

Air Force Civil Engineer Center



**Performance-Based
Remediation (PBR) at
the Former Galena
Forward Operating
Location (FOL), Alaska**

Restoration Advisory
Board (RAB) Meeting
26 October 2016



Former Galena FOL Performance Based Contract

- **Parsons - Prime Contractor**
- **Partnering Team – CH2M and Ahtna Engineering Services**
- **Remediation of 32 sites contaminated primarily with fuels and solvents**
- **Installation of remediation systems from 2015 to 2018**
- **Operation through Summer 2020**





2016 Field Activities

- **Installation of 12 subsurface aeration systems:**

Bioventing

- Former POL Fuel Lab Bldg 2541 at BLM (Site SS016)
- Southeast Runway Fuel Spill (Site ST010)
- Old Abandoned Pipelines (Site CPL006)
- Former Bldg 1812 Haz Waste Satellite Accumulation (Site CSS002)
- Former Birchwood Hangar and Truck Fillstands (Sites SS014/SS017)

Soil Vapor Extraction

- Former JP-4 Fuel Stands at ADOT Maint Bldg (Site ST009)
- Former UST at POL Fuel Lab Bldg 1837 (Site ST020)

Air Sparging

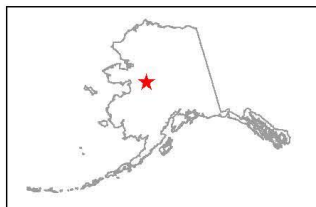
- Former Combat Alert Cell Hangar (Site CST011)

Air Sparging/Soil Vapor Extraction

- Former Wilderness Hall Bldg 1872 (Site SS005)
- Former Steam Plant USTs (Site TU001)
- Former UST at Dining Hall Bldg 1859 (Site CST014)



2016 Remediation System Locations



Legend

- Bioventing System Installation
- SVE System Installation
- Vertical Air Sparge/SVE System Installation
- Sulfate Enhanced Bioremediation Injection

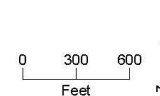


Figure 1

Installation of 2016 Remediation Systems
at the Former Galena FOL

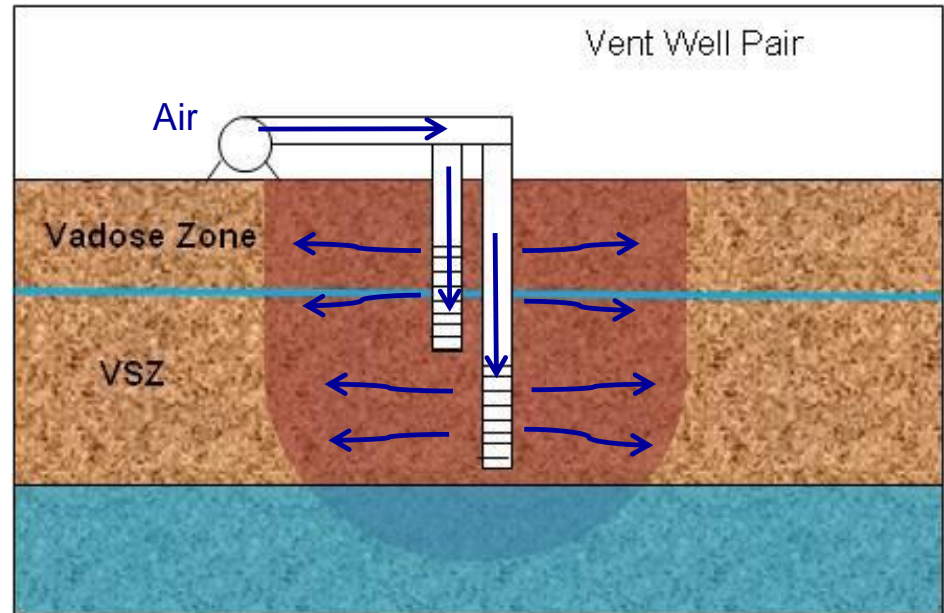
Former Galena Forward Operating Location, Alaska
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Bioventing Systems

