HWMU 5 Public Meeting
22 January 2009

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HWMU 5 RCRA Permit Modification
Public Meeting
22 January 2009

- Purpose of Meeting
- Background of HWMU 5
- Summary of Chemicals Present Beneath HWMU 5
- Proposed Corrective Action

HWMU 5 Public Meeting
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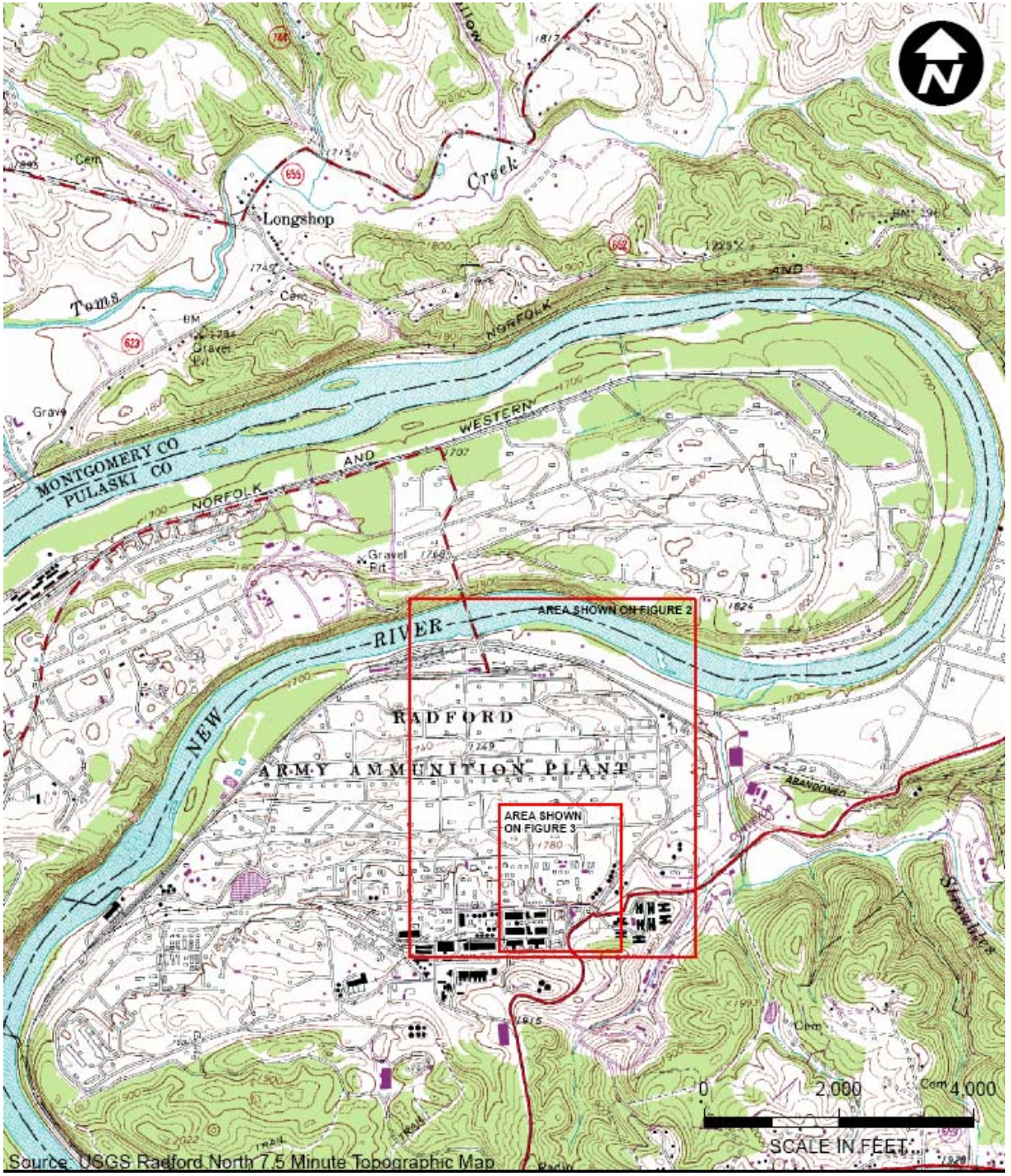
- U.S. Army is inviting the public to comment on the proposed permit modification for the post closure care RCRA permit for Hazardous Waste Management Unit (HWMU) 5 at the Main Manufacturing Area of Radford Army Ammunition Plant
- Public notice of the permit modification application was published on 21 December 2008 in the Roanoke Times
- Comments may be submitted during the 60-day comment period (17 December 2008 to 15 February 2009)
- Additional information on how to submit comments will be provided at the conclusion of this presentation

HWMU 5 Public Meeting
22 January 2009

- Purpose of Meeting
- **Background of HWMU 5**
- Overview of the Investigations at HWMU 5
- Results and Path Forward



Source: USGS Radford North 7.5 Minute Topographic Map

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NEW RIVER
HWMU 5
BLD 1549
BLD 1034
BLD 1041
0
600
1,200
SCALE IN FEET
LEGEND
RAAP-47 Building

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Background of Site
Former Waste Impoundment (HWMU 5)

- HWMU 5 operated between 1970 and 1986 to receive acid wash down water from an acid tank farm and storm water runoff
  - Lined in 1981
  - 1986 removed from service
  - 1989 stabilization of contents with fly ash and an impermeable cover placed over the HWMU
- Work has documented the materials likely discharged to the impoundment. TCE was unlikely to have been in the materials discharged to the treatment lagoon
- However, low levels of TCE was reported in groundwater wells nearby HWMU 5

Background of Site
Former Waste Impoundment (HWMU 5)

