Status of Cleanup at Twin Cities Army Ammunition Plant (TCAAP)

21 September 2021

US Army Environmental Command (USAEC)

AGENDA – September 21, 2021 at 7 p.m.

- Review/Approve minutes of last meeting
- Old Business
- Cleanup Status Update
- New Business
- Next Meeting Agenda
- Public Comments

Old Business

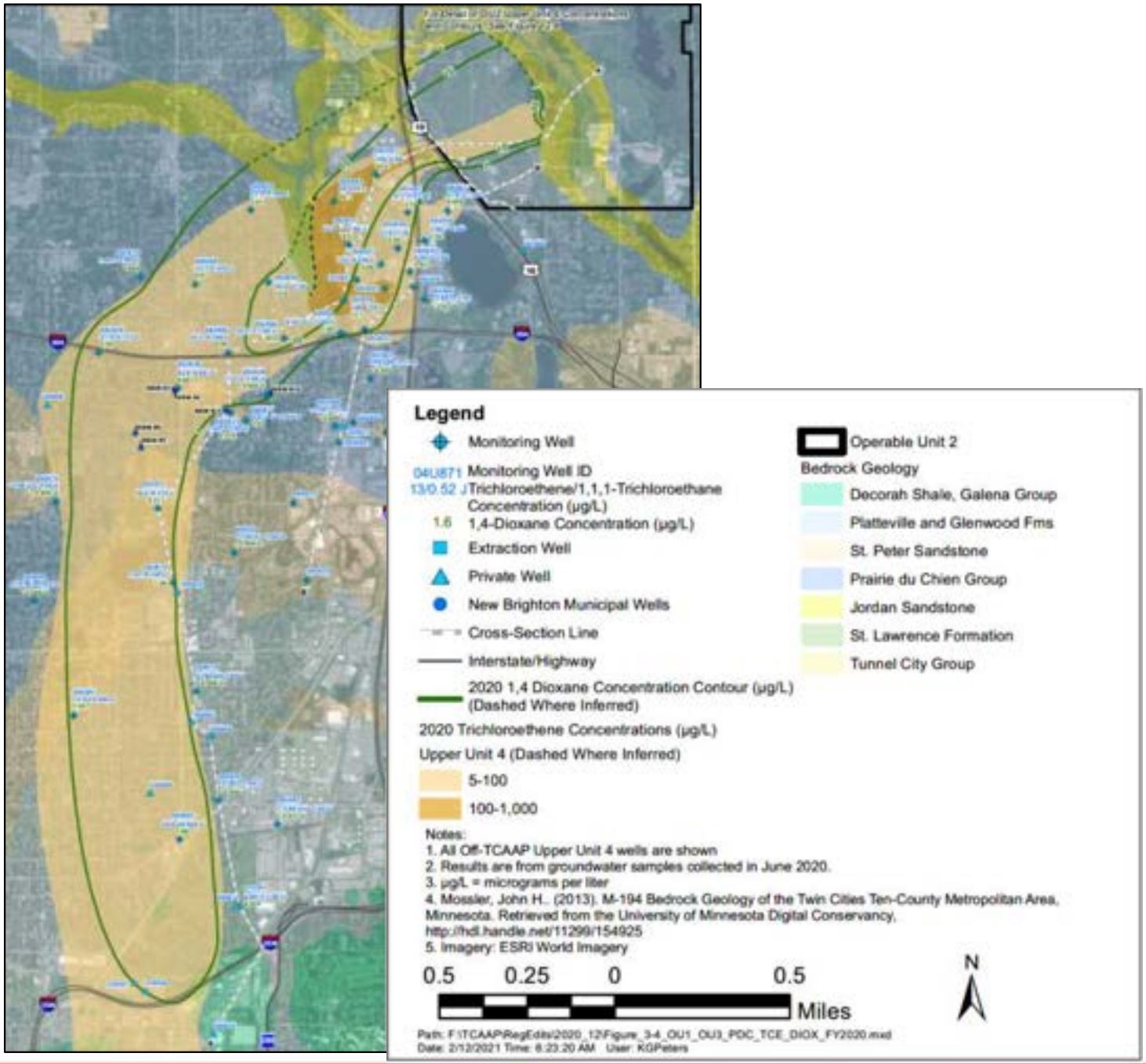
- Vote to accept the minutes as changed
- Update on Round Lake as well as all the other cleanup activities
- OLD/NEW BUSINESS: Army contract expired, new contractor is EA Engineering, Science, and Technology, Inc. (and subcontractor GHD, Inc.). RAB will get to know them over the next 5 years (length of contract).

