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# Fairbanks Old City Landfill

## Conceptual Site Model



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**OLD FAIRBANKS CITY DUMP  
TARGETED BROWNFIELDS ASSESSMENT REPORT**

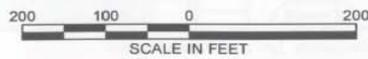
**SITE MAP**

**URS**

**FAIRBANKS, ALASKA**

**FIGURE 2-2**

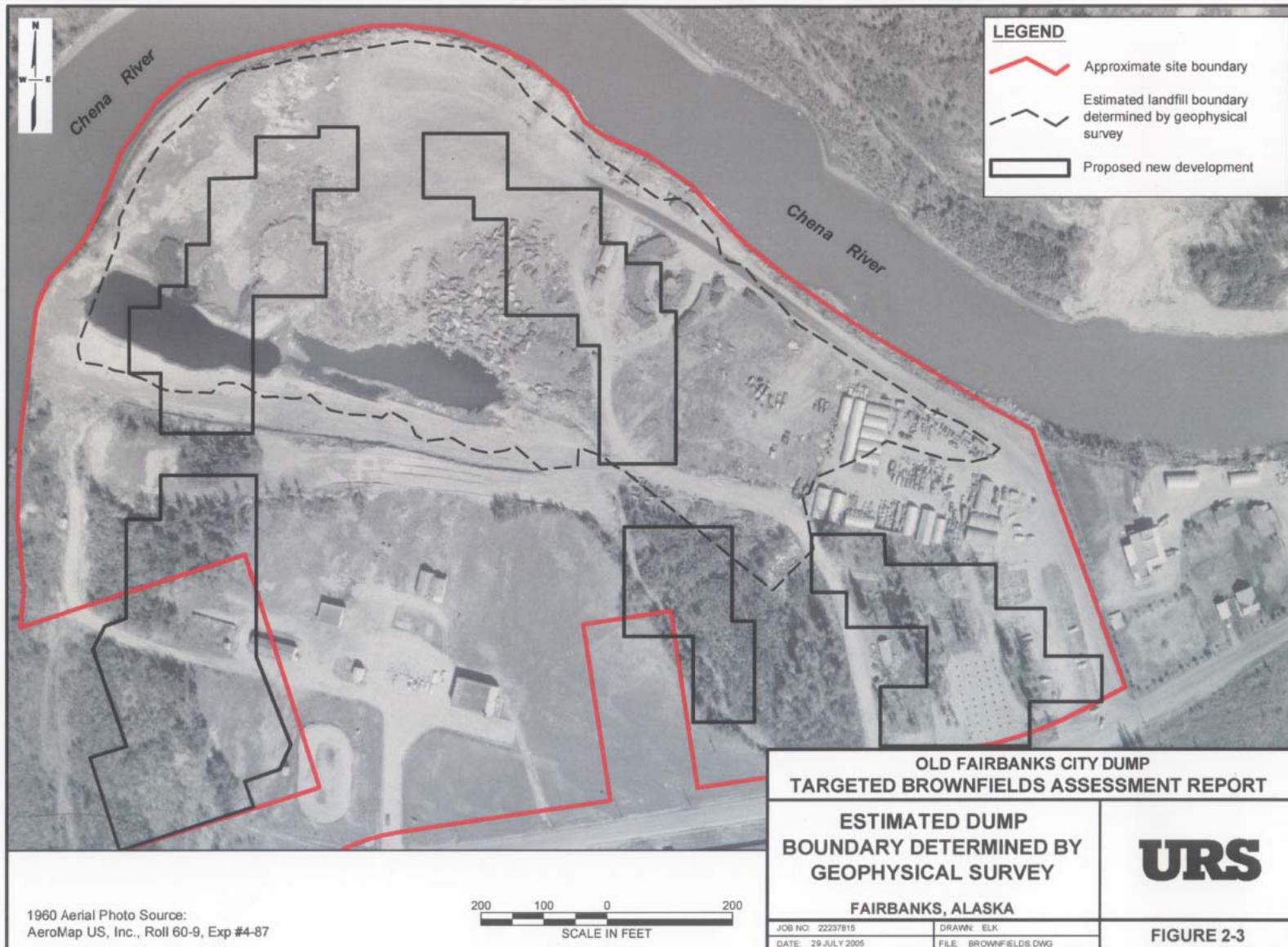
2004 Aerial Photo Source:  
AeroMap US, Inc., Roll 2004-9C, Exp #4-2