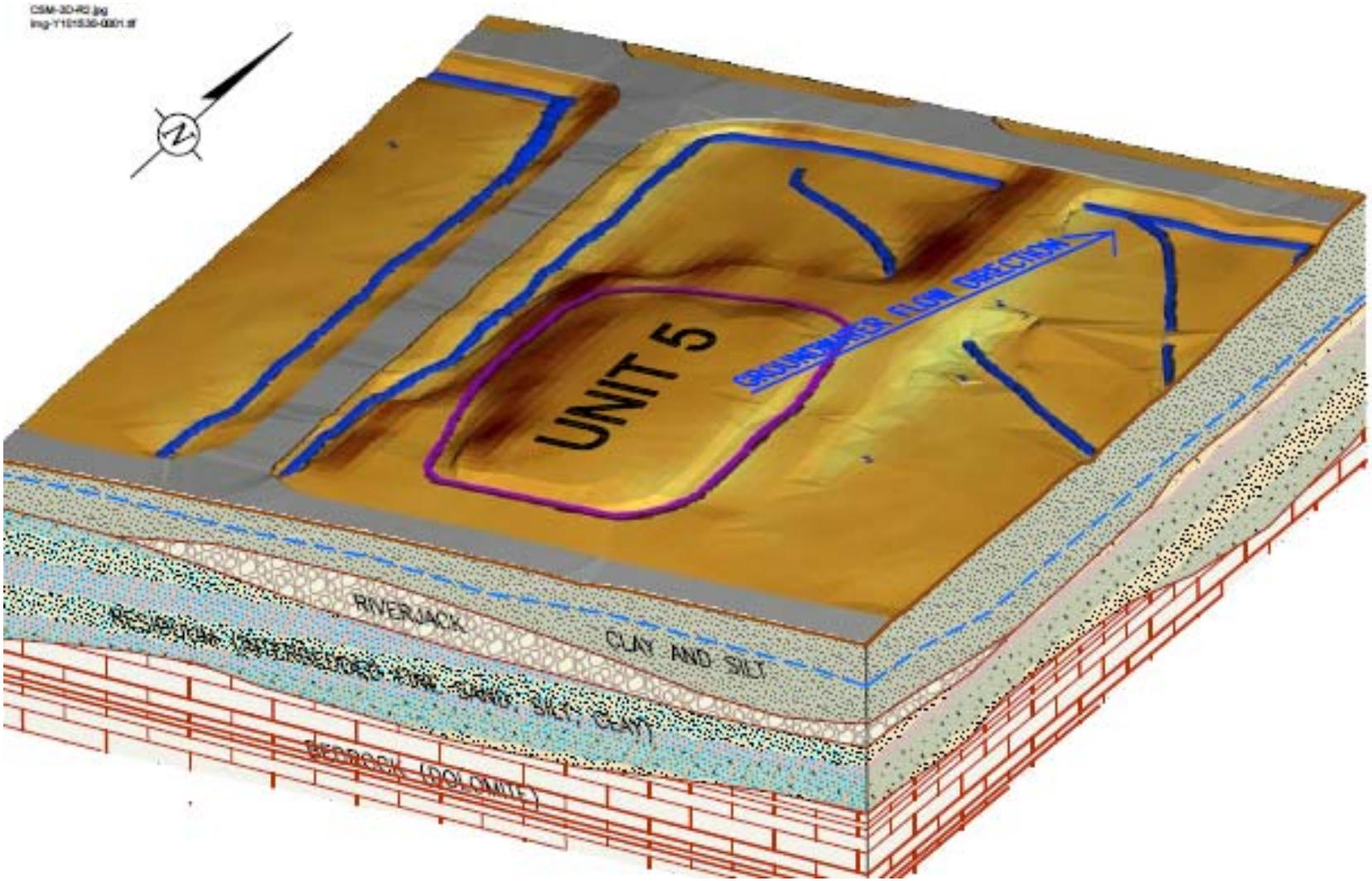
PREVIOUS WORK

- Army has been monitoring groundwater in vicinity of HWMU 5 since mid 1990's under the post closure care permit
- Investigations in and around HWMU conducted in 2002, 2004, and 2008 to determine nature of the waste within the closed lagoon, and to determine if the TCE in groundwater was associated with the HWMU or other sources
- Soil, groundwater, and residual material in HWMU was sampled during these studies

HWMU -5

HWMU-5 Wells

HWMU -5 Conceptual Site Model



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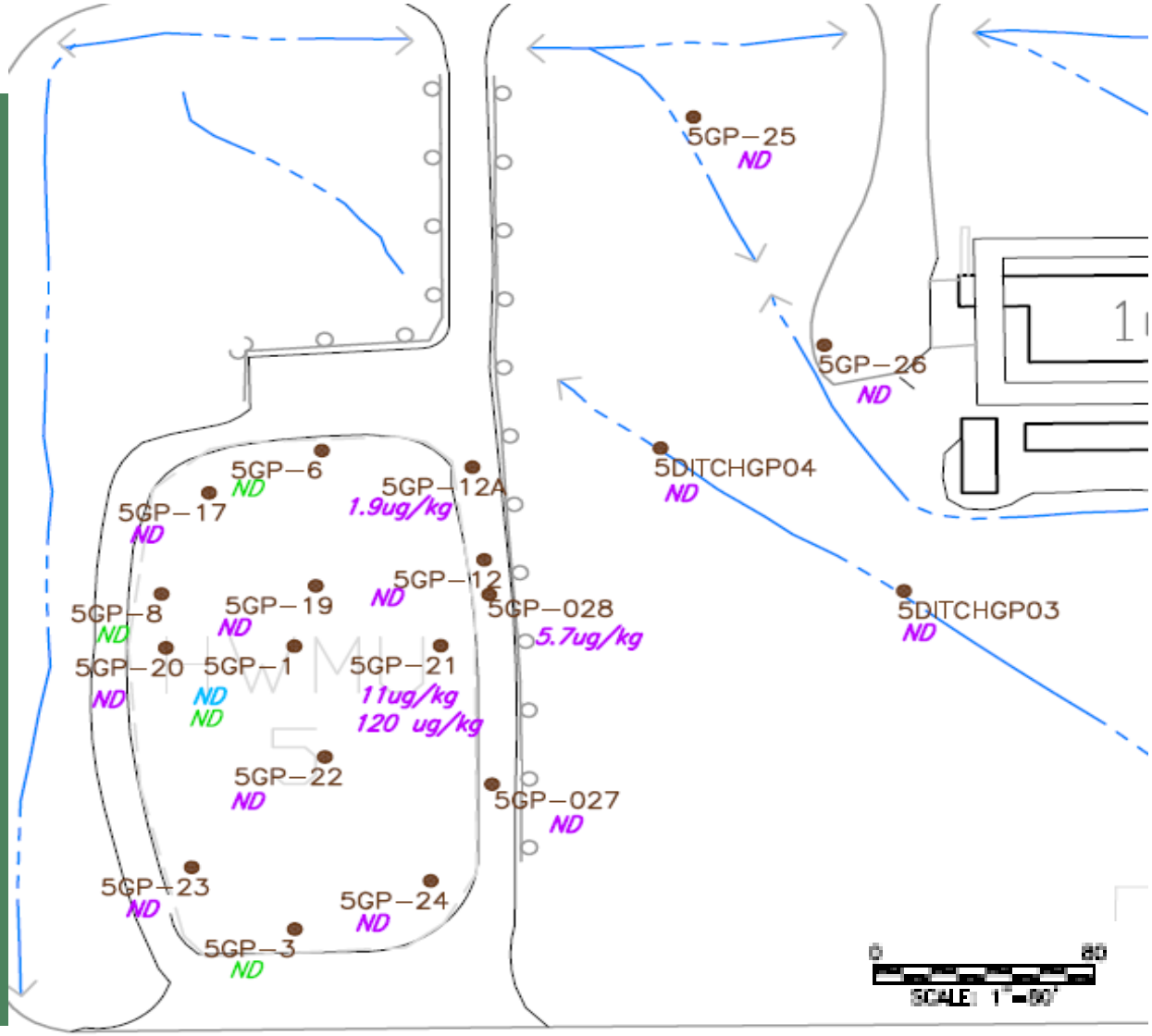
HWMU Area Soil Results ug/kg (ppb)

