75.346
- Surface water 18 AAC 70/75
- Sediment NOAA and ORNL

# Other State criteria

- Method 3 – Modify default using site specific soil and aquifer data
- Method 4 – site-specific cleanup levels using a risk assessment

# Mountain Top Sites

- OT001: Former Composite Building
- FL009: Spill/Leak No.1 at Septic Tank
- WP003: POL Waste Pit



# The Former Composite Building Pad 0T001 (Looking Southeast)



# OT001 Site History

- Former Building foundation, antenna pads, two former 20,000 gal USTs, 110 gal AST
- 1985 USACE site inspection – 7 surface soil samples
  - PCBs max 6.8 mg/kg NW corner of building,
  - DRO max 1,100 – location not known
  - VOCs detected
- 1991- All structures demoed, only one tank noted as removed
- 1995 PA/SI – 8 surface soil samples near building and antenna pads
  - PCB ND – not coincide with 1985 locations
  - DRO 1,300 mg/kg near 110 gal tank – may not be diesel

# OT001 PA/SI

## Objectives

- Confirm removal of 2<sup>nd</sup> UST
- Determine if contaminants in surface soil
- Determine depth to bedrock
- Determine if surface water is present
- Determine if subsurface soils contaminated from 20,000 gal UST

# OT001 PA/SI Field Program

- PID readings from 21 locations around foundation and 14 around antenna pads. PID measured from hole in ground.
- Five surface soil composites from building and one from antenna pad
- Composites field screened using Dexsil test kit
- All samples submitted for DRO/RRO and RCRA metals
- Samples with PID hits submitted for GRO/PAHs

# OT001 Results

- Two PID hits (9.5 and 34.4 ppmv) noted along west side of building
- Dextsil screening all below 25 ppm (1.33 - 3.42)

# OT001 Detected Results

	Location	DRO in ppm
OT001-S01	Composite from around Antennas 3 and 4	244
OT001-S02	Composite from around Antennas 1 and 2	770
OT001-S03	Comp along west side (PID and odor)	3030
OT001-S04	Comp along west side (highest CL hit)	307
OT001-S05	Test pit at former USTs	662
OT001-S06	Test pit at elevated PID hit	168

- PCBs not detected above reporting limit
- VOCS, GRO - ?



**LEGEND**  
SAMPLE LOCATION  
ANTENNA LOCATION

# FL009 – Spill/Leak No.1 at the Septic Tank Site History

- 160' line from southeast side of composite building to septic tank
- Septic tank drains to outfall 400 feet away from tank



# FL009 PA/SI Objectives

- Confirm site layout
- Determine if tank/piping was removed
- Determine if contaminants in surface soil

# FL009 PA/SI Field Program

- Septic tank still in place
- Tank appeared dry with sediment in bottom
- Two manholes found, but may not be outfall for system (this area covered with snow)
- Soil samples collected from around vent pipe and 2<sup>nd</sup> manhole
- PID readings from 4 locations around vent pipe and 14 around antenna pads. PID measured from hole in ground.
- Soil composited and field screened using Dexsil test kit
- One sample collected 30'E of manhole
- Samples submitted for DRO/RRO, PCBs and RCRA metals

# FL009 Results

- Confirmed removal of 2<sup>nd</sup> UST
- Depth to bedrock = 3-10 feet
- No surface water observed
- PID hits from vent area low (0.2 to 0.4 ppmv). Headspace in tank had PID reading of 6 ppmv.
- Dexsil screening all below 25 ppm.
- DRO detected in sample from vent pipe at 697 mg/kg.
- PCBs not detected above reporting limit.

# WP003 (Looking Southwest)



# WP003 Site History

- Floor drain outfall 250' NE of composite building
- 1985 USACE site inspection – 1 surface soil sample from end of drain within outfall
  - Trace BTEX, solvents, PCBs noted
  - 1991- All structures demoed, only one tank noted as removed
- 1995 PA/SI – 1 surface soil sample 60' downslope from outfall
  - TPH 120,000 mg/kg
  - GRO 609 mg/kg
  - DRO 75,000 mg/kg
  - Trace BTEX, pesticide

# WP003 PA/SI

## Objectives

- Determine location of Waste Pit
- Determine if contaminants in surface soil
- Determine depth to bedrock

# WP003 PA/SI Field Program

- Four surface soil samples (+ 1 dup) collected
- Sample from battery area submitted for DRO/RRO, metals, and PCBs
- 3 samples from outfall submitted for DRO/RRO, GRO, PAHs, metals, PCBs
- 2 samples from outfall submitted for pesticide/herbicides and VOCs (not same 2 samples)