TCAAP Cleanup Status Update

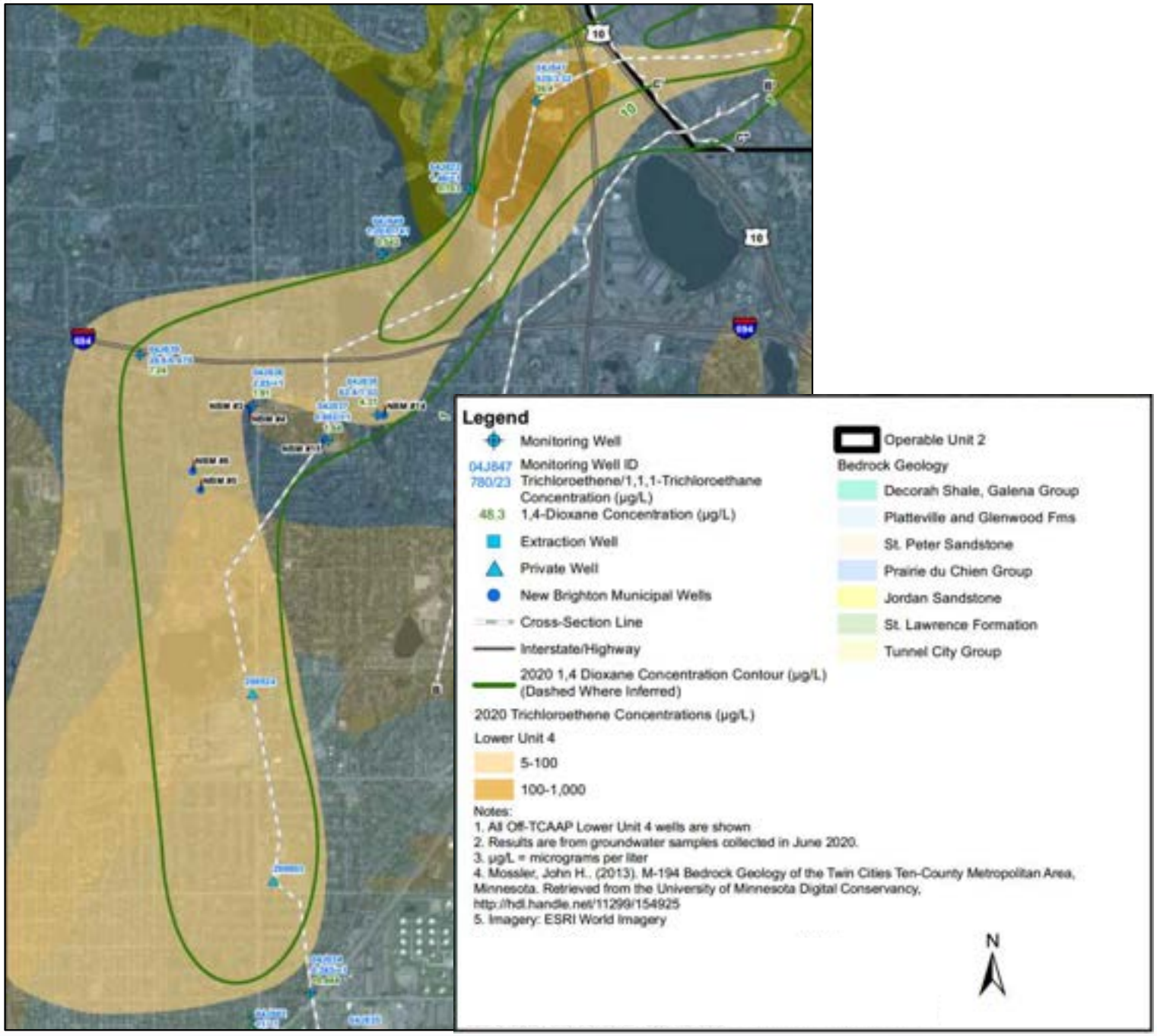
Groundwater Sampling Update

- Groundwater sampling conducted in July and September 2021.
- Groundwater sampling allows the Army to monitor the plumes and update the maps.
- Annual plume maps are available in the respective APRs.

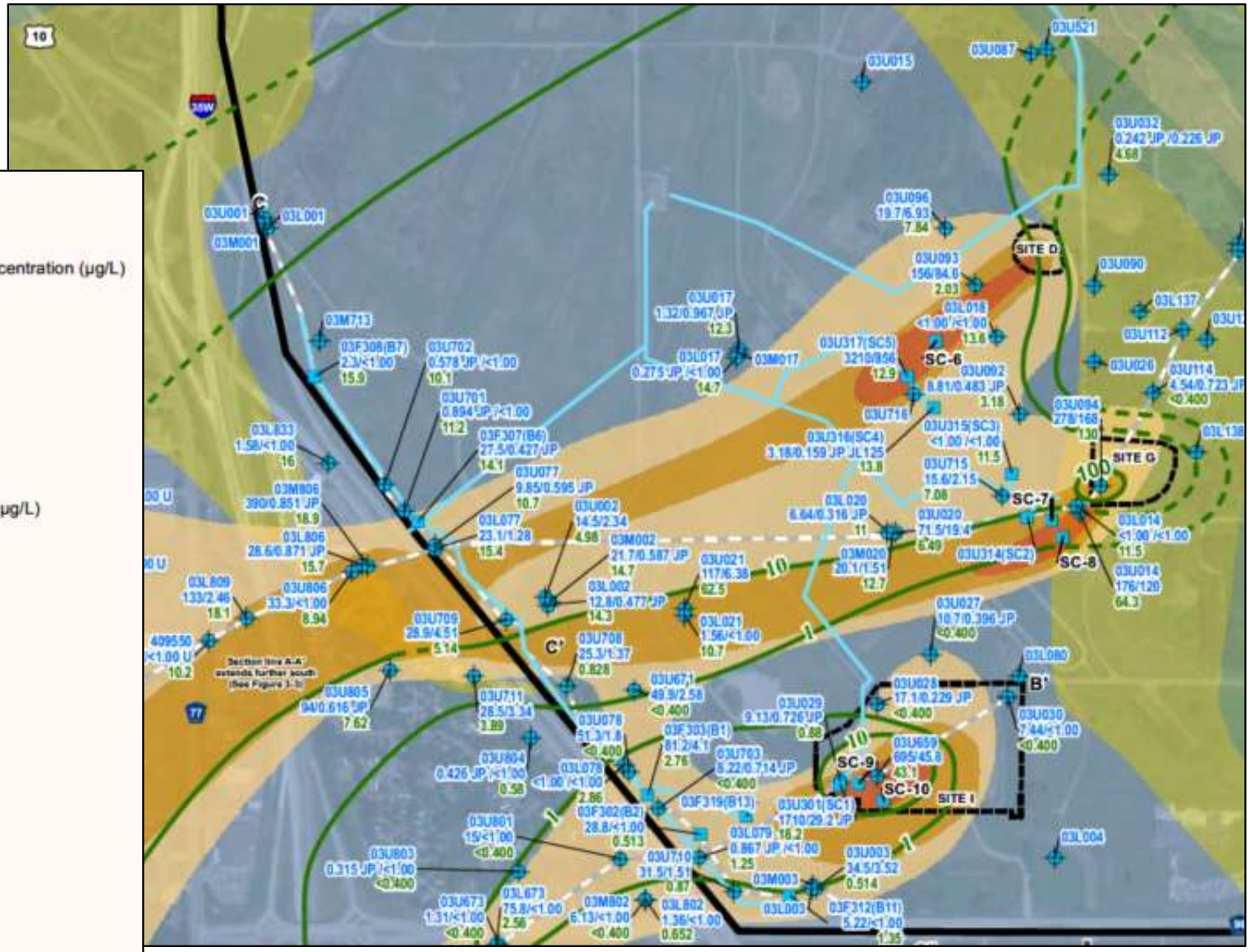
FY2020 – Prairie du Chien Plume Map



FY2020 – Jordan Plume Map



FY2020 – OU2 Unconsolidated Sediments Plume Map



Legend

- 03U093 — Monitoring Well ID
- 130/55 — Trichloroethene/1,1,1-Trichloroethane Concentration (µg/L)
- 1.6 — 1,4-Dioxane Concentration (µg/L)
- Extraction Well
- Private Well
- Cross-Section Line
- Site Boundary
- Extraction Well Piping
- 2020 1,4 Dioxane Concentration Contour (µg/L)