- No TCE detected in stabilized material in HWMU
- 120 ug/kg or 11 ug/kg (duplicate) TCE detected in 2004 in soils beneath liner
- 5.7 ug/kg and 1.9 ug/kg TCE detected in wet soils in 2008 east of HWMU
  - Blue = Cap
  - Green = Residual Material (9 to 11 feet below surface)
  - Magenta = Soil beneath HWMU (13 to 14 feet below surface)



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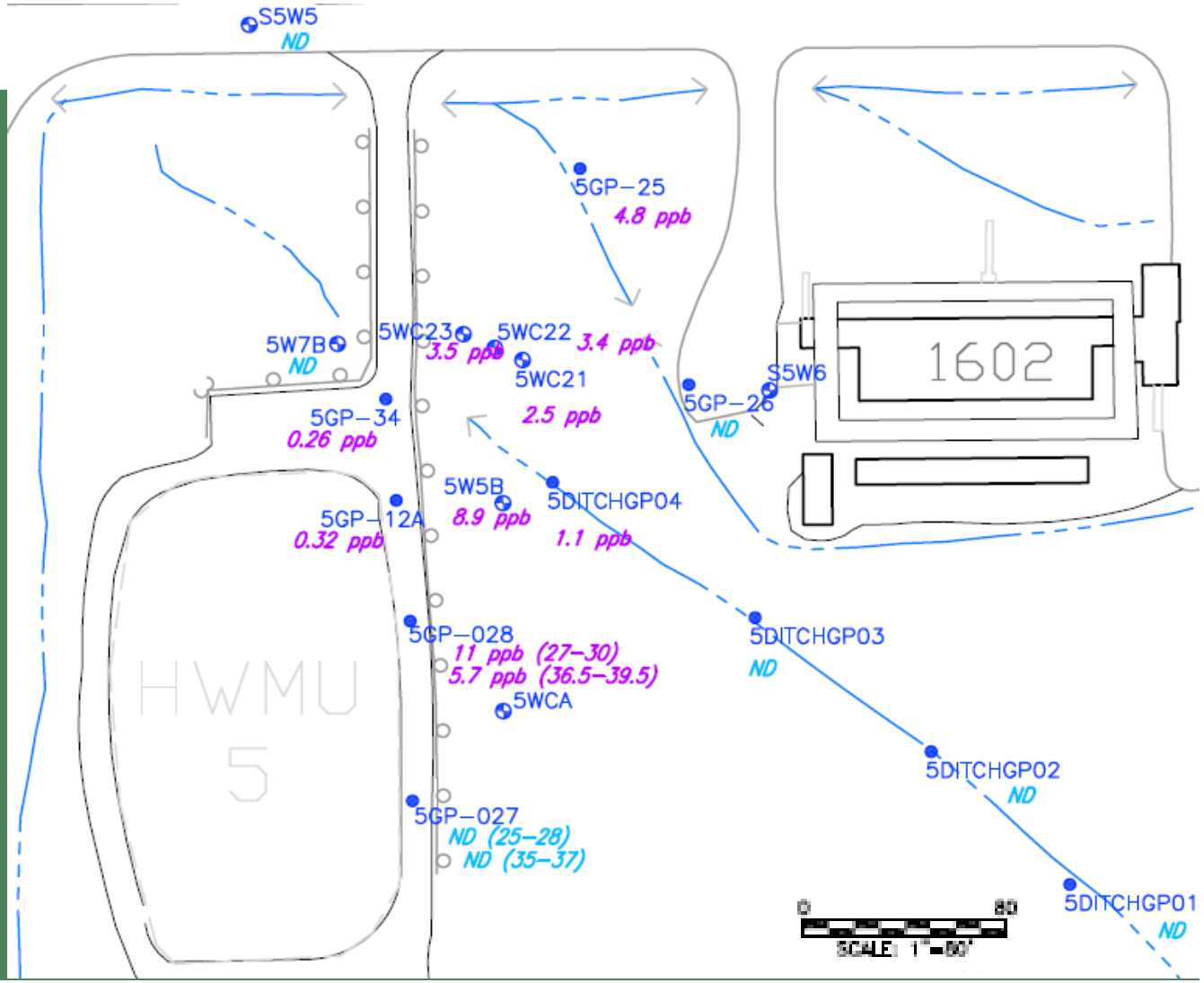
HWMU Area Groundwater Results ug/L (ppb)

- 11 ug/l TCE maximum detection in 2008
- Decreasing concentrations with depth (cross section to follow)
- Minimal areal distribution of TCE in subsurface



