

Fairbanks Old City Landfill

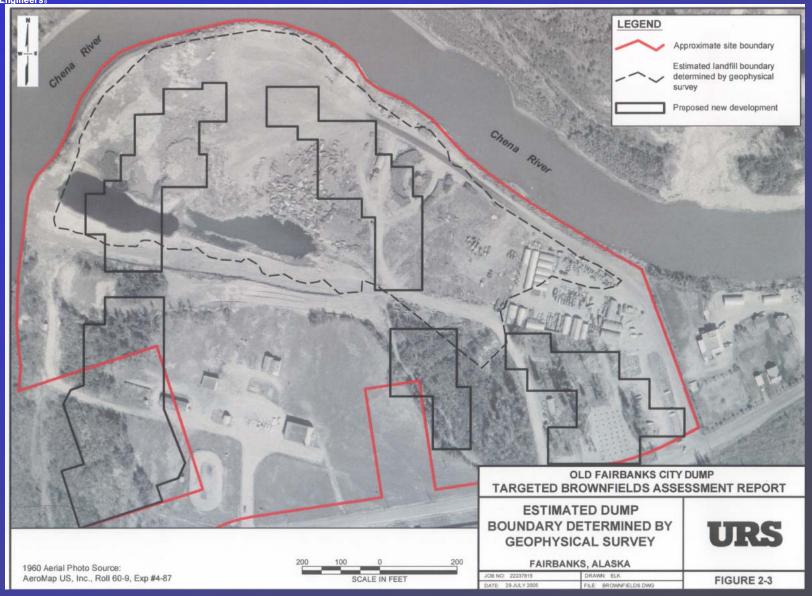
Conceptual Site Model







US Army Corps of Engineers





Facility Info

- Historical gravel pit used for City Landfill (approx 1951 - 1965)
- On 1984 List of 45 Potential Hazardous Waste Sites in Alaska – ranked low priority
- Municipal wastes, scrap metals, autos, lumber, household goods
- Hazardous waste unlikely based on age of landfill
 15-20 drums of tar may be buried at site
- Currently contains Carlson Center, curling club, and Ball fields



Physical Features

- Flat topography
- Adjacent to Chena River, which drains to Tanana River
- Wetlands on site?



Geology

- Thick Quaternary deposits of fluvial and glaciofluvial sediments and loess from Alaska Range
- Depth to bedrock not known (estimate 600 feet from seismic surveys)
- No permafrost present Seasonal frost zone ranges from 4-10 feet depending on ground cover
- Seismic Zone 3 (>6.0 on Richter). No faults on site



Hydrogeology

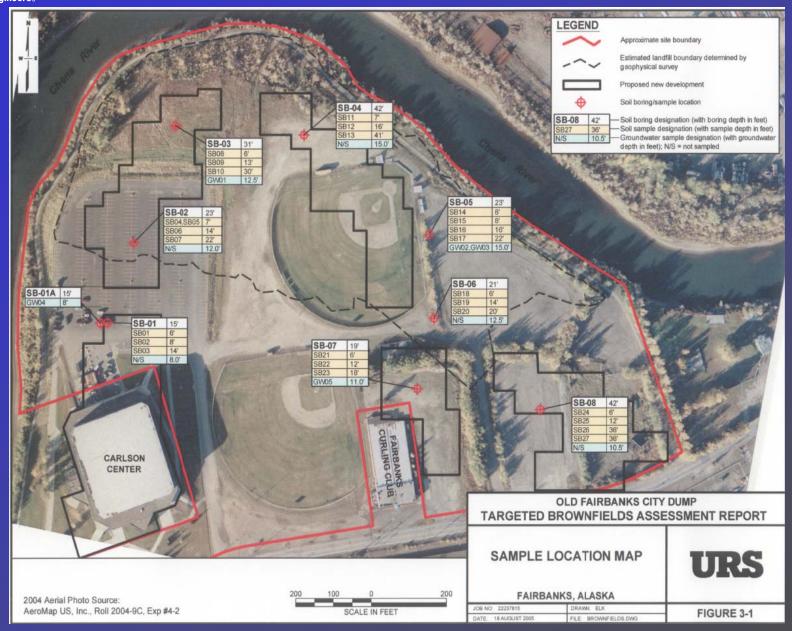
- Groundwater present in shallow sand/gravel aquifer (8-13 'bgs) and influenced by Chena River stage (highest in late spring)
- Groundwater flow toward river?
- Drawdown test at Fish Hatchery no drawdown observed
- Estimated hydraulic conductivity 1000 ft/day
- Water quality tests from Baseball field Aquifer Evaluation indicates total iron (5.37-6.51 mg/l) and manganese (0.502-0.563 mg/L)



Wells within ½ mile

Well	Depth in feet	Up or Downgradient across river	Water depth in feet
1	23	Down	7.59 -14.66
2	20	Down	10.6 - 15.52
3	18	Up	5.21 - 12.94
4	NR	Up	NR
5	20	Up	5.40 – 16.16
6	NR	Down	NR