2020 Trichloroethene Concentrations (µg/L)

Upper and Lower Unit 3

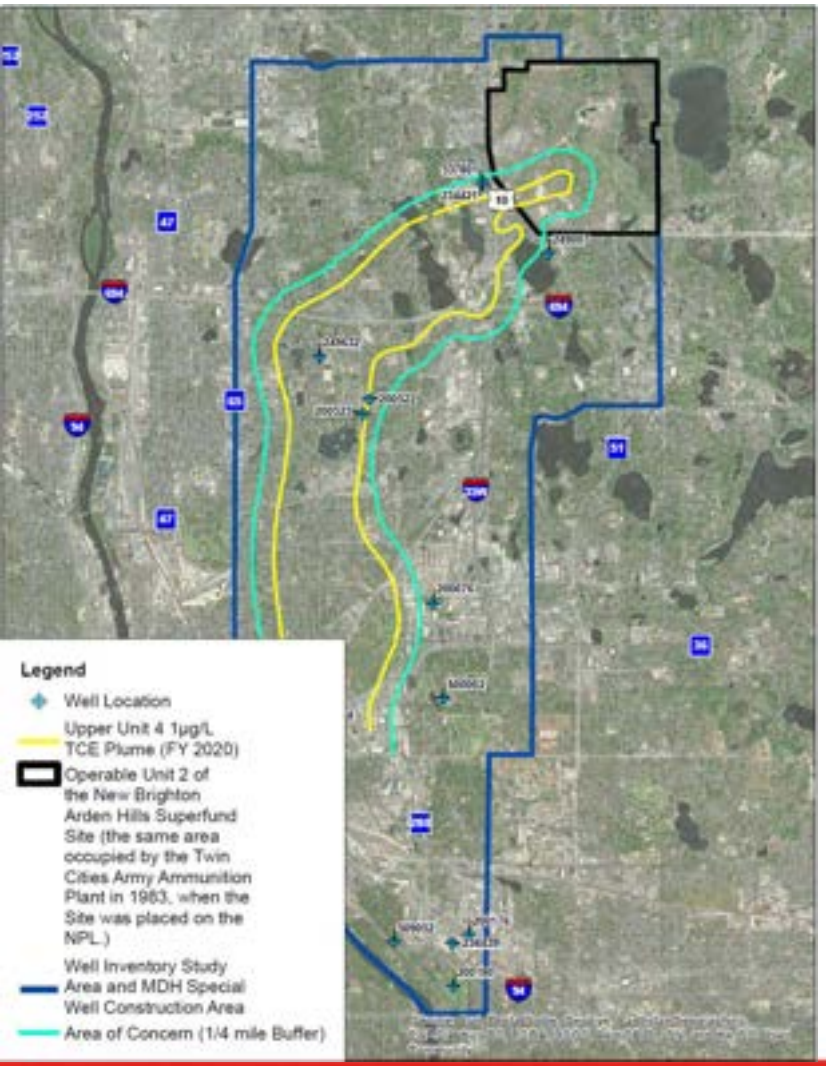
- 5-100
- 100-1000
- 1000+
- Operable Unit 2

Bedrock Geology

- St. Peter Sandstone
- Prairie du Chien Group
- Jordan Sandstone
- St. Lawrence Formation
- Tunnel City Group

What has the Army done since April 2021

- Received concurrence from regulators on TCAAP Well Inspection Report
- Resampled 13 off-site irrigation/industrial wells



- Resampling validated 4 wells exceeded cleanup standards.
  - Irrigation, car washing, industrial (paper making), or out of service.
- The Army notified well owners and irrigation well owner requested connection to municipal water supply.
- Army awaits response from other three well owners.
- None of these wells are used for drinking water.

Twin Cities Army Ammunition Plant Cleanup

LEGEND:

- Operable Unit 1 (North Plume)
- Operable Unit 2 of the New Brighton/ Arden Hills Superfund Site (the same area occupied by the Twin Cities Army Ammunition Plant in 1983, when the Site was placed on the NPL.)
- Operable Unit 3 (South Plume)
- Municipal Boundaries

OU1 Optimization

- Goal: increase amount of contaminant removed by relocating well more central to plume.
- Drilling to refine location was completed.
- Well location has been finalized (approved by stakeholders) Army will fund and New Brighton will install new drinking water supply well over the next year.
- Army will continue to work with New Brighton to ensure drinking water treatment operations are not affected.

Twin Cities Army Ammunition Plant Cleanup

On-Post
OU2

LEGEND:

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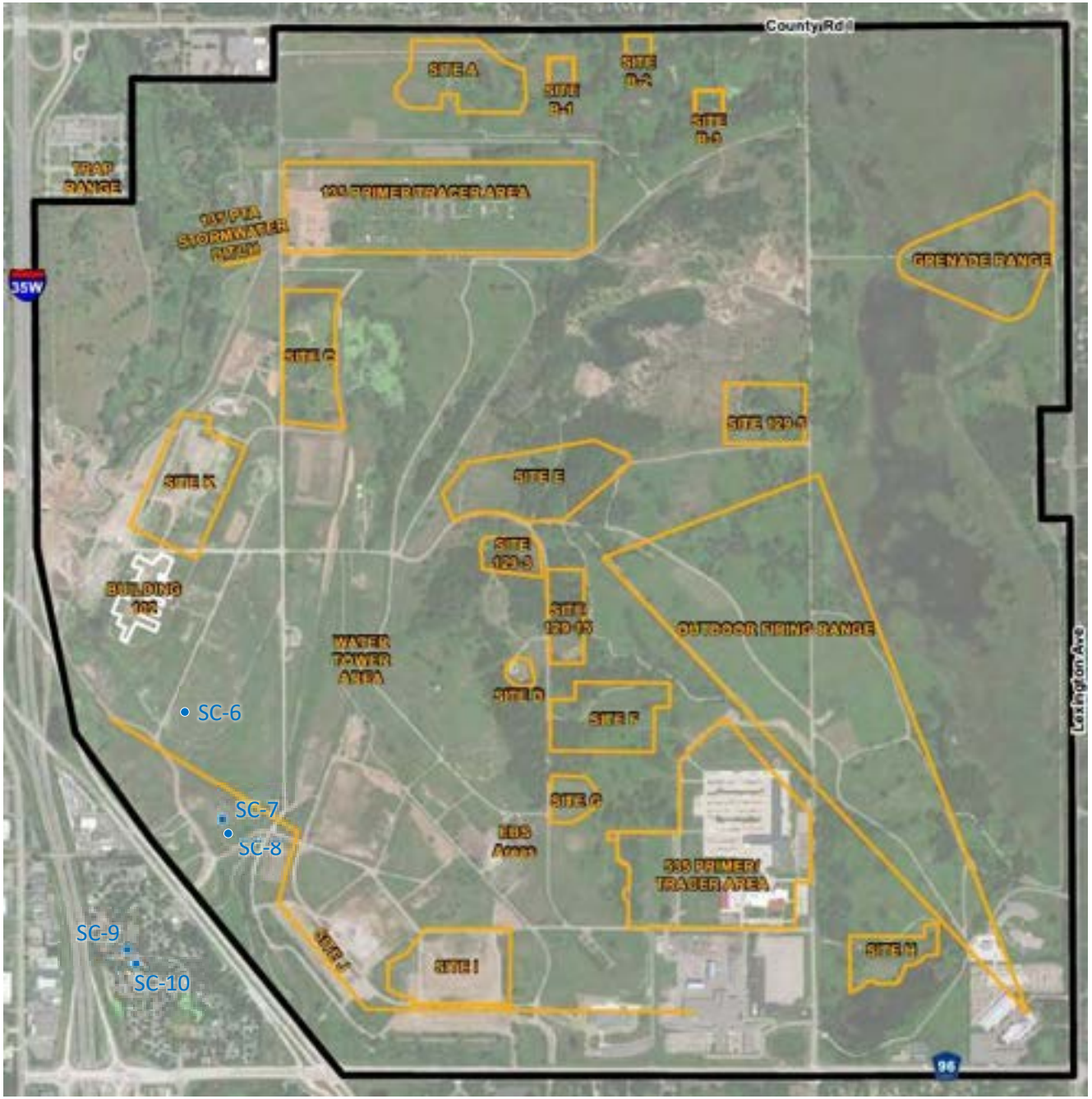
OU2 Optimization