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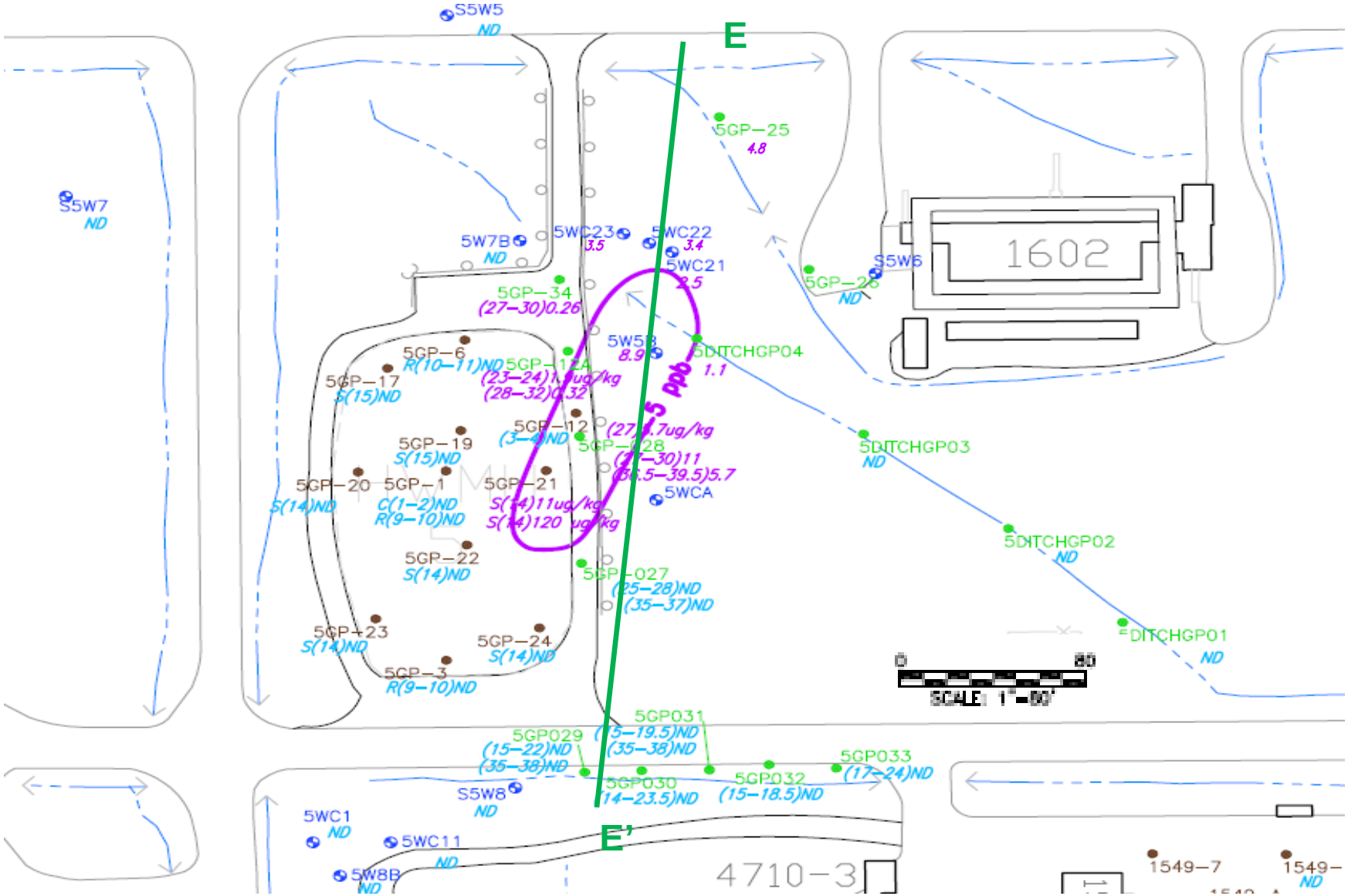
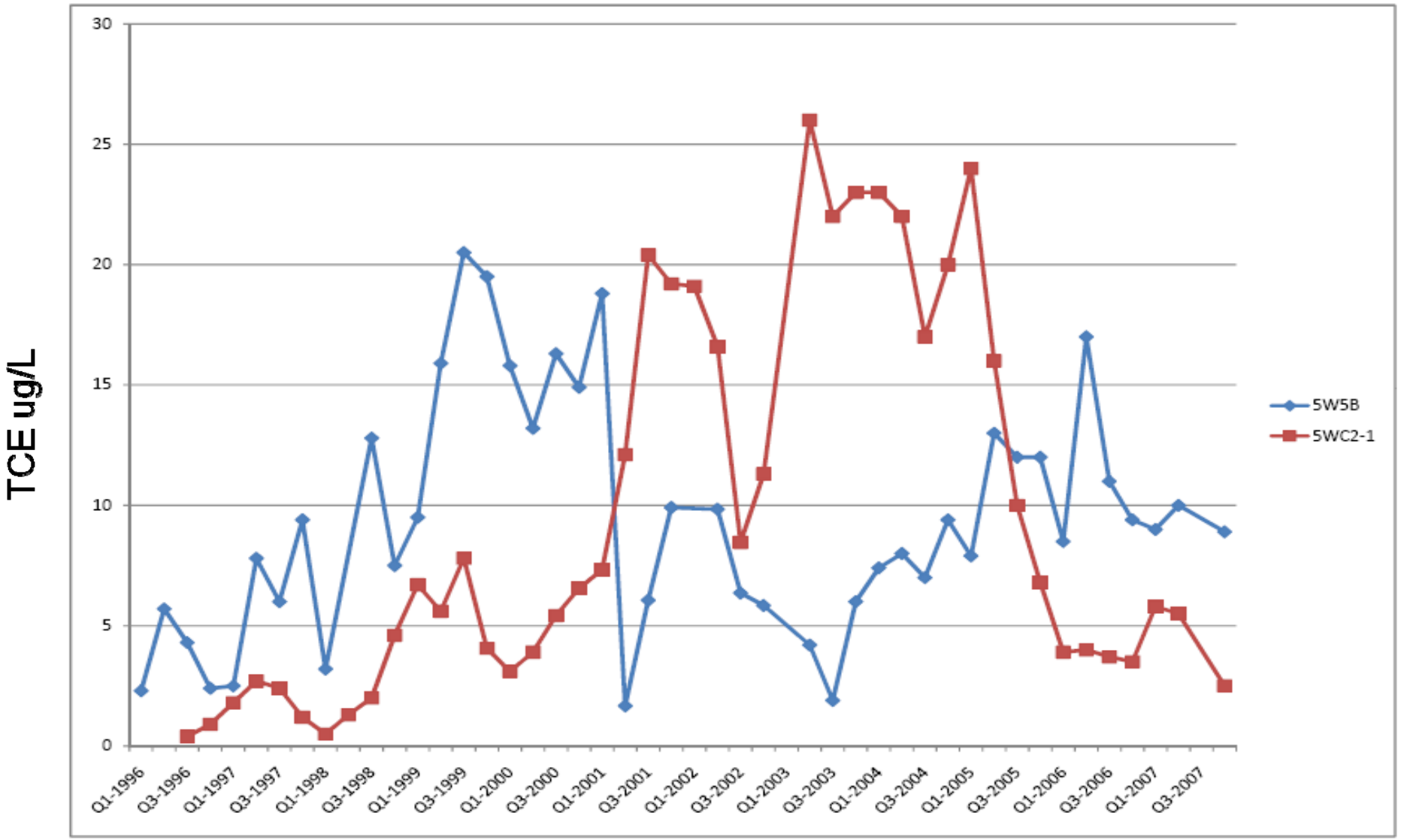
Groundwater Plume (162 ft end to end)