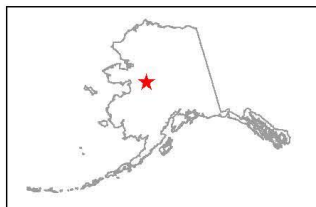
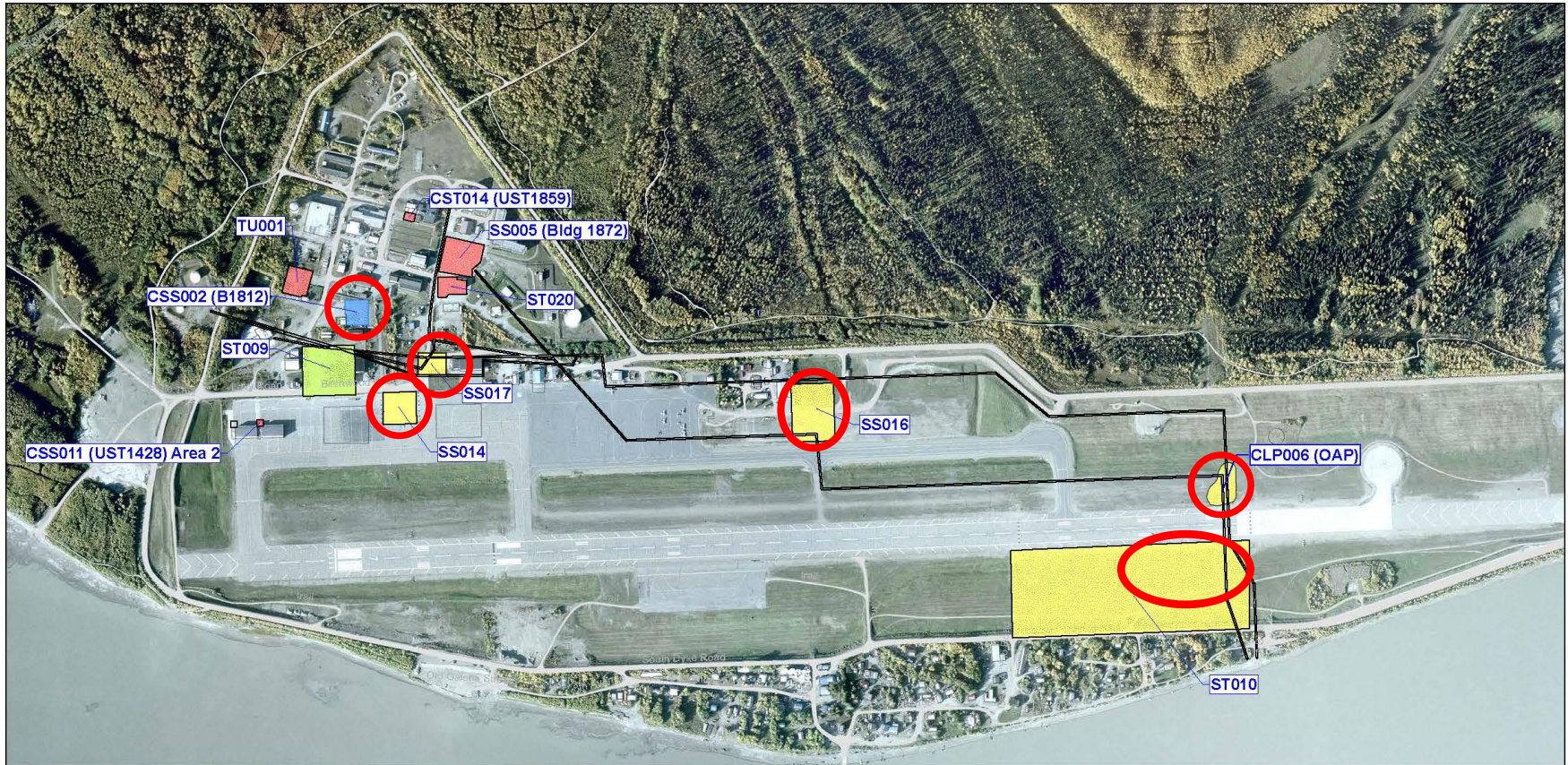
- **Bioventing injects air (oxygen) to stimulate aerobic biodegradation of fuel hydrocarbons in unsaturated soil**



Note: VSZ = variably saturated zone



Location of Bioventing Systems



Legend

- Bioventing System Installation
- SVE System Installation
- Vertical Air Sparge/SVE System Installation
- Sulfate Enhanced Bioremediation Injection