# WP003 Results

- End of pipe located 213' E of NE corner of composite building. Heavily stained soil noted up to 50' from outfall
- 15-20' diameter area of burned batteries noted 275 N of NE corner of building
- Two PID hits (9.5 and 34.4 ppmv) noted along west side of building
- Dexsil screening all below 25 ppm (1.33 - 3.42)



# WP003 Detected Results

	Location	DRO	RRO	Lead	As
WP003-S01	Outfall (2' bgs)	9250	29,800	4.45	4.94
WP003-S02	15' from outfall (2' bgs)	9380	18,700	3.78	9.22
WP003-S03	Composite from battery area (0.5' bgs)	98.5	506	76,600	3.76
WP003-S04	5' NW of outfall (3.5' bgs)	2880	337	5.8	11.5

- PCBs note detected above reporting limit
- VOCS, GRO - ?



# SS008 POL Pipeline



# SS008 Site History

- 4" diameter fuel supply line originating at fill stand on beach to pumphouse with 250,000 AST. From there, a 2" diameter pipeline was used to pump fuel to the composite building
- 1991 –removal of all above ground piping, POL removed and pipe placed in Landfill No. 1
- 1995 PA/SI – 3 surface soil samples from near north end of runway. One sample contained DRO 5,360 mg/kg.

# SS008 PA/SI

## Objectives

- Confirm pipe removal
- Locate beach landing area
- Determine if contaminants in surface soil along corridor

# SS008 PA/SI Field Program

- Soil samples collected every 200' along pipeline and PID readings collected from hole.
- Samples with PID hits submitted for DRO/RRO and metals