- TCAAP Groundwater Recovery System (TGRS) installed in 1987 treats trichloroethene (TCE).
- The Army is installing a secondary treatment called Source Groundwater Recovery System (SGRS) which will treat TCE and 1,4-dioxane.
- Installed five additional extraction wells nearer to the source areas (Sites D, I, and G).
- Began construction on SGRS building in August 2021. Expected completion in May 2022.

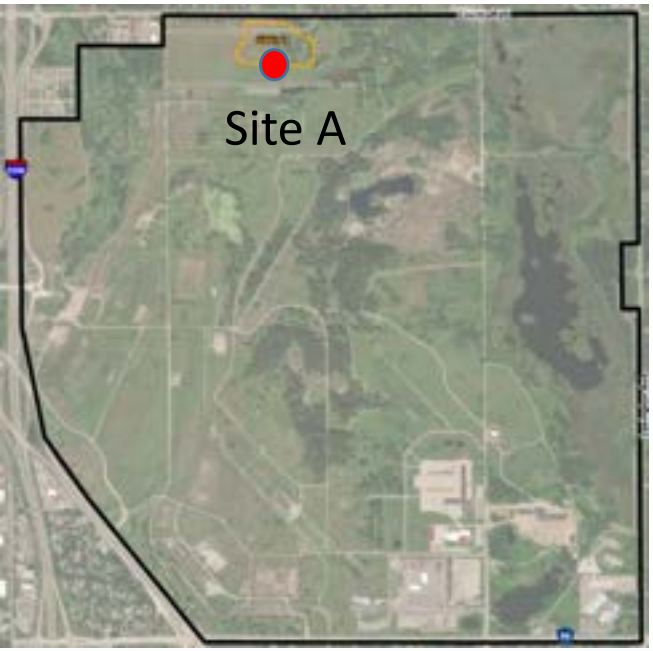
NOTE: SGRS does not replace TGRS.

OU2


County Rd
SITE A
SITE B-1
SITE B-2
SITE B-3
TRAP RANGE
105 PRIMER/TRACER AREA
105 PTA STORMWATER BASIN
GRENADE RANGE
35W
SITE C
SITE 120-1
SITE E
SITE D
SITE 120-3
BUILDING 102
SITE 120-15
OUTDOOR FIRING RANGE
WATER TOWER AREA
SITE F
Lexington Ave
SC-6
SITE G
SC-7
SC-8
338 PRIMER/ TRACER AREA
SITE H
SC-9
SITE J
SITE I
SC-10
94

OU2 – Site A Site Investigation

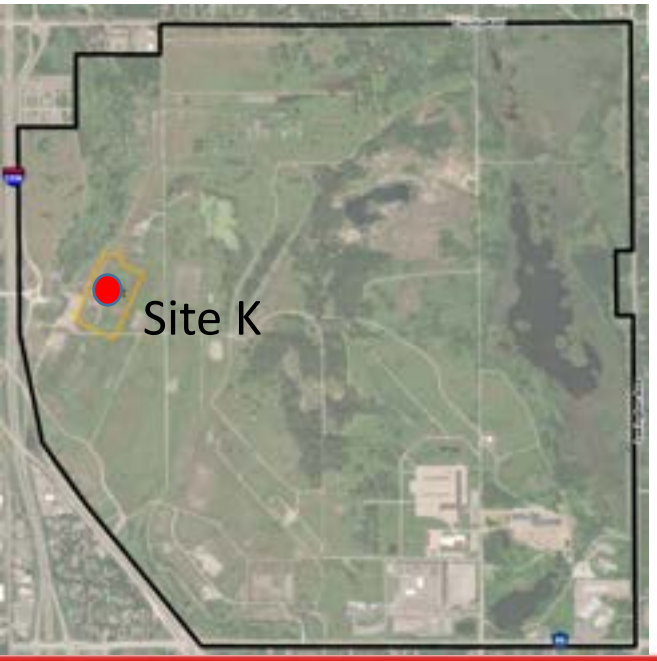
- Purpose - to address the migration of a shallow groundwater plume that exists at Site A and the potential vapor intrusion (VI) risk it poses to the residential neighborhood directly north of the TCAAP property boundary.
- VI study completed; report submitted to regulators; will share with public once finalized.
- No VI risk found.