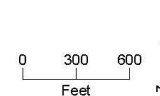


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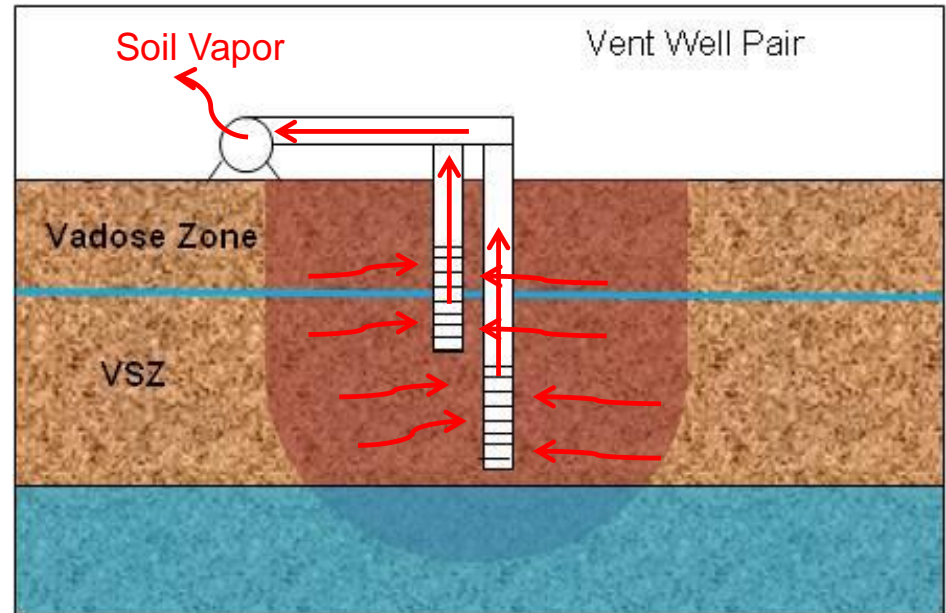
Former Galena Forward Operating Location, Alaska
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Soil Vapor Extraction (SVE) Systems

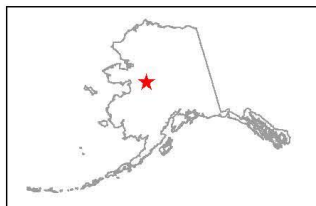
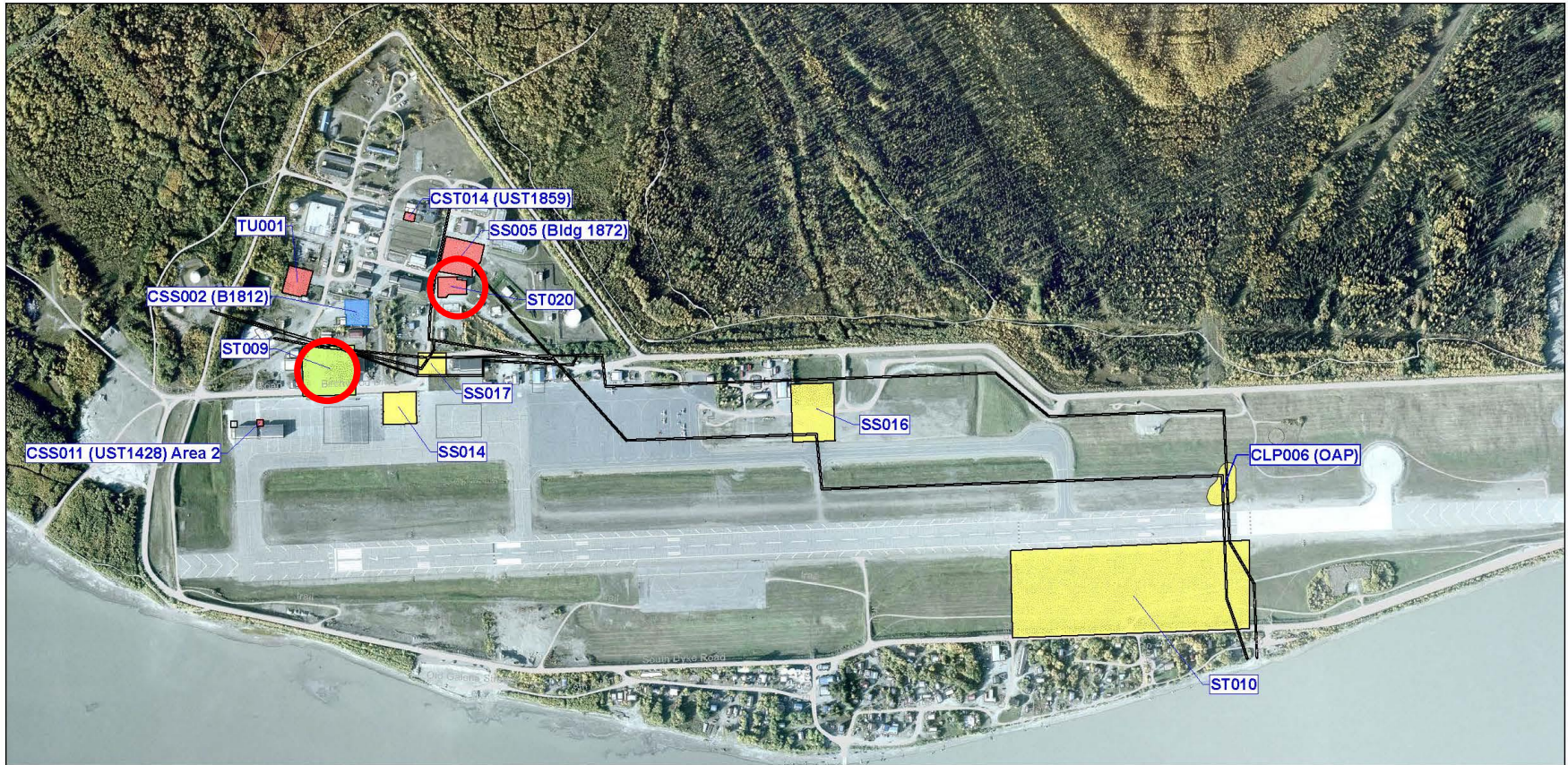
- **SVE removes volatile fuel hydrocarbons in unsaturated soil**