JOB NO: 22237815	DRAWN: ELK
DATE: 18 AUGUST 2005	FILE: BROWNFIELDS.DWG



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# 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



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# Physical Features

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



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# 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



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# 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)



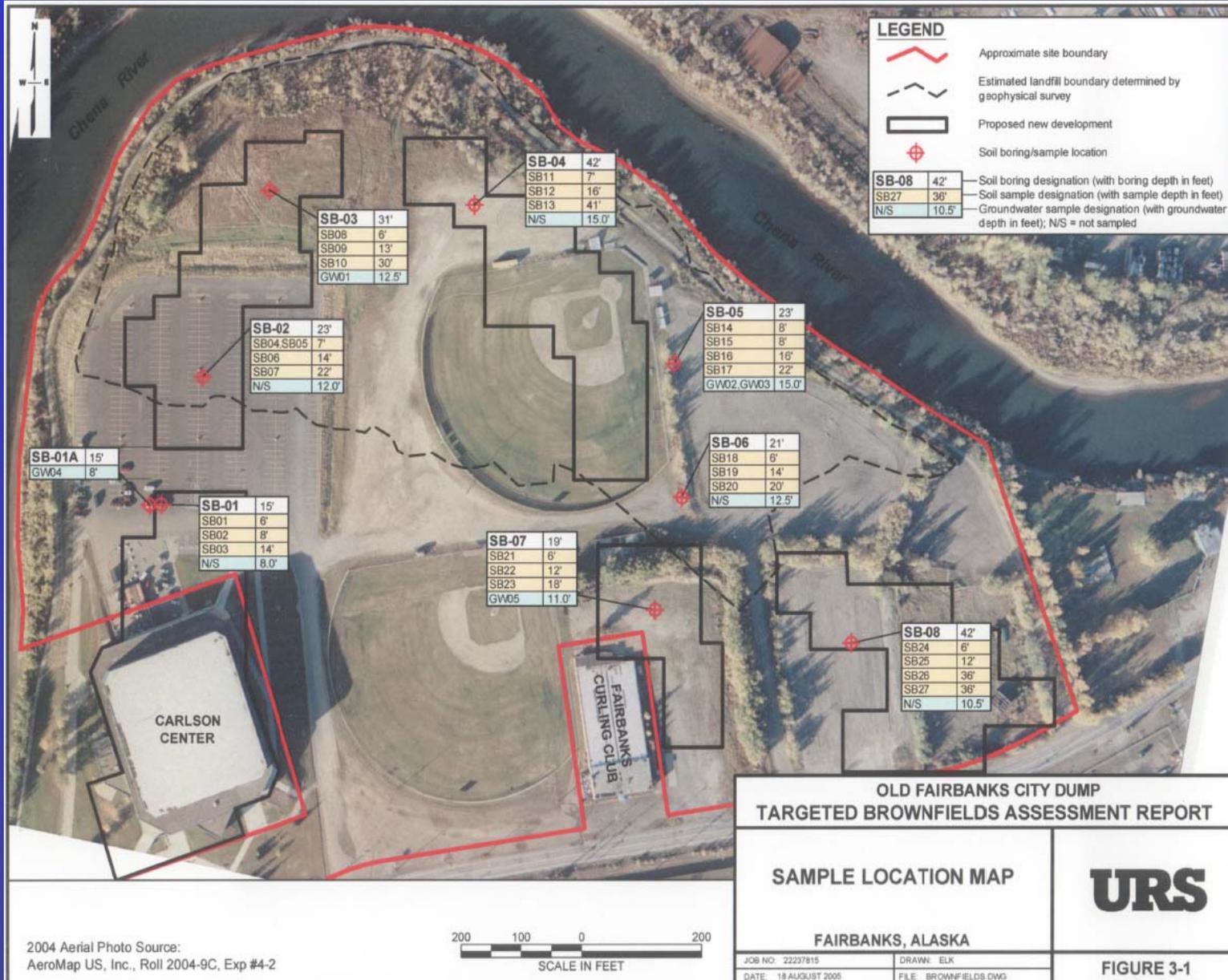
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## Wells within 1/2 mile