TCE Data Trends

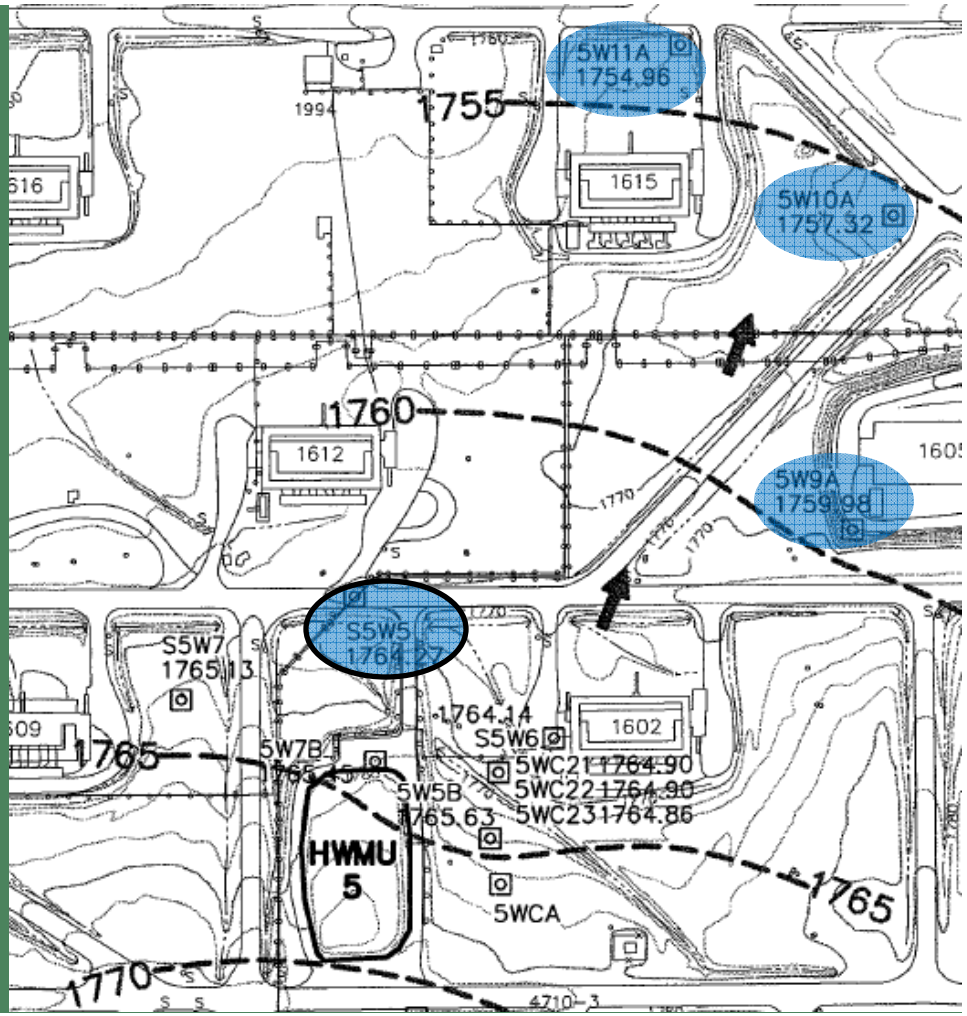


HWMU 5 Summary of Chemicals Present in Groundwater

- Small plume of TCE (160 ft) delineated east of HWMU-5
- Maximum TCE detected in 2008 in Groundwater was 11 ppb
- Only 3 samples exceed drinking water standard of 5 ppb at HWMU 5

Historical TCE data downgradient of HWMU 5

- Well S5W5 150 feet from HWMU
  - TCE non detect in samples since 1999,
  - ‘97-’98 - 4 detections of concentrations less than 0.5 ppb.
  - 25 ft total depth
  - 10 ft screen.