Landfill Depths

Boring	Landfill Depths in feet
SB02	9.5 - 13.5
SB03	10.5 - 29
SB04	8.5 - 12
SB05	6.5 - 11.5

Approx 600,000 CY in Landfill if assume 20 feet depth



Soil Sampling

- 27 samples collected from 8 borings to represent:
 - Above Landfill
 - In Landfill
 - Below Landfill
- Samples collected for VOCs, SVOCs, pesticides, PCBS, metals, GRO, DRO, RRO



Soil Results Screening Criteria

- Soils collected from below 5'
- Soil concentrations compared to:
 - ADEC Method Two Soil Cleanup Levels (Under 40-inch Precip Zone, Ingestion/Inhalation) and Migration to GW
 - EPA Region 9 PRGs, if Method Two NA
 - USACE Fort Wainright background levels



Soil Results Detected Below Screening Levels

- VOCs: acetone, carbon disulfide, 2butanone, methylene chloride, dichlorodifluoromethane
- Pesticides: DDT isomers, endrin, ketone, alpha and gamma chlordane
- DRO/RRO
- SVOCS: phthalates, napthalene, 2methylnapthalene



Soil Results above Screening levels

Analyte	Frequency above screening level	Max vs screening level in mg/kg	Location
Antimony	2/27	27.4/3.6	SB05 (SB03)
Cadmium	2/27	42.5/5	SB05 (SB03)
Chromium	1/27	154/114	SB03
Lead	3/27	3,020/400	SB05 (SB03)
Nickel	1/27	93.5/87	SB05
Selenium	3/27	14.2/3.5	SB05 (SB03)
Thallium	2/27	5.8/5.2	SB05
PCBs	2/27	6.1/1.0	SB05



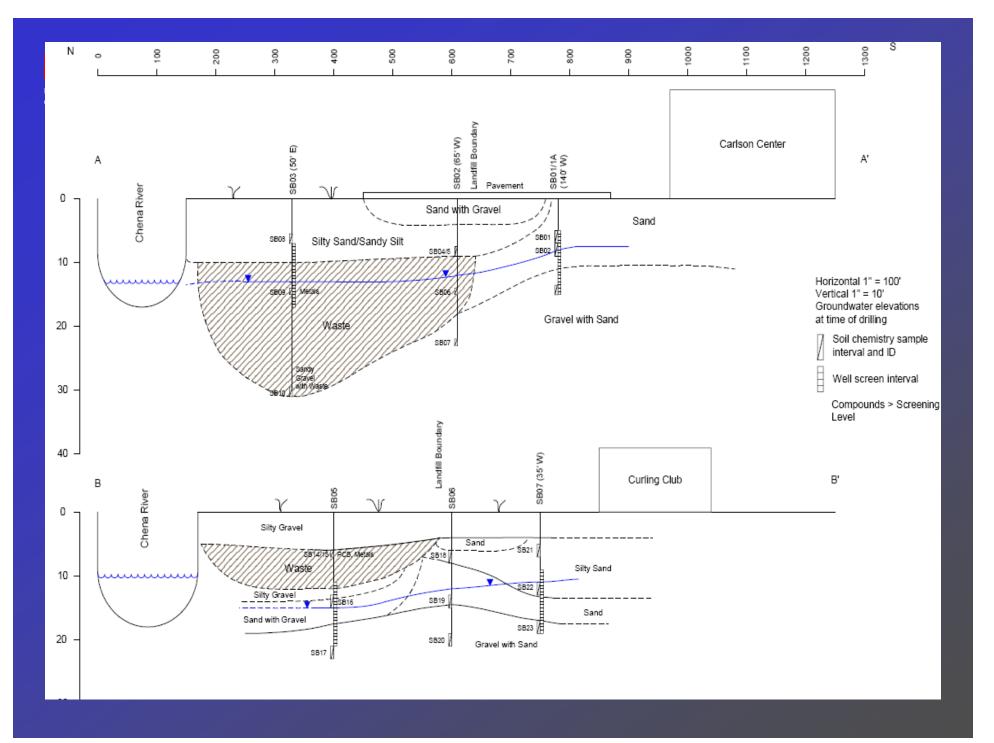
Soil Impacts in Landfill

- Only lead and PCBs detected above ingestion/inhalation based criteria
- Remaining metals above migration to GW criteria



Impacts outside of Landfill

- Soil borings SB01, SB07 and SB08 not in Landfill area
- Only metals and low levels acetone detected well below screening levels in these borings
- SB06 in Landfill boundary, but not waste encountered





Groundwater Sampling

- Temporary well points installed at SB01A, SB03, SB05, and SB07
- Sampled from 2' PVC casing with 10' of schedule
 40 PVC screen with 0.02 inch slots (no filter pack)
- Low flow sampling with tubing 2' below static water level
- Samples submitted for VOCs, SVOCs, pesticides, PCBS, total/dissolved metals, GRO, DRO, RRO
- Well points removed once samples collected