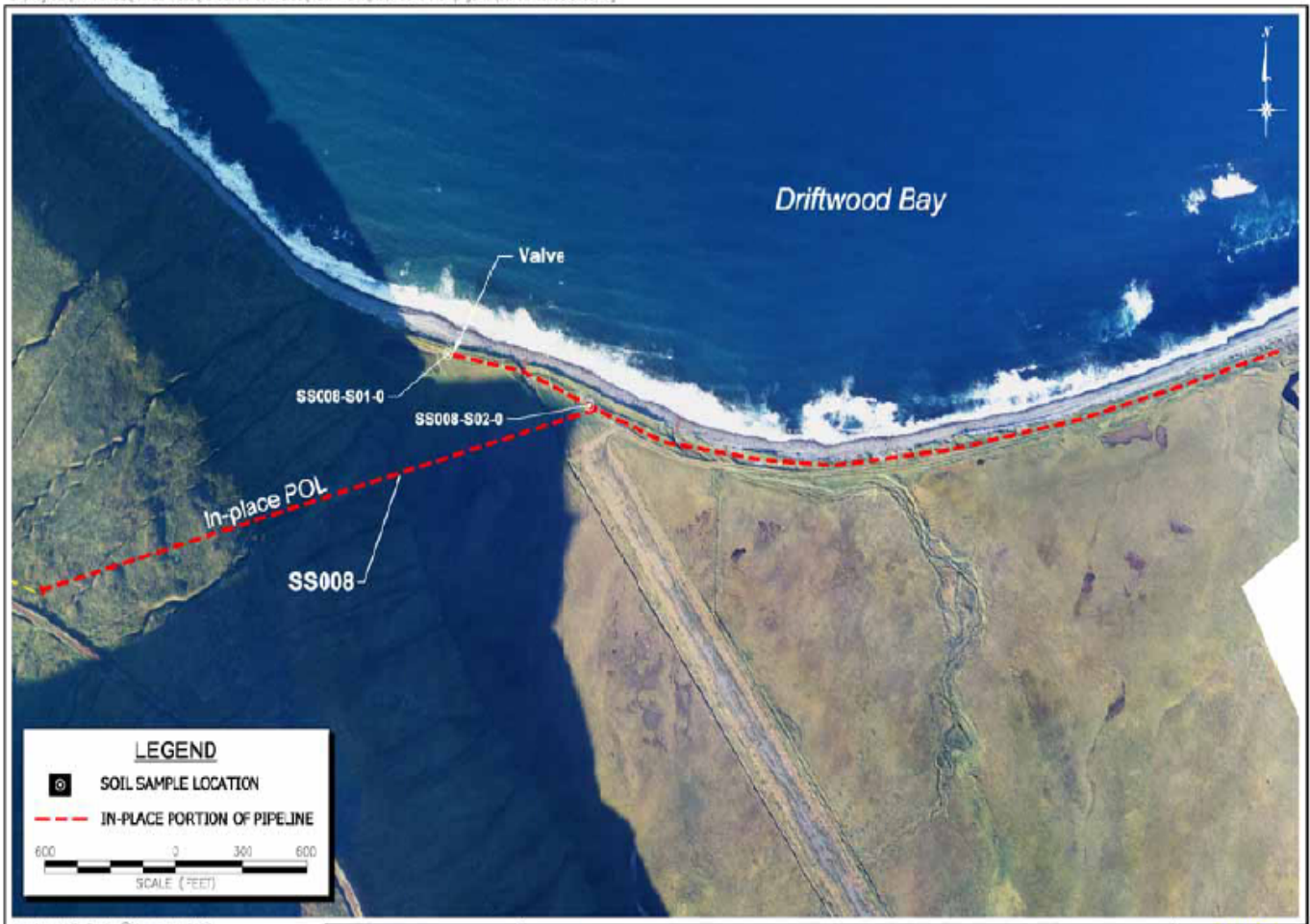
# SS008 Results

- Portions of pipe found in place along beach and west of beach. No residual produce observed
- Fill stand found
- No evidence of stressed vegetation along corridor
- Only two PID hits noted along beach
  - Under fill stand (3.1 ppmv)
  - 700' east of fill stand (28.2 ppmv)

# SS008 Detected Results

Sample	Location	DRO
SS008-S01	Fill stand (1.5' bgs)	111
SS008-S02	700' E of fill stand (1.5'bgs)	9,600





# Beach Area Sites

LF006: Old Disposal Area

SS004: Spill/leak No.4 at Drum Storage Area

SS007: Spill/Leak No. 7 at POL Tank Area

SS010: Spill/Leak No. 2 at Former Water  
Supply Pump House

SS011: Spill/ Leak No. 3 at Former Lighting  
Vault at the Runway

# LF006

## The Old Disposal Area (Looking West)



# LF006 Old Disposal Area Site History

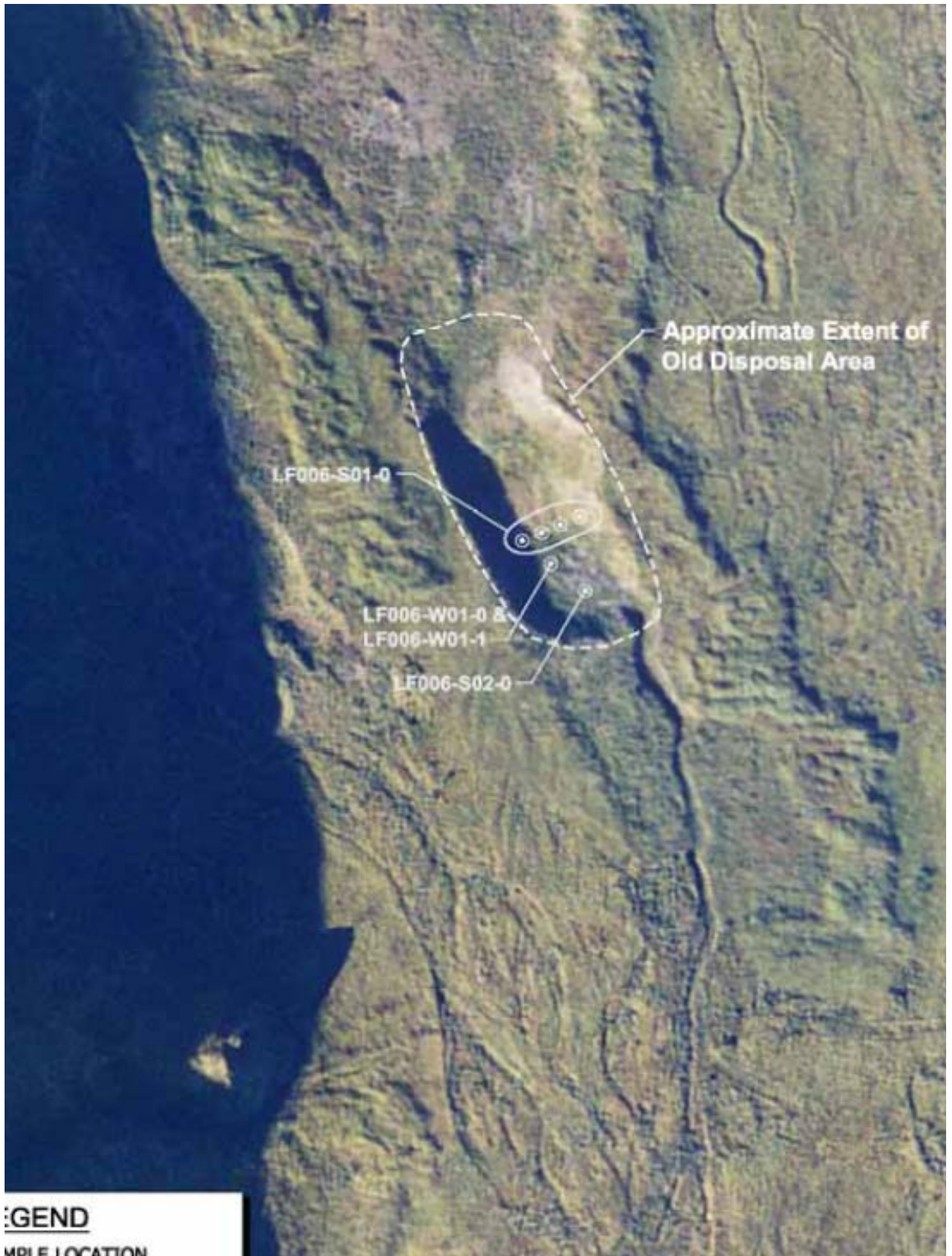
- Landfill 1 mile S of runway - extent unknown. Anecdotal evidence that fluid from heavy equipment buried here.
- 1995 PA/SI – samples collected E of landfill
  - 1 surface soil sample- TPH and DRO below screening criteria.
  - 1 surface water sample –ND