Note: VSZ = variably saturated zone



Location of SVE Systems



Legend

- Bioventing System Installation
- SVE System Installation
- Vertical Air Sparge/SVE System Installation
- Sulfate Enhanced Bioremediation Injection

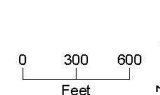


Figure 1

Installation of 2016 Remediation Systems
at the Former Galena FOL

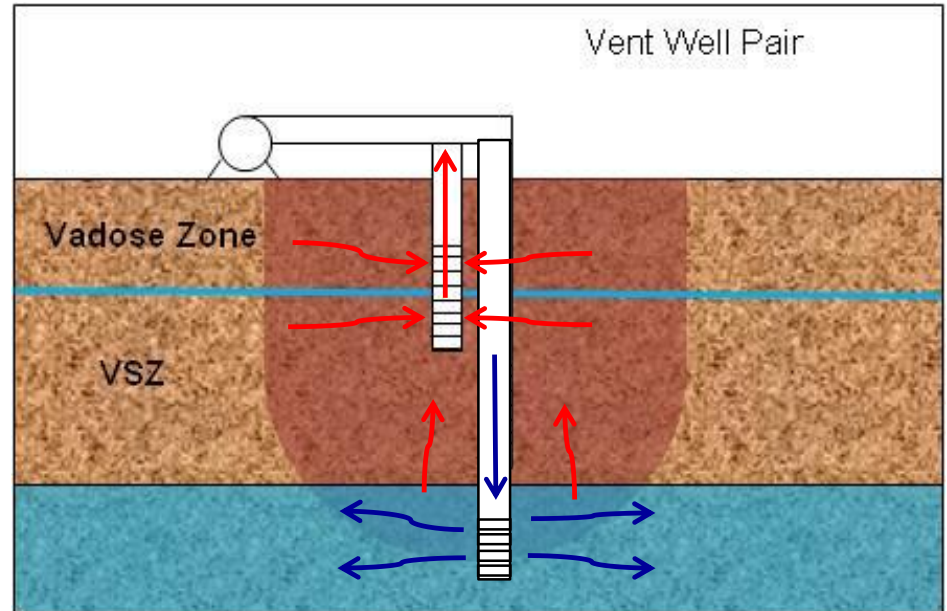
Former Galena Forward Operating Location, Alaska
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Air Sparge / SVE Systems