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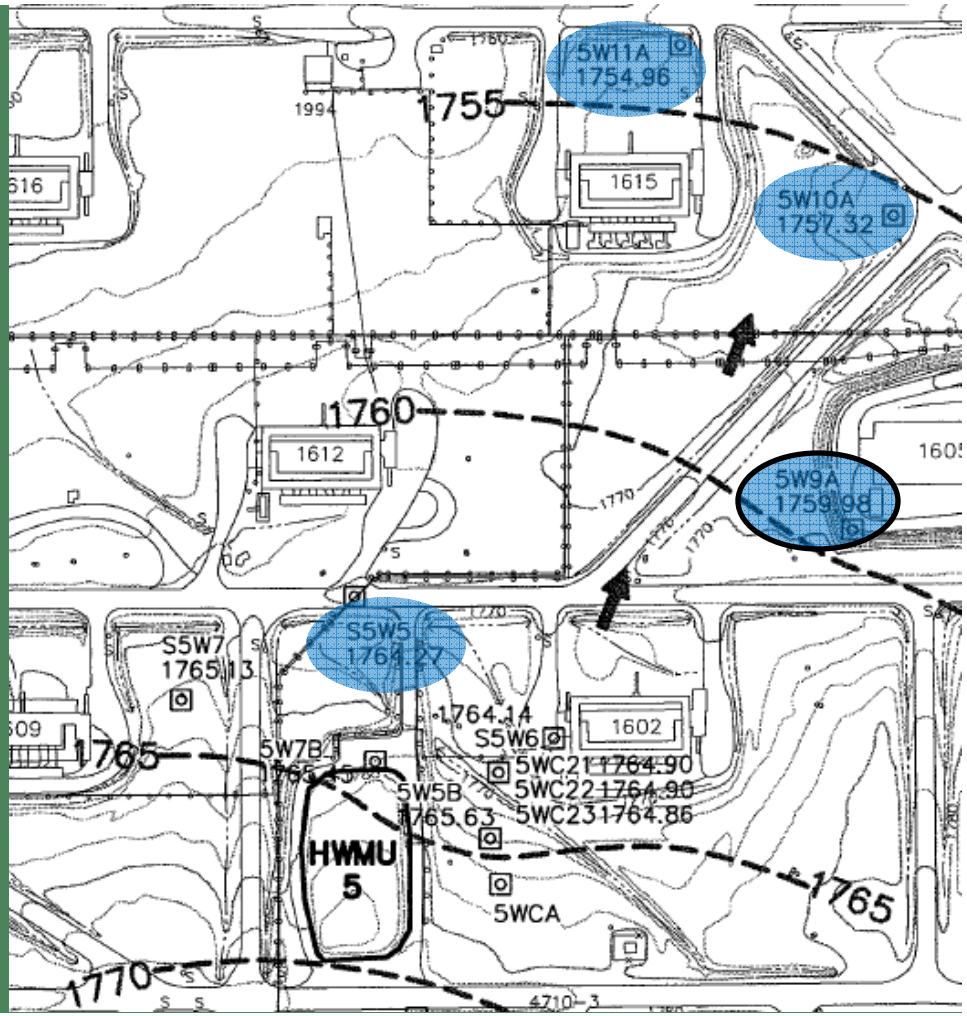
Historical TCE data downgradient of HWMU 5

- Well 5W9A 500 feet from HWMU
  - TCE non detect in samples since the 3rd quarter of 1999,
  - '96-'98 low level detections less than 1 ppb.
  - 49 foot total depth
  - 20 ft screen



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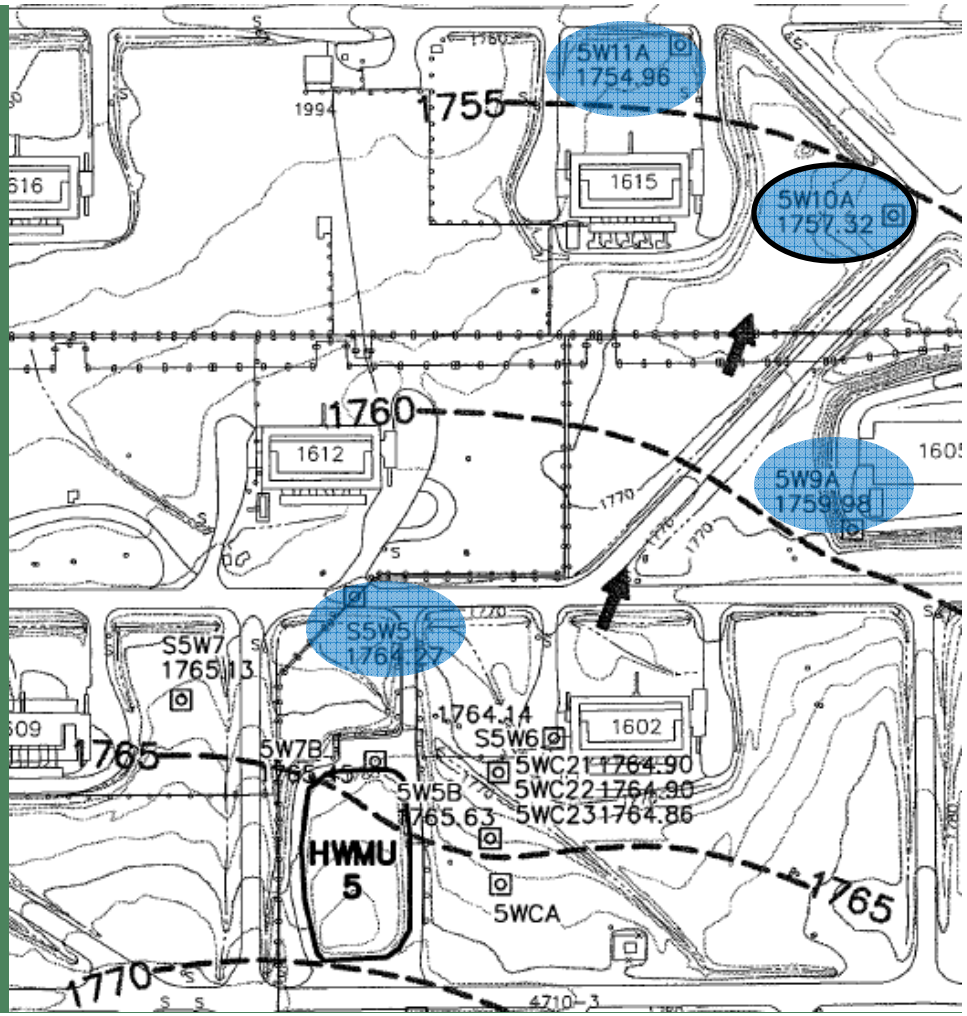
Historical TCE data downgradient of HWMU 5

- Well 5W10A 700 feet from HWMU
  - TCE detected once at 7.4 ppb 9 years ago and never repeated
  - 45 foot total depth
  - 20 ft screen