# LF006 PA/SI Objectives

- Determine extent of Landfill
- Estimate types of debris present
- Determine if contaminants in surface soil or surface water

# LF006 PA/SI Field Program

- General field reconnaissance
- Two soil samples collected
  - 4 point composite from exposed debris
  - Sample south of pond near a drum
- One surface water sample collected from near submerged drums
- Samples submitted for DRO/RRO, GRO, VOCs, PAHs, PCBs, Pest/Herb, RCRA metals



**LEGEND**

SAMPLE LOCATION

# LF006 Results

- 18 55-gallons drums observed from air
- Appeared to be a borrow pit used as a Landfill (200' x 75', 20' deep)
- Small pond contained submerged drums
- Exposed debris included engine, vehicle parts, batteries, fire extinguisher
- No stressed vegetation, or sheen on water observed



# LF006 Detected Results

- Only Arsenic detected slightly above background in composite sample (11.9)
- All other compounds below screening criteria

# SS004: Spill/Leak No.4 at Drum Storage Area Site History

- Drum Storage Area and wooden storage building 1,000' W of S end of runway
- Suspected 500 gal gasoline AST located near wooden building
- Trench noted parallel to road
- Landfill Closure Report indicates building burned and disposed in landfill
  
- 1985 report. One composite from E side of building. Trace methylene chloride detected. Seven drums also sampled and found to contain BTEX.
  
- 1995 PA/SI – 3 soil samples collected and submitted for TPH, DRO, DRO and VOCs
  - W side of building - DRO = 1,640 ppm, GRO detected
  - Drum storage area – DRO = 1,210 ppm, GRO = 248 ppm
  - Trench – low detections of TPH and DRO

# SS004 PA/SI

## Objectives

- Determine locations of features
- Determine if AST present
- Determine if contaminants in surface soil at the 4 subsites

# SS004 PA/SI Field Program

- Building foundation in place. Vegetation sparse
- Drum storage area had stressed vegetation/stained soil
- Bare soil in trench (60x20')
- No UST located
- Field testing from building, storage area, and trench
  
- Building Area
  - 15 ' grid samples in 90'x 45' area (10 feet outside of perimeter) = 28 samples
  - PID readings taken from 28 locations
  - Samples composited into four samples for Dextil field screening
  - 2 composite samples (N and S) submitted for DRO/RRO, PCBs, and RCRA metals. One sample submitted for GRO, VOCs, PAHs, Pest/herb
  
- AST – one sample collected near as-built location of AST and submitted for DRO/RRO, GRO, PAHs, and RCRA metals.