Well	Depth in feet	Up or Down-gradient 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



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# 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



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# 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



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# 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



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# Soil Results Detected Below Screening Levels

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



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# 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



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# Soil Impacts in Landfill

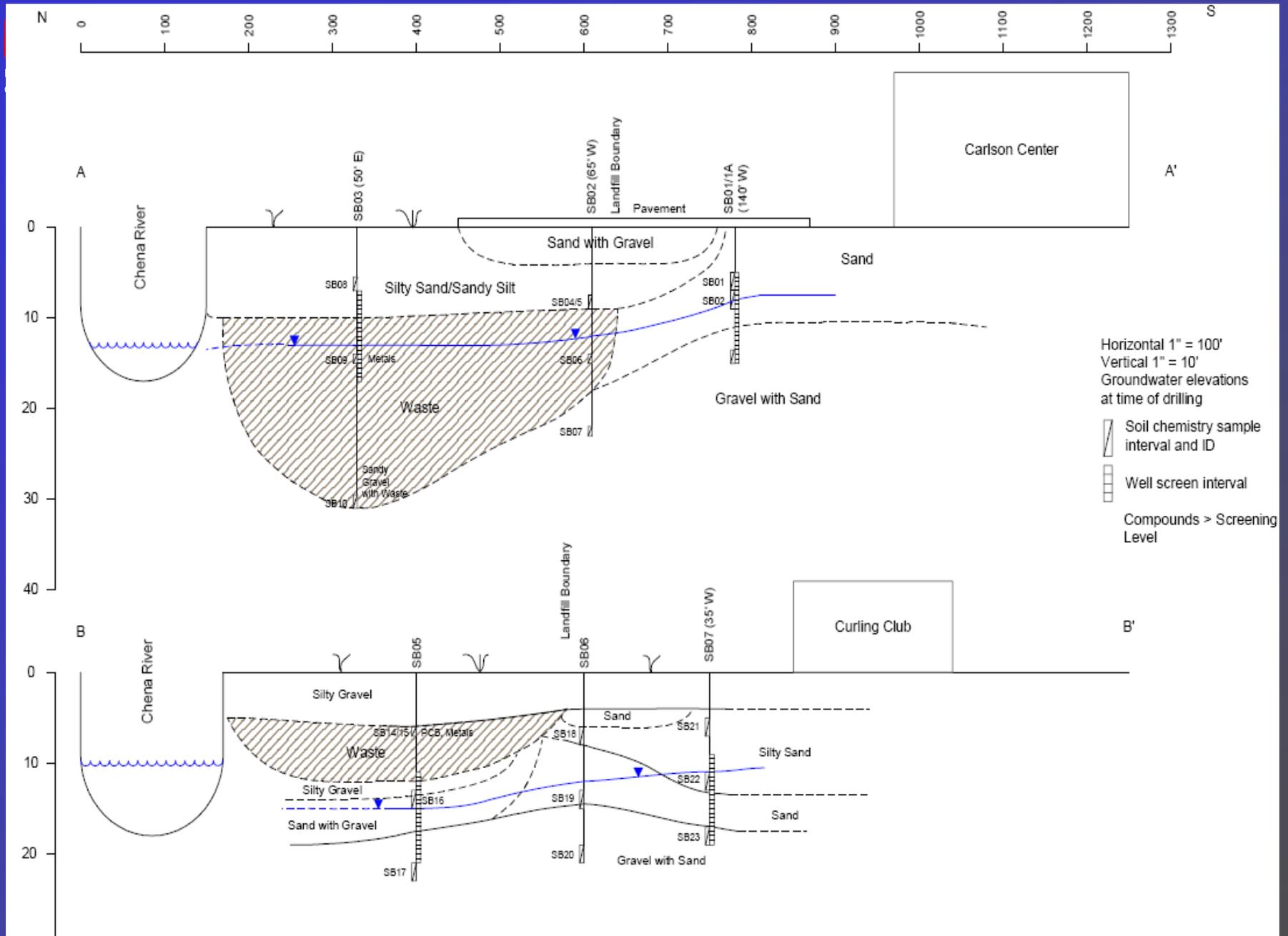
- Only lead and PCBs detected above ingestion/inhalation based criteria
- Remaining metals above migration to GW criteria