Groundwater Screening Criteria

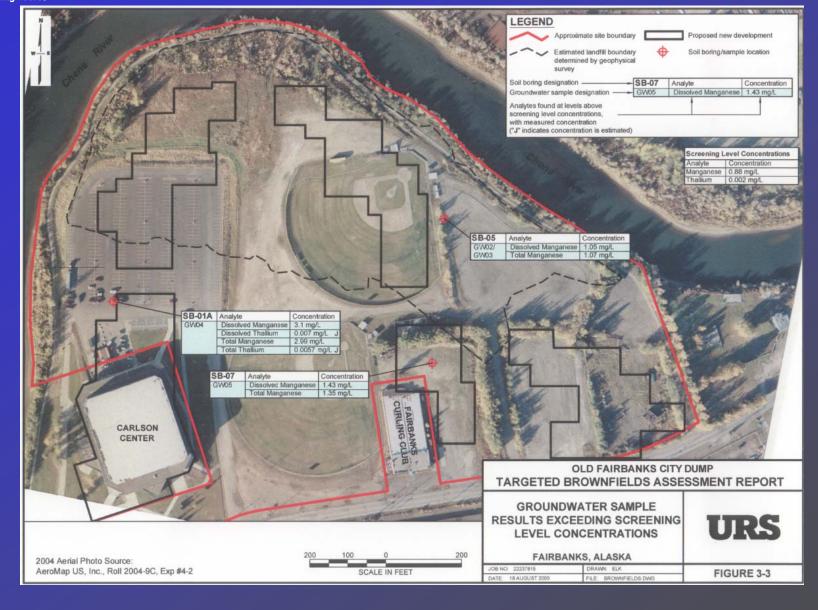
- Groundwater concentrations compared to:
- ADEC Drinking Water criteria; or
- EPA Region 9 PRGs for tap water.



Groundwater Results

- total/dissolved manganese and thallium detected above screening levels (0.88 and 0.002 mg/L)
 - Total/dissolved manganese max = 2.99/3.1 mg/L
 - Total/dissolved thallium max = 0.0057/0.007 mg/L
- Other metals detected below screening levels
- Remaining constituents were ND







Land Use and Exposure

(1) Check the media that could be directly affected by the release.	(2) For each medium identified in (1), follow the top arrow <u>and</u> check possible transport mechanisms. Briefly list other mechanisms or reference the report for details.	(3) Check exposure n identified in (2).	(4) Check exposure pathways that are complete or need further evaluation. The pathways identified must agree with Sections 2 and 3 of the CSM Scoping Form.		each e recept both c C	exposui ors, "F' urrent a urren	re path for fut and fut t & F	way: En ture rece ure rece uture	Receptor
Surface ✓ Migra Soil ✓ Migra	Transport Mechanisms Check soil Check soil	Exposure Media	Exposure Pathways	Residents (adjut	Commercial Commercial	Site visitors, trees	Construction	Farmers or subsistence	Subsistence consumers Other
	f or erosion check surface water		✓ Incidental Soil Ingestion	F	F	C/F	F		
	e by plants or animals <u>check biota</u>	✓ soil	Dermal Absorption of Contaminants from Soil	F	F	C/F	F		\top
Subsurface	ease to subsurface soil check soil tion to groundwater check groundwater lization check air (list): lease to subsurface soil check groundwater (check air check groundwater check groundwater lization check surface water body check surface water	groundwater	✓ Ingestion of Groundwater ✓ Dermal Absorption of Contaminants in Groundwater ☐ Inhalation of Volatile Compounds in Tap Water ✓ Inhalation of Outdoor Air ✓ Inhalation of Indoor Air	F	F F C/F	F F C/F	F F		
Uptak	ow to sediment <u>check sediment</u> ptake by plants or animals <u>check biota</u> ther (list):	V	✓ Inhalation of Fugitive Dust				F		
✓ Direct re	elease to surface water check surface water		☐ Ingestion of Surface Water						
Juliace _	lization check air	✓ surface water	✓ Dermal Absorption of Contaminants in Surface Water	F	F	C/F	F		
114101	entation check sediment e by plants or animals check biota (list):	/	☐ Inhalation of Volatile Compounds in Tap Water					\Box	
		✓ sediment	Direct Contact with Sediment	F	F	C/F	F		
Sediment Resus	elease to sediment check sediment spension, runoff, or erosion check surface water	,					-		
Uptak ☐ Other	e by plants or animals <u>check biota</u> (list):	biota	✓ Ingestion of Wild Foods	F		F			



Structural Building Considerations

Based on Carlson Center Geotechnical Study
 Underlying silts likely to liquify in earthquake
 Several feet excavation, backfill with structural fill, and displacement type foundation pilings

Deep dynamic compaction (to compact to 4 feet above water table)

For parking lots — minimum 6 " asphalt over 18" of sandy gravel. Removal of surficial silts recommended