# SS004 PA/SI Field Program, cont.

- Trench
  - samples along trench in 10' intervals – 6 total
  - PID readings taken from 6 locations
  - Samples composited into one samples for Dexsil field screening
  - One surface and one subsurface (6.5') sample submitted for DRO/RRO, GRO, VOCs, PAHs, and metals. Shallow sample submitted for PCBs, and Pest/Herb.
- Storage Area
  - 10' grid over 40 X 40' area
  - PID readings taken from 25 locations
  - Samples composited into four samples for Dexsil field screening
  - 3 surface samples submitted for DRO/RRO, PCBs, RCRA metals. 2 submitted for GRO, VOCs, PAHs, Pest/Herbicide
  - 1 subsurface (4.5') from NW corner of grid submitted for DRO/RRO, GRO, PAHs, metals

# SS004 Field Results

- Building
  - No PID hits, Dextsil screening all below 25 ppm (2.5 - 3.2 ppm)
- Trench
  - Low PID hits (0.6 ppmv), Dextsil screening was 2.03 ppm
- Drum storage Area
  - PID hits at 2 locations (max 96 ppmv)
  - Dextsil screening noted one hit in DSA-2 above 25 (57.2 ppm CI)

# SS004 Lab Results

Building area – No detected exceedances

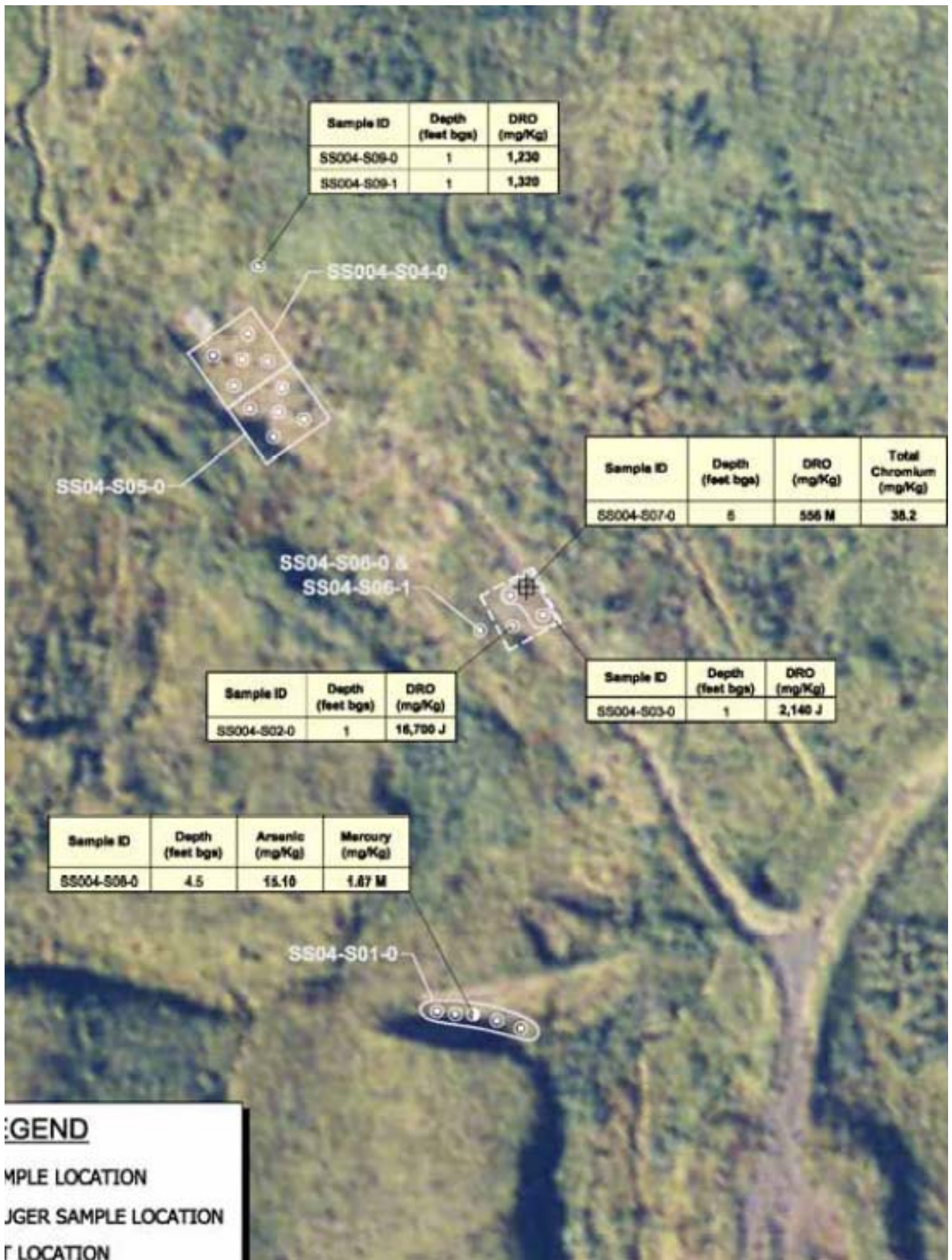
Trench – Subsurface sample contained Hg (1.67 ppm) and As (15.1 ppm) above screening criteria (1.24/9.85, respectively)