KCLMCUIA2

OU2 – Site K USGS Treatability Study

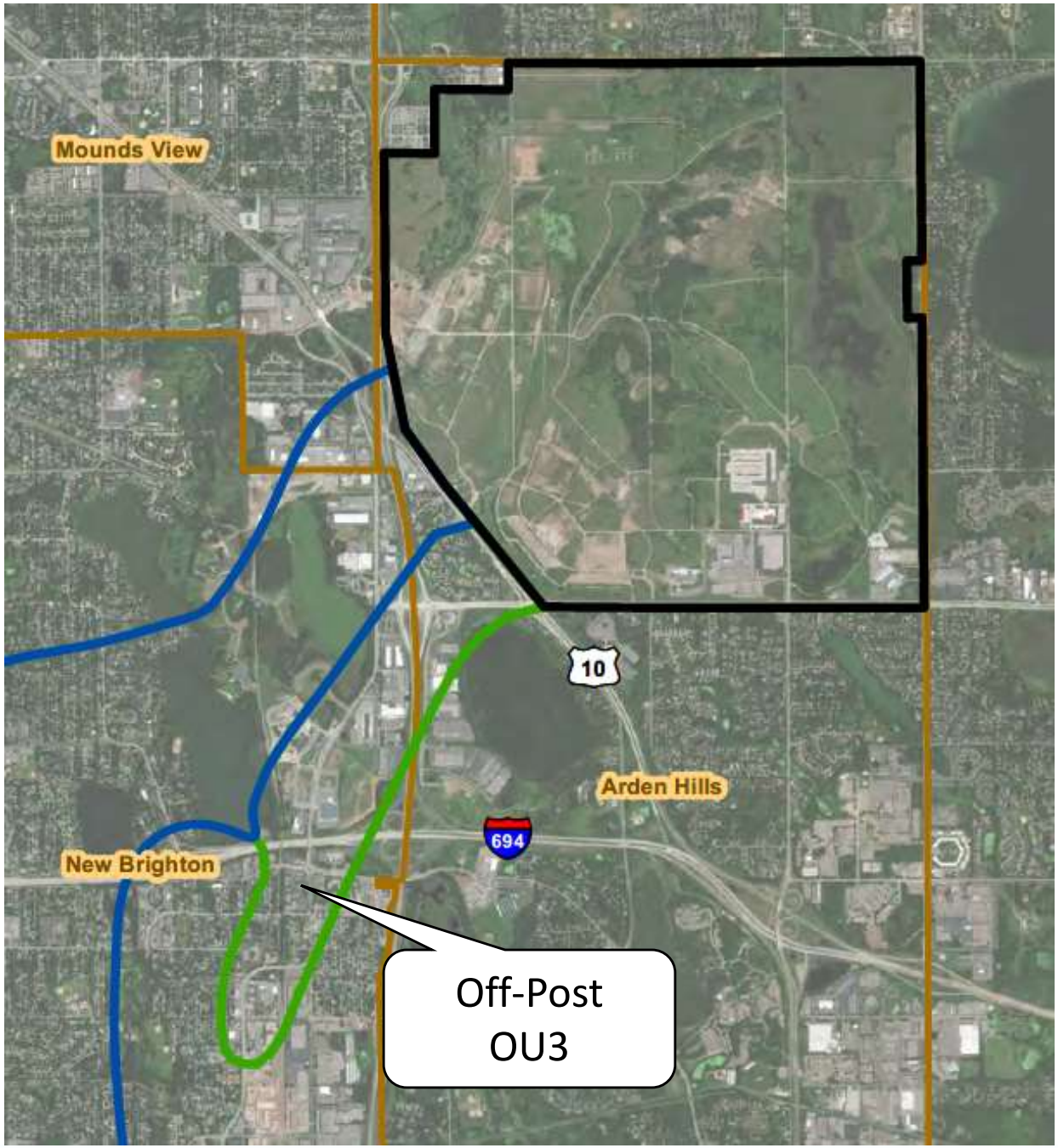
- Purpose: to improve shallow groundwater remediation of TCE.
- Three-year treatability study began July 2021.
  - Samples taken to develop site-specific microbes.
  - Installed three groundwater monitoring wells.
  - Treatability will include bioremediation techniques.
- Next steps:
  - Inject site-specific microbes.
  - USGS will report interim results at future RAB meeting.
  - Anticipate completion Summer 2024.



Slide 16

KCLMCUIA2 Site K needs to be annotated on the map iwth a red dot; the yellow can't be seen well
Kropp, Cathy L Ms CIV USA IMCOM AEC, 4/4/2021

Twin Cities Army Ammunition Plant Cleanup



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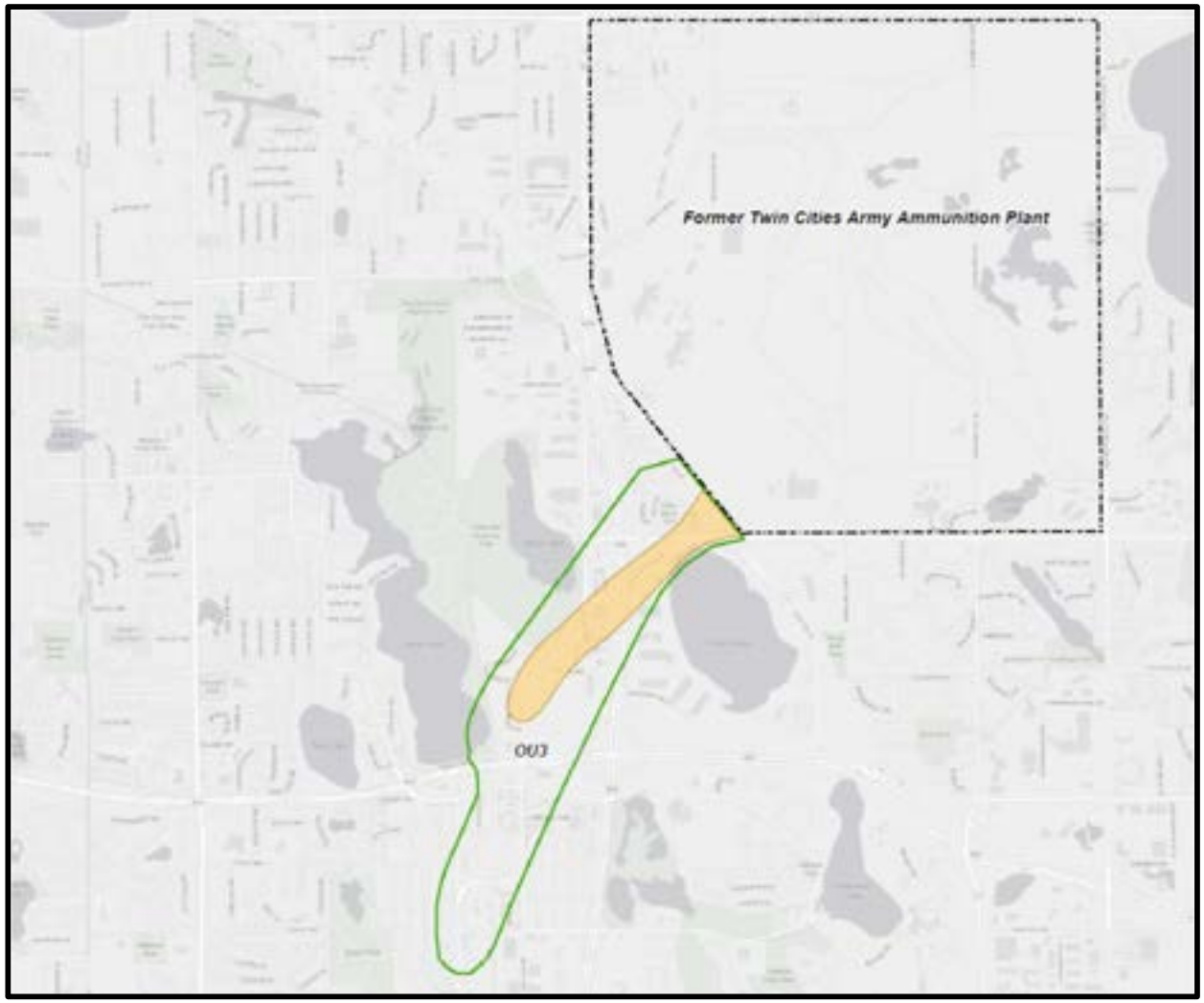
OU3 Plume



- Continued monitored natural attenuation
- Annual groundwater sampling each summer
- Results from sampling are available in the Annual Performance Report

Twin Cities Army Ammunition Plant Cleanup

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Round Lake – Next Steps

- Record of Decision (ROD) – Army intends to submit to regulators Spring 2022 and release to the public once accepted by EPA and MPCA.
- Established Technical Working Group (TWG).
- TWG will provide feedback to the Army on remedial design and construction.
- Responsiveness summary will be released with the ROD.