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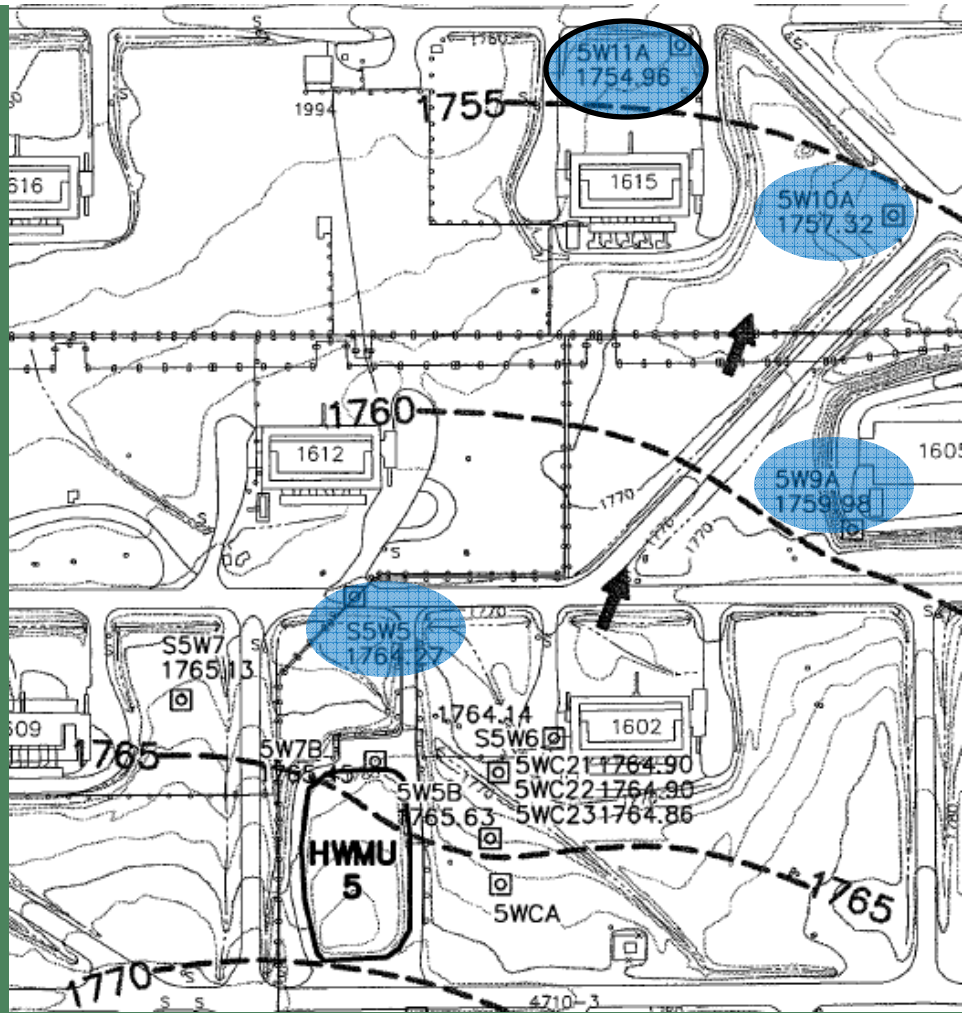
Historical TCE data downgradient of HWMU 5

- Well 5W11A 750 feet from HWMU
  - TCE not detected in 10+ years of data.
  - Unconsolidated
  - 48 foot total depth
  - 20 ft screen



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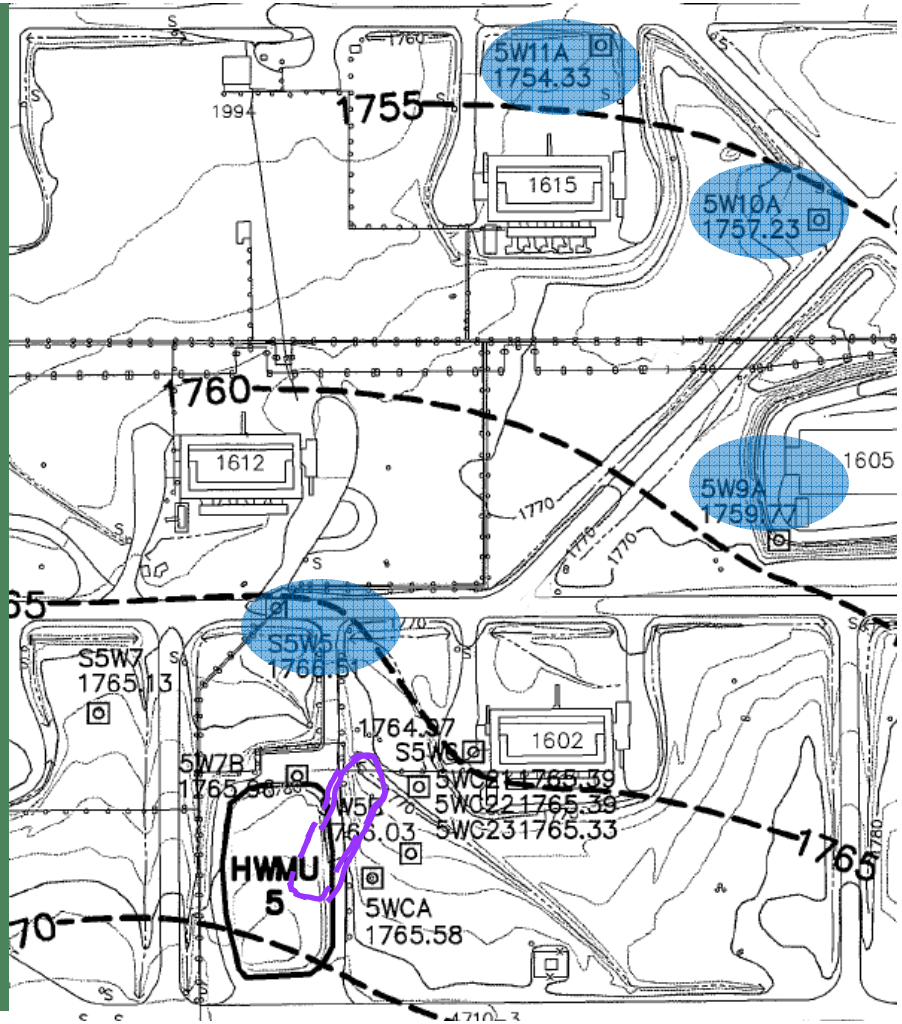
Historical TCE data downgradient of HWMU 5