AST – DRO detected at 1,230 ppm

# SS004 Drum Storage Area Lab Results

	Location	DRO in ppm	Cr in ppm
SS004-S02	Highest PID hit	16,700	2.34
SS004-S03	Comp from highest CL hit	2,140	5.34
SS004-S07	W of highest CL hit	556	38.2





**LEGEND**

○ SAMPLE LOCATION

○ JGER SAMPLE LOCATION

○ T LOCATION

# SS007 Spill/Leak No. 7 at POL Tank Area (Looking South)



# SS007 Site History

- Tank area 3,000' E of North end of runway
- 2 250,000 gal ASTs, 25,000 Mogas AST
- 1985 – 2 soil samples collected near 250,000 gal tanks. PCBs not detected. Surface water sample from Humpy creek – no metals detected
- 1991 – oiled sand excavated from foundations and placed in Landfill No. 1. Sample from sand – TPH/DRO = 27,000 ppm/1,930 ppm.
- 1995 PA/SI –
  - 3 soil sample collected - from both foundations, north side of pumphouse E of landfill – DRO near foundation max = 9,700 ppm, near pumphouse = 13,300 ppm
  - 1 surface soil sample- TPH and DRO below screening criteria.
  - 1 surface water sample from Creek – DRO, BTEX ND

# SS007 PA/SI

## Objectives

- Determine if beach landing area near tank farm
- Confirm location of tank farm
- Determine location of 25,000 gal tank
- Determine if contaminants in surface soil

# SS007 PA/SI Field Program

- 15 ' grid established over tank farm area (110x250') = 49 samples
- PID readings from each location measured from hole in ground.
- 4 soil samples submitted for DRO/RRO and metals. Two submitted for GRO, VOCs, and PAHs

# SS007 Results

- Foundations for 250,000 gal tanks found.
- Pumphouse foundation located
- Earthen berms found surrounding tank farm
- No beach landing found due to wave action
- MOGAS tank location not found – may have been reworked by wave action

# SS007 Results, cont

- PID hits and odor noted in several locations (max = 6.1 ppmv)

	Location	DRO in ppm	Benzo(a)pyrene in ppm
SS007-S01	W pad	72.8	NA
SS007-S02	E pad	3,900	NA
SS007-S03	4' N of pumphouse	13,700	2.37
SS007-S04	Highest PID hit	37.4	0.0788