What's Next

- OU1
  - Army will fund and New Brighton will install new drinking water supply well.
- OU2
  - Complete abandonment of 40 monitoring wells.
  - Complete installation of 3 monitoring wells including optimization of the monitoring well network.
  - Conduct Risk Assessment for unrestricted land use.
  - Conduct Engineering Evaluation/Cost Analysis for the 135 Primer Tracer Area.
- OU3
  - Continue groundwater monitoring.
- Round Lake
  - Publish Record of Decision

New Business

- Topics for future RAB meetings?
- Additional administrative requirements for RAB?
- Suggestions for improvement of RAB?

Next Meeting Agenda

- Review/Approve minutes of last meeting
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Public Comments

- Does anyone have any comments, concerns or suggestions

Questions

You can ask questions now or at anytime using the email listed on the website.

Chemicals of Concern at TCAAP

- **Primary Contaminants of Concern:**
  - chlorinated solvents
  - degradation compounds resulting from trichloroethylene impacts
  - 1,4-dioxane
- **Affected Media of Concern:**
  - Groundwater
  - Sediment
  - Soil
  - Surface Water
- Army Website: https://tcaaprab.org/
- EPA Website: https://cumulis.epa.gov/supercpad/cursites/csitinfo.cfm?id=0504010

Emerging Chemicals

1,4 Dioxane

- New Brighton discovered 1,4 Dioxane in their wells in early 2015.
- Water was pumped from deeper non-impacted aquifer and then purchased from Minneapolis while treatment train was designed and installed.
- November 2018 an Ultraviolet/Peroxide Advanced Oxidation Process became operational and treatment resumed.
- Periodic sampling continues.

• Per- and polyfluoroalkyl substances (PFAS)

- The Army is investigating potential releases of certain PFAS on all its installations.
- Army's priority is to quickly address PFOS and PFOA in drinking water above EPA safe levels.
- Preliminary Assessment anticipated in 2021.

Land Transfers

Property conveyance by parcel:

Parcel Name	Parcel Acres	Disposal Date	Parcel Recipient	Conveyance Authority
National Guard Bureau (NGB) 1	1,245.0	27 Sep 2000	NGB	Fed to Fed
Arden Hills A	6.9	25 Jan 2001	Arden Hills City	Special Legislation
NGB 2	276.0	1 Aug 2002	NGB	Fed to Fed
Ramsey Maintenance Facility	39.8	30 Sep 2004	Ramsey County	Special Legislation
Rice Creek & Railroad Spur, Rush Lake	115.5	27 Jun 2006	Ramsey County	PBC
Highway Right of Way	33.9	27 Sep 2007	State of Minnesota	PBC
Highway Right of Way	3.0	17 Jan 2013	State of Minnesota	PBC
Railroad Spur	23.5	31 Jan 2013	Commercial	Negotiated Sale
Ramsey County	397.0	13 Apr 2013	Ramsey County	Negotiated Sale
Ramsey County (Lease)	30.0	17 Dec 2017	Ramsey County	Negotiated Sale
Wildlife Corridor	92.8	20 May 2019	Ramsey County	PBC
Primer/Tracer Area	42.5	4th Qtr FY20	Minnesota Dept. of Transportation (MDOT)	Negotiated Sale

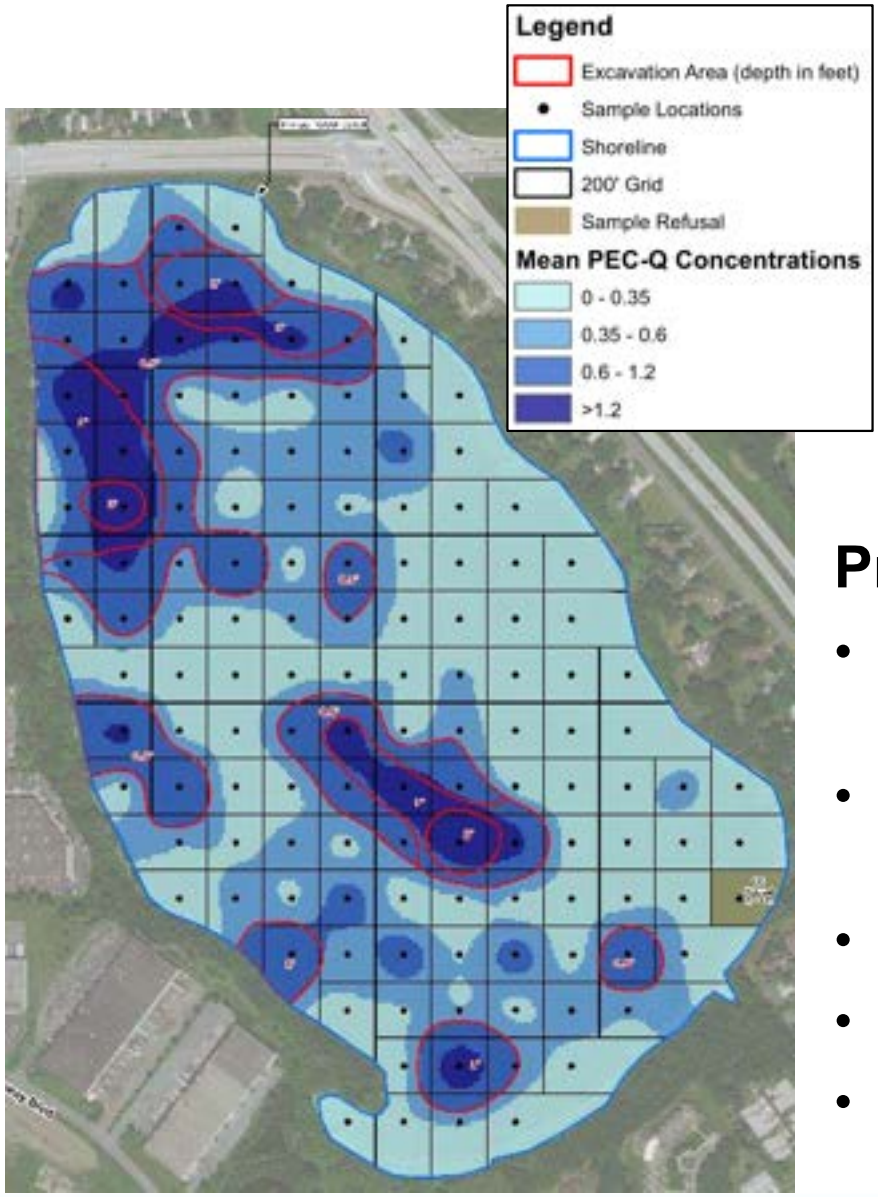
Due to the discovery of 1,4-dioxane in the groundwater, GSA was unable to complete the transfer of the last parcels. The EPA would not issue an Operating Properly and Successfully (OPS) determination. As a result, the Army prepared a Finding of Suitability for Early Transfer (FOSET) for one of the three parcels where the soils were ready for transfer, and the Minnesota Governor concurred. On 12 December 2017, Army transferred a 30-acre parcel (consisting of numerous environmental carve-outs) to Ramsey County. The Army also prepared a FOSET for the Wildlife Corridor Parcel and the Governor concurred. On 20 May 2019, Army transferred the Wildlife Corridor to Ramsey County.
GSA is currently working with the Minnesota Department of Safety concerning possible interest in the last Twin Cities parcel, Primer/Tracer Area.