- Current conditions
  - Continued Non-detects for TCE



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HWMU 5 RCRA Corrective Action

- The Army has submitted an application to modify the post closure care RCRA permit and add a corrective action plan
- Due to the limited extent and low concentrations of the TCE in groundwater Monitored Natural Attenuation (MNA) has been proposed as the corrective action

HWMU 5 RCRA Corrective Action
Primary Remedial Objectives

1. Demonstrate Continued Plume Stability and Control;

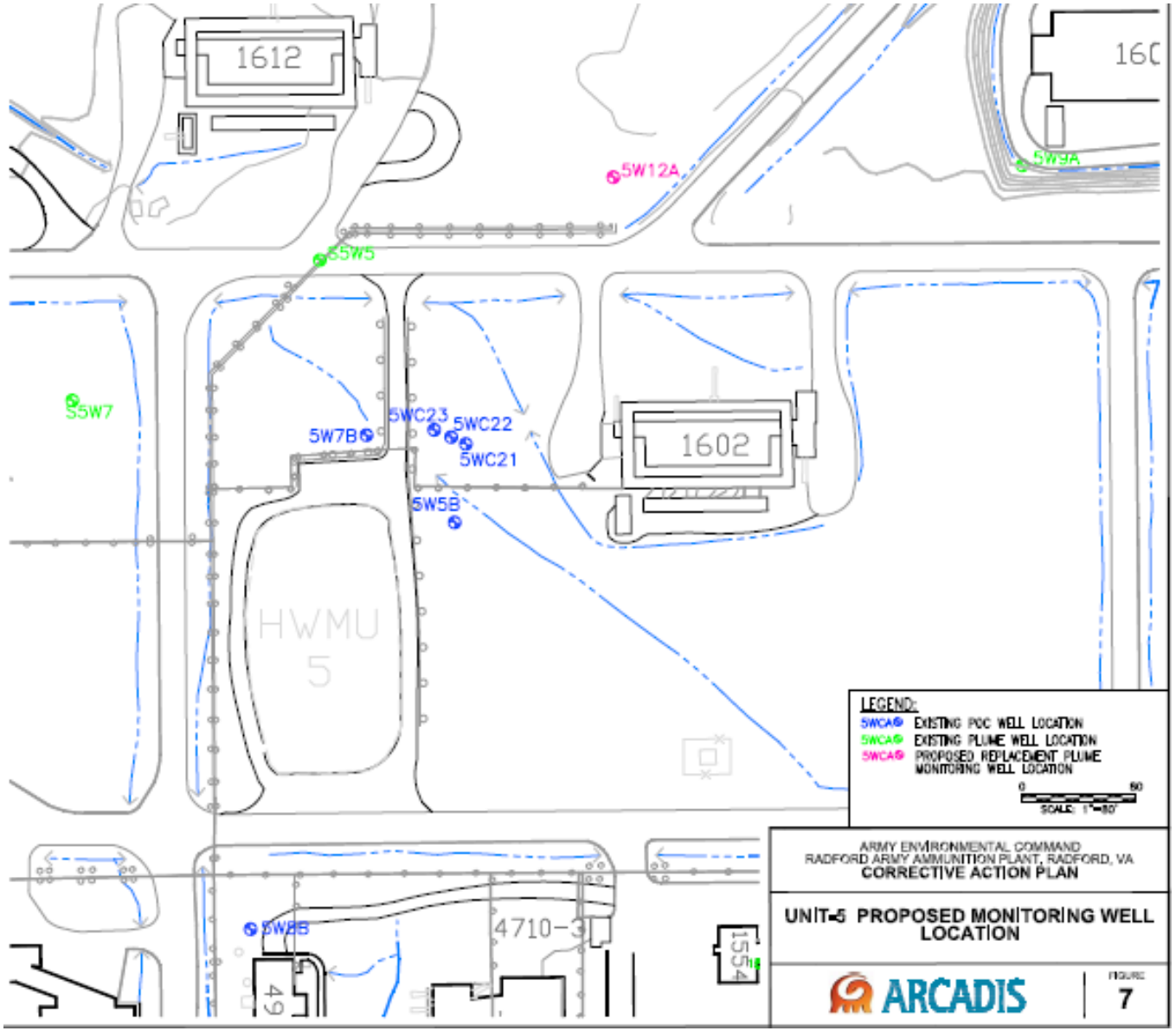
2. Evaluate the rates of degradation/transformation/dechlorination of the TCE

3. Monitor the projected response duration

HWMU 5 RCRA Corrective Action

- Monitoring of the plume would be conducted at 6 locations semi annually (one up-gradient and 5 down-gradient wells)
- Additionally, annually sampling will be conducted at one additional well between HWMU 5 and the New River
- Semi-annually groundwater will be analyzed for TCE and it's breakdown products
- Annually biogeochemical parameters will also be analyzed

Proposed Monitoring Network



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HWMU 5 RCRA Corrective Action

- The Corrective Action Monitoring will be continued until TCE and its breakdown products have been demonstrated to the regulating agencies have dropped below their drinking water standards for a statistically significant period of time

HWMU 5 RCRA Corrective Action
Decision Process and Comment Submittal

- At the end of the public comment period, and consideration of all public comments, DEQ will make a final decision of whether to modify the permit

HWMU 5 RCRA Corrective Action
Decision Process and Comment Submittal

Comments can be submitted via email, fax, or mail to the VADEQ. Comments must include your name, address, and telephone number and received by 15 February. Comments should be sent to:

Matthew Stepien: Senior Environmental Engineer
Virginia Dept of Environmental Quality
629 East Main Street
Richmond VA 23219
Telephone: 804 698 4026
Fax: 804 698 4234
mmstepien@deq.virginia.gov