Foundations

S03-0

SS007-S02-0

SS007-S01-0

SS007-S04-0





SS010

Spill/Leak No. 2 at the  
Fromer Water Supply  
Pump House

# SS0010 Site History

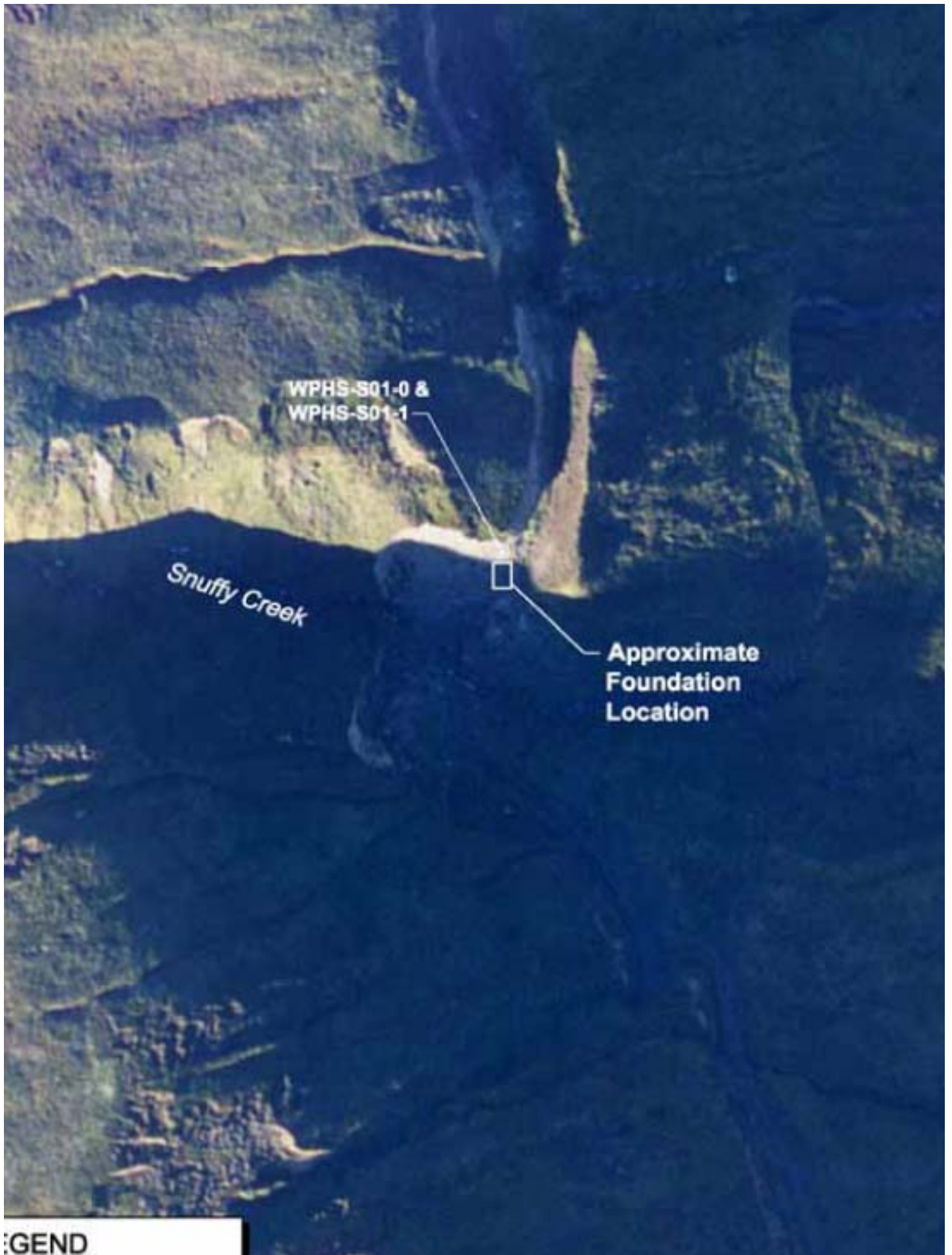
- Pipeline transported water from Creek to pumphouse to a 24,000 gal storage tank
- Pumphouse likely powered by 500 gal UST
- Previous investigations attempted to located UST with no success (landslide obstruction)

# SS0010 PA/SI Objectives

- Determine location and status of UST
- Determine if subsurface contamination is present

# SS0010 PA/SI Field Program

- Remove soils from location with backhoe. Pumphouse pad exposed.
- Large piece of metal (UST top) found and strong odor noted
- 1 soil sample collected and submitted for DRO/RRO, PAHs, and metals.



**LEGEND**

# SS010 Results

- UST appears to be in place but surrounding soil could not be removed due to safety concerns.
- DRO detected at 7,570 ppm.

SS011

Spill/Leak No. 3 at the  
Former Lighting Vault at  
the Runway

# SS0011 Site History

- Lighting vault located 650' SE of S end of runway.
- Historical photos indicate small AST near building.
- 1995 PA/SI -1 soil sample collected from N side of building and submitted for PCBs and pesticides.
- 2000 – 5 soil samples and submitted for BTEX, GRO, DRO/RRO, VOCs, PCB, and pesticides.
- DRO/RRO and SVOCs detected