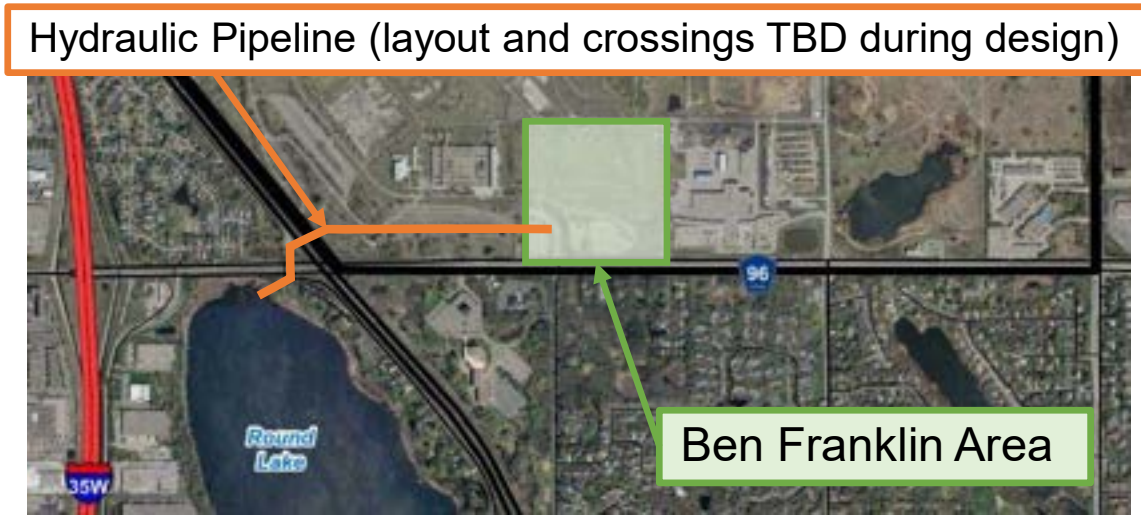
On-post vs Off-post

- When TCAAP was placed on the National Priorities List (NPL) in 1983, it occupied approximately 2,370 acres in northwest Ramsey County, Minnesota, within the Minneapolis/St. Paul metropolitan area.
- Since 1983, much of the property has been transferred outside of federal ownership to Ramsey County, the city of Arden Hills, National Guard Bureau and Army Reserves.
- For the purposes of cleanup, references to TCAAP include all of the Army-owned installation property in 1983, which is also referred to as operable unit (OU) 2 and considered on-post.