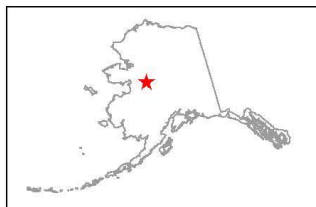
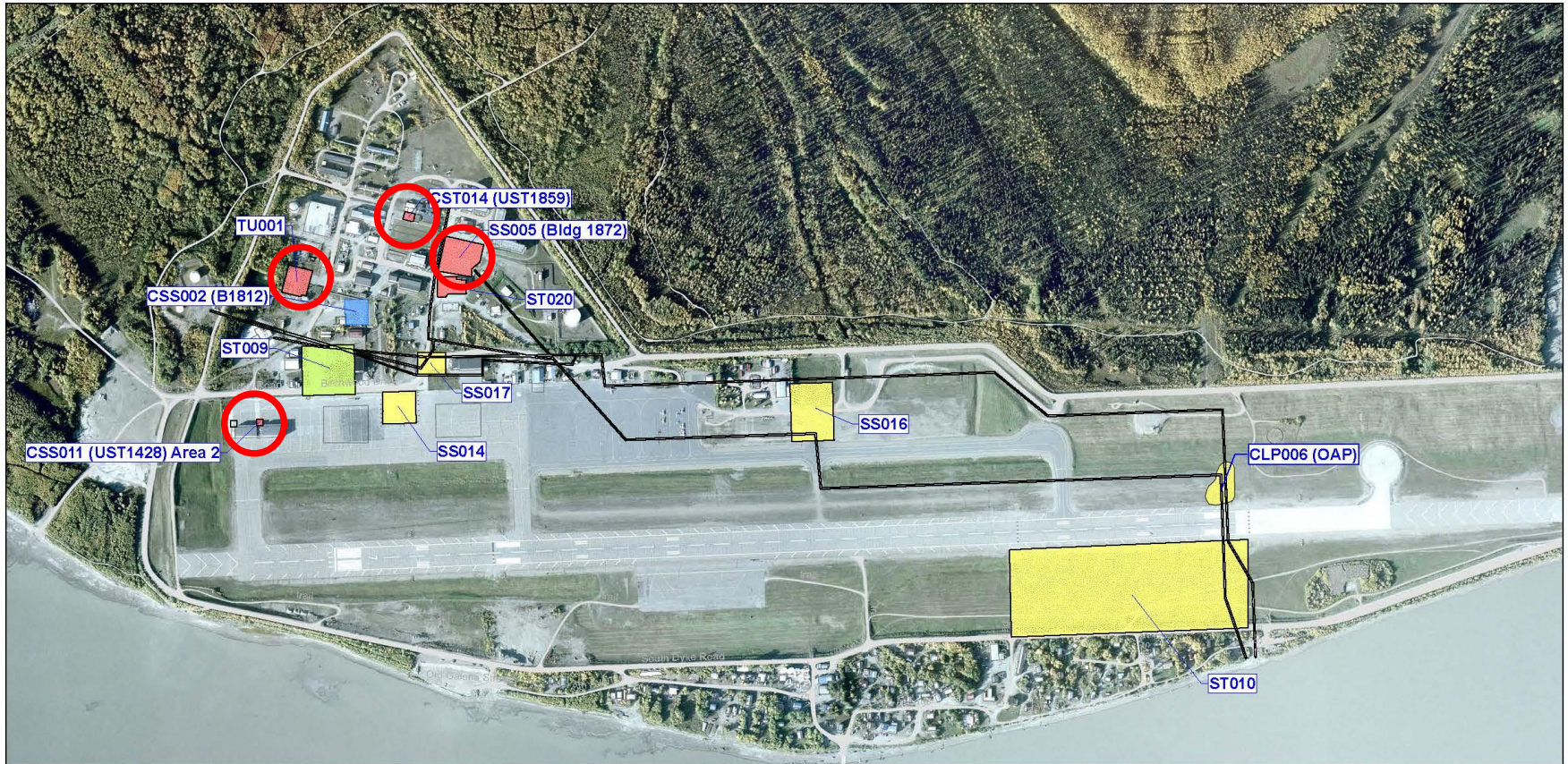
- Air Sparging injects air (oxygen) to stimulate aerobic biodegradation of fuel hydrocarbons in saturated soil
- Combined with SVE to capture volatile fuel hydrocarbons in unsaturated zone