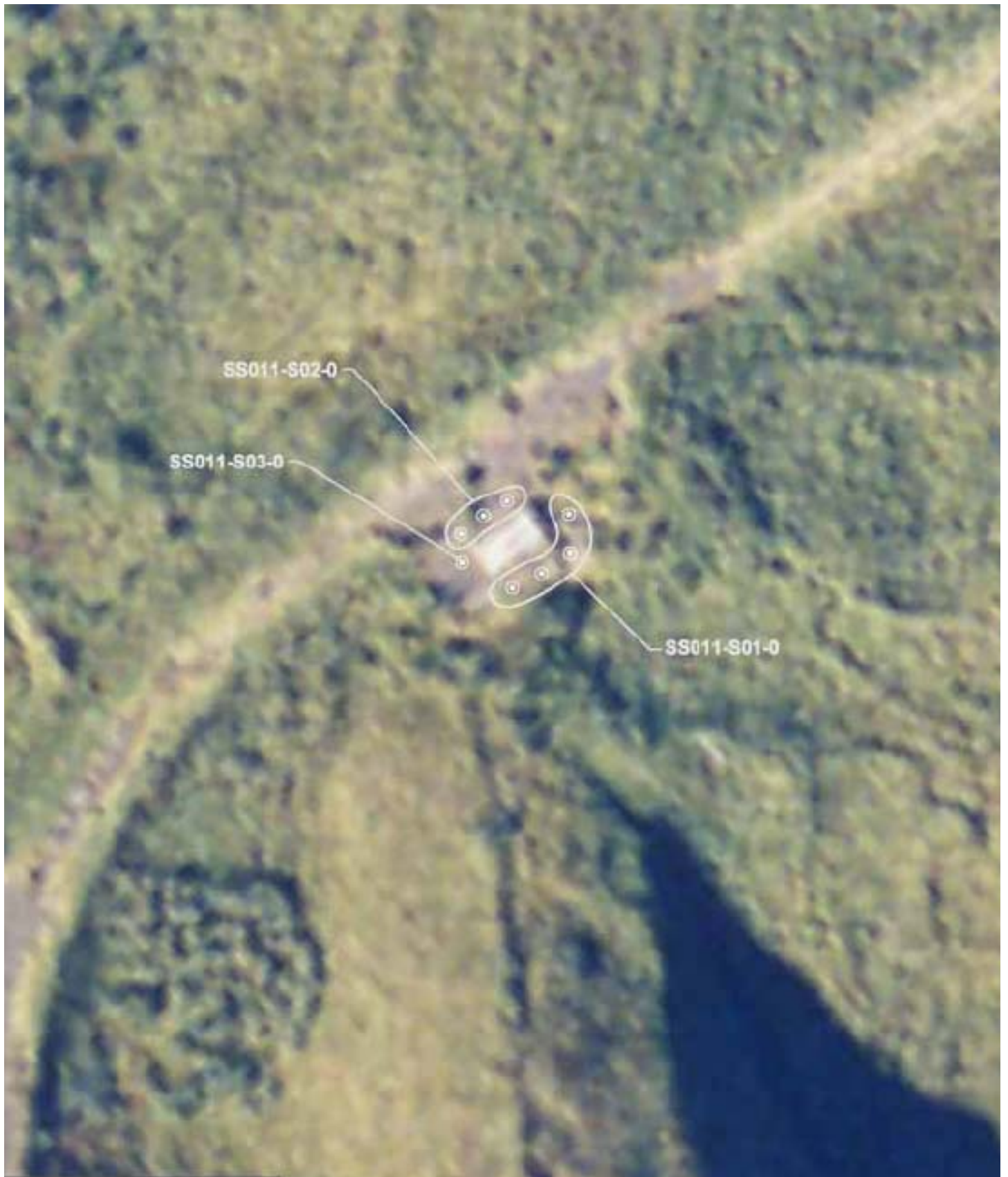


# SS0011 PA/SI Objectives

- Determine location of vault and AST
- Determine if surface contamination is present

# SS0011 PA/SI Field Program

- 3 surface soils collected from perimeter of foundation
- 2 samples collected and submitted for DRO/RRO, PCBs, and RCRA metals. One sample submitted for GRO and PAHs.



**LEGEND**

IL SAMPLE LOCATION

MPOSITE SAMPLE LOCATION

0 20 40

# SS011 Results

- Foundation of vault found in place 10 x 15'.
- Low levels of DRO detected (3.67 – 887 ppm).

# Additional Points of Interest

- 1958 Construction Camp – near former wooden storage building near runway. No evidence of contaminated areas observed
- Ammunition Storage shed – near composite building. Construction debris observed during recon
- Drainage Ditch Bordering runway – No distressed vegetation, staining, or wildlife observed
- Drums along Road to Wide Bay – no drums observed during flights, but partially covered in snow

# Additional Points of Interest

- Fish Pond NE of Drum Storage Area – no fish observed, not connected to other water source
- Heavy Equipment Storage Building – S of S end of runway.
  - Scrap metal observed in area.
  - Two samples collected for DRO/RRO, GRO, VOCs, PAHs, PCBs, Pest/Herb, and metals.
  - DRO detected at 2,210 ppm
- Red Cinder Dome Rock Quarry – 2 miles W of runway. No evidence of use as landfill noted.

# Potential Remedy

- ❖ To be determined following the RI/FS.

# Project Constraints

- ❖ Funding/Schedule
- ❖ Land Transfer requirements
- ❖ Land Use Controls
- ❖ Real Estate issues
- ❖ Past Precedents
- ❖ Litigation Potential
- ❖ Weather
- ❖ Logistics



# Funding

- Available for SSI/RI in 2007
- Removal funding?

# Land Transfer Requirements

- BLM needs based on future user needs
- F&W requirements
- Air Force policy requirements
- Legal definition of property boundary

# Land Use Controls

- Can they be implemented
- How can they be monitored

# Weather Issues

Rapidly changing conditions



# Logistics Issues



- ❖ Helicopter, barge, and fixed-wing access only
- ❖ Limited resources in the area