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# 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





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# 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



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# Groundwater Screening Criteria

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



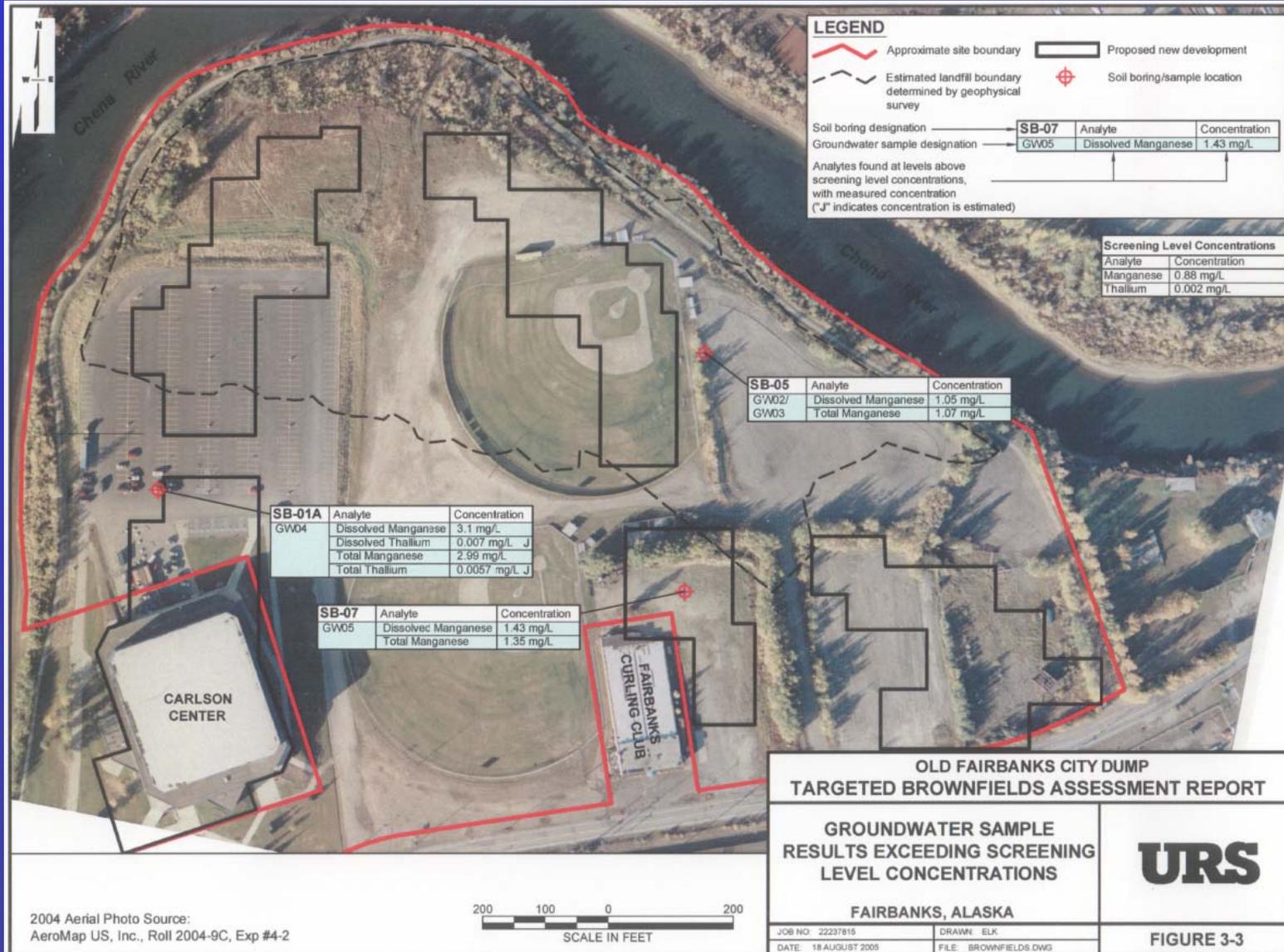
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# Groundwater Results

- 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



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# 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



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