Round Lake – Preferred Alternative

Alternative 4A – Removal and Offsite Disposal



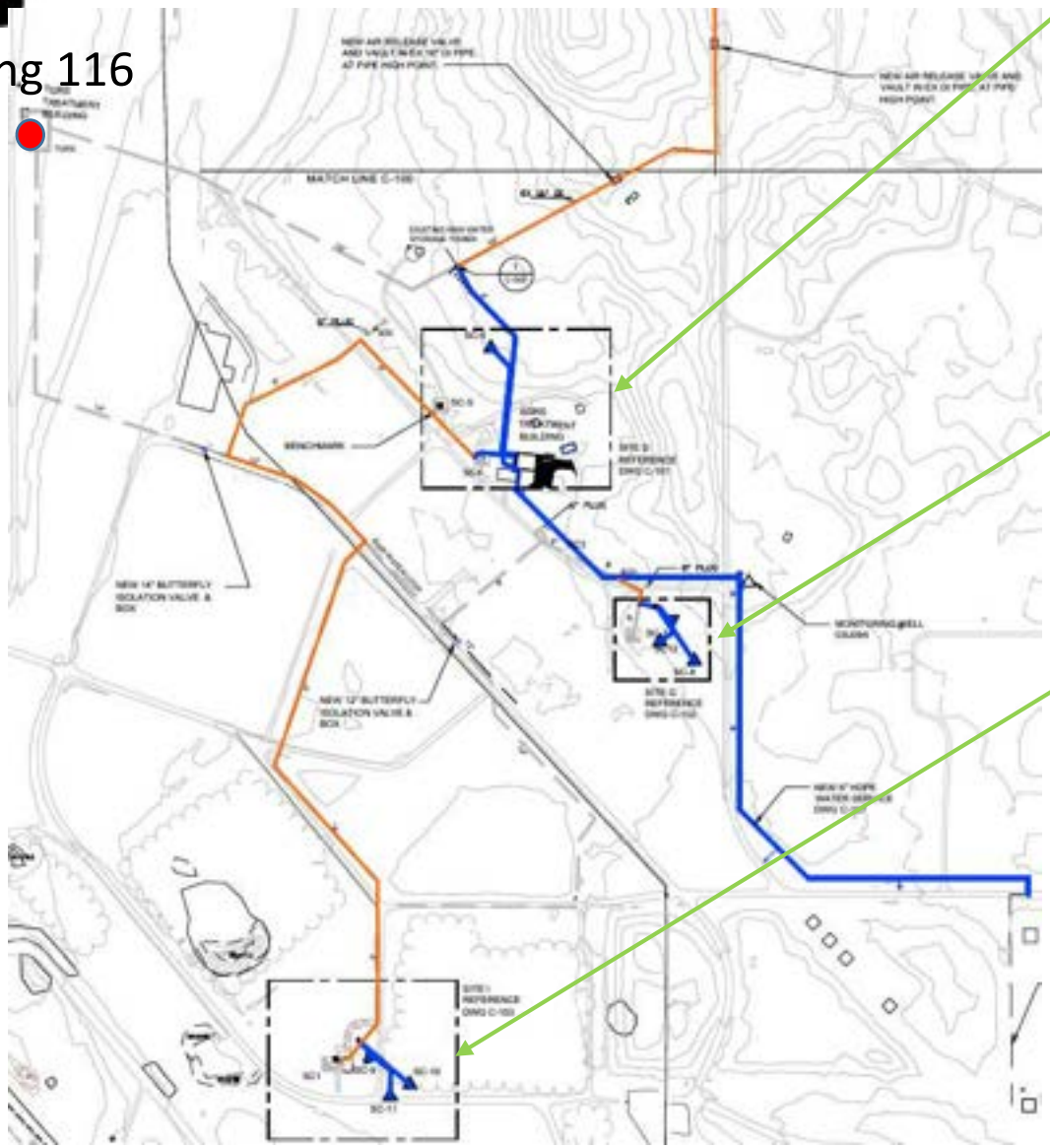


Primary Design Elements

- Mechanical or hydraulic dredging to remove 82,000 CY of sediment
- Hydraulic transport of sediment to Ben Franklin area (AHATS)
- Dewater in geotextile tubes
- Onsite treatment of water prior to discharge
- Off-site disposal at permitted landfill.

Future SGRS – Pumping Plan

Building 116



Site D

- Location of SGRS Building for road and electrical access
- SC-5 uses existing wellhouse; SC-6 manifold inside SGR building
- Discharge to Sand and Gravel Pit

Site G

- One wellhouse serving three extraction wells (SC-7, SC-8, and SC-12)

Site I

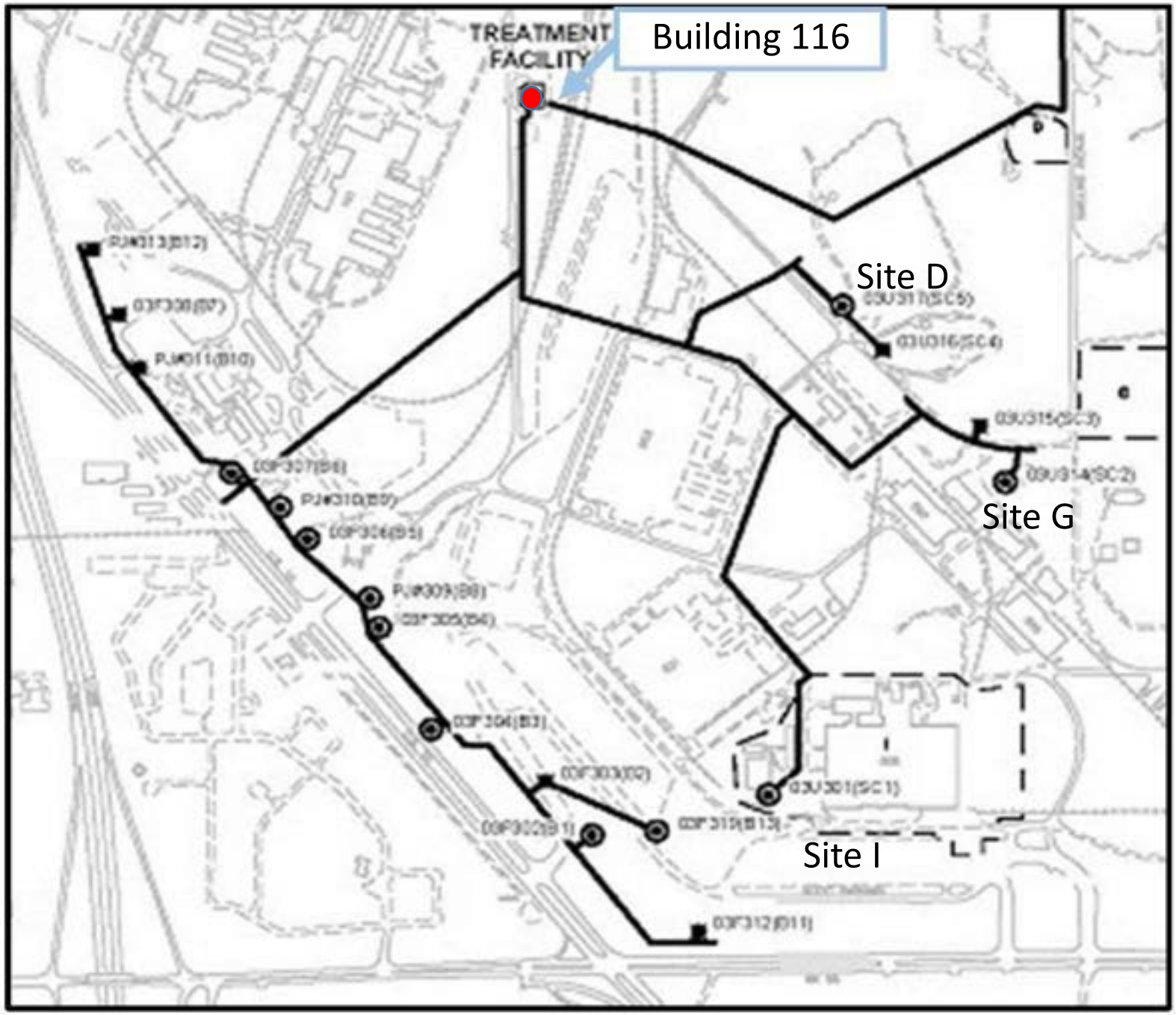
- One wellhouse serving four extraction wells (SC-1, SC-9 through SC-11)

Pipe Routing

- New piping in blue
- Existing piping in orange

KCLMCUIA4
VH2

Existing TGRS – Current Piping



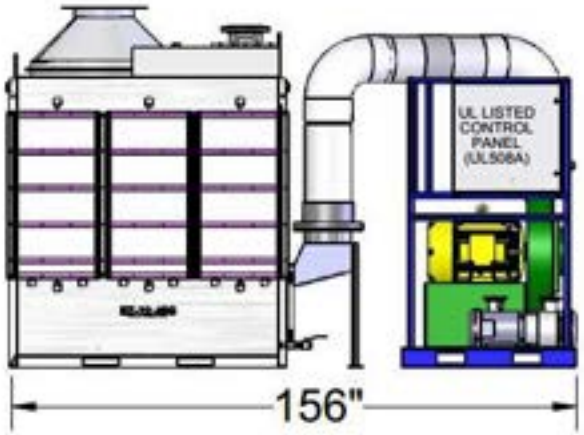
Slide 32

KCLMCUIA4 Are the source areas even on this map?
Kropp, Cathy L Ms CIV USA IMCOM AEC, 4/4/2021

VH2 Added Sites D, G and I
Voscott, Hoa, 4/5/2021

Future SGRS – Process Flow

SGRS will treat for both 1,4-Dioxane and TCE



NOTE 1
Transfer pumps on Air Stripper Skid sized to discharge to Sand and Gravel Pit