Note: VSZ = variably saturated zone



Location of Air Sparge/SVE Systems



Legend

- Bioventing System Installation
- SVE System Installation
- Vertical Air Sparge/SVE System Installation
- Sulfate Enhanced Bioremediation Injection

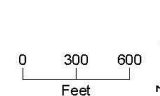


Figure 1

Installation of 2016 Remediation Systems
at the Former Galena FOL

Former Galena Forward Operating Location, Alaska
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2016 Field Activities (cont'd)

- **Additional soil excavation at RAPCON Yard (Site CSS001)**
- **Blast media surface soil excavation at west side of Steam Plant (Site TU001)**
- **Offsite disposal of PCB- and petroleum-contaminated soil, and tar drums from Time Critical Removal Action at the Disposal Site West of Dike (Site DP023)**
- **Annual landfarm operation and soil treatment (transitioned to windrows using Brown Bear Tiller)**
- **Annual groundwater sampling of monitoring wells**



Additional Soil Excavation at RAPCON Yard



- **Excavated petroleum-contaminated soil around utility lines that remained after the 2011 Interim Removal Action excavation; approx. 86 cy went to landfarm for treatment.**
- **Small area of contaminated soil underneath the steam/water utilidor could not be removed**
- **Evaluating remaining risk using the ADEC Method Three Hydrocarbon Risk Calculator**



Blast Media Excavation at Steam Plant

- Sand blast media with elevated metals was found in the top few inches of soil on the east side of the Steam Plant
- Approximately 30 cy was hand-excavated down to about 1 foot deep
- Confirmation sample results pending and excavated soil will be disposed next year.
- The excavation was backfilled and graded with clean soil





Proposed Galena PBR Schedule

- **Planned 2017 Field Work (April through October)**

- Horizontal Well Air Sparging**

- Million Gallon Hill/Missile Storage (Sites CG001/CG002)
 - POL Tank Farm Area (Site ST005)

- Bioventing**

- Former Fire Protection Training Area (Site FT001)

- Soil Vapor Extraction**

- Former South Apron Maintenance Area (Site SS015)

- Sulfate-Enhanced Bioremediation Injections**

- Former Bldg 1812 Hazardous Waste Satellite Accumulation (Site CSS002)
 - Former Birchwood Hangar and Truck Fillstands (Sites SS014/SS017)
 - Former JP-4 Fuel Stands at ADOT Maintenance Bldg (Site ST009)

- Enhanced Anaerobic Bioremediation Injections**

- Former South Apron Maintenance Area (Site SS015)

- Excavation**

- Former Waste Accumulation Area South of Bldg 1499 (Site SS018)



Proposed Galena PBR Schedule (cont'd)

- **Operation and maintenance of remediation systems**
- **Annual groundwater monitoring**
- **Landfarm reconstruction and operation**
- **2018 – Complete excavation at the former disposal site west of the dike (Site DP023)**
- **2018 – Install remedies at Bldg 1845 TCE Area (Site SS006)**
- **2018 to 2020 – Operate and monitor remedies**



2017-2018 Field Work Locations

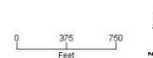


Legend

ADOT Runway Control Areas

- Approach (TERPS)
- OFA
- OFZ
- Safety Area
- Runway Centerline

- Remediation Sites
- Building



Proposed 2017 Remediation Sites

October 2016 Presentation for
Former Galena Forward Operating Location, Alaska
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Communications

- **Public Review Period for Proposed Plans (SS025, SS018, and FT001)**
 - Review Period October 26 through November 28, 2016
 - Updated DVDs of the Administrative Record have been placed at the Galena library
- **Semi-annual RAB Meetings (April/October)**
- **Air Force maintains Administrative Record for Final Documents at:**

<http://afcec.publicadmin-record.us.af.mil/>



Questions?

Air Force Public Affairs Office

AFCEC/Public Affairs
2261 Hughes Ave., Suite 155
JBSA Lackland, TX 78236-9853
Toll Free (866) 725-7617
AFCEC.PA@us.af.mil



