

Solid Waste Management Unit 54 (Propellant Burning Ash Disposal Area)

RCRA Facility Investigation (RFI)/
Corrective Measures Study (CMS)

Site Description

- Two non-contiguous inactive areas
 - Used for disposal of burned propellant ash from Waste Propellant Burning Ground (SWMU 13)
- Disposal occurred in 1970s
- Southern area (Area A) < 1 acre
- Northern area (Area B) > 1 acre
- Undeveloped grass area located on alluvial terrace adjacent to the New River in Horseshoe Area
- Groundwater flow east towards the New River
- Figure 1 – Site location map
- Figure 2 – Site layout

Previous Investigations

Investigation	Date	Area Investigated	Nature of Investigation
D&M VI	1991	Area A	Geophysics + 3 GW wells
Parsons RFI	1996	Area A	Soil + GW Sampling
MSE RFI	1998	Area B	Soil Sampling + 1 GW Well
Parallax	1999	Areas A + B	GW Sampling Interim Measure Removal for Lead + Explosives – 1,827 Tons of Soil Excavated

RFI Sampling Summary

- Area A – 43 Soil Borings (2004-2006)
- Area B – 27 Soil Borings (2004-2006)
- Groundwater Sampling
 - 2004 – Direct Push Investigation
 - 2003 – Monitoring Wells – 54MW2, 54MW3, 54MW4, 54MW5, 54MW6, 54MW7
 - 2004 – 54MW8, 54MW9, 54MW10
 - 2006 – 54MW1 through 54MW10 (Quarterly sampling for explosives and perchlorate)
- New River Sampling
 - 2006 - Surface water/sediment pore water/sediment
- Figure 3 – RFI Sample Locations
- Figure 4 – Surface Water/Sediment Pore Water Sample Locations
- Figure 5 – Sediment Sample Locations

Primary COPCs – Area A

- Soil COPCs
 - Lead
 - Explosives
 - Dioxin/Furans
 - Pesticides
 - PCBs
- Groundwater
 - Explosives
 - Perchlorate

Primary COPCs – Area B

- Soil COPCs
 - Lead
 - Explosives
 - Dioxin/Furans
 - Pesticides
 - PCBs
- Groundwater
 - None

Primary COPCs – New River

- Surface Water/Sediment Pore Water
 - None
- Sediment
 - None identified specific to site

Remedial Alternatives

- Three corrective measures technologies assessed
 - Alt. 1: No Further Action;
 - Alt. 2: Excavation of Soil at Area A and Area B, Offsite Disposal, and Monitored Natural Attenuation; and
 - Alt.3: Excavation of Soil at Area A and Area B, Offsite Disposal, and Enhanced *In Situ* Bioremediation of Groundwater.
- Recommended Alternative
 - Alt. 2: Excavation of Soil at Area A and Area B, Offsite Disposal, and Monitored Natural Attenuation
 - Figure 6 – Soil Remedial Boundary – Area A
 - Figure 7 – Soil Remedial Boundary – Area B

Assessment of Alternative 2

- Removal of the soil will prevent future leaching of COPCs to groundwater;
- Removal of soil will allow for continued attenuation of COPCs in groundwater;
- Provide future unrestricted use of the site;
- Soil removal is expected to be completed in less than one year; and
- Monitored natural attenuation of groundwater is expected to require five years or less of performance monitoring to achieve objectives with up to an additional three years of monitoring after achieving and maintaining the remedial objectives before site close out.

Assessment of Alternative 3

- Alternative 3 was not recommended due to:
 - Potential adverse effects to groundwater (i.e., degradation of secondary water quality parameters) from remedial implementation activities;
 - Potential adverse impacts due to the proximity to surface water;
 - Longer duration to implement than Alternative 2; and
 - Higher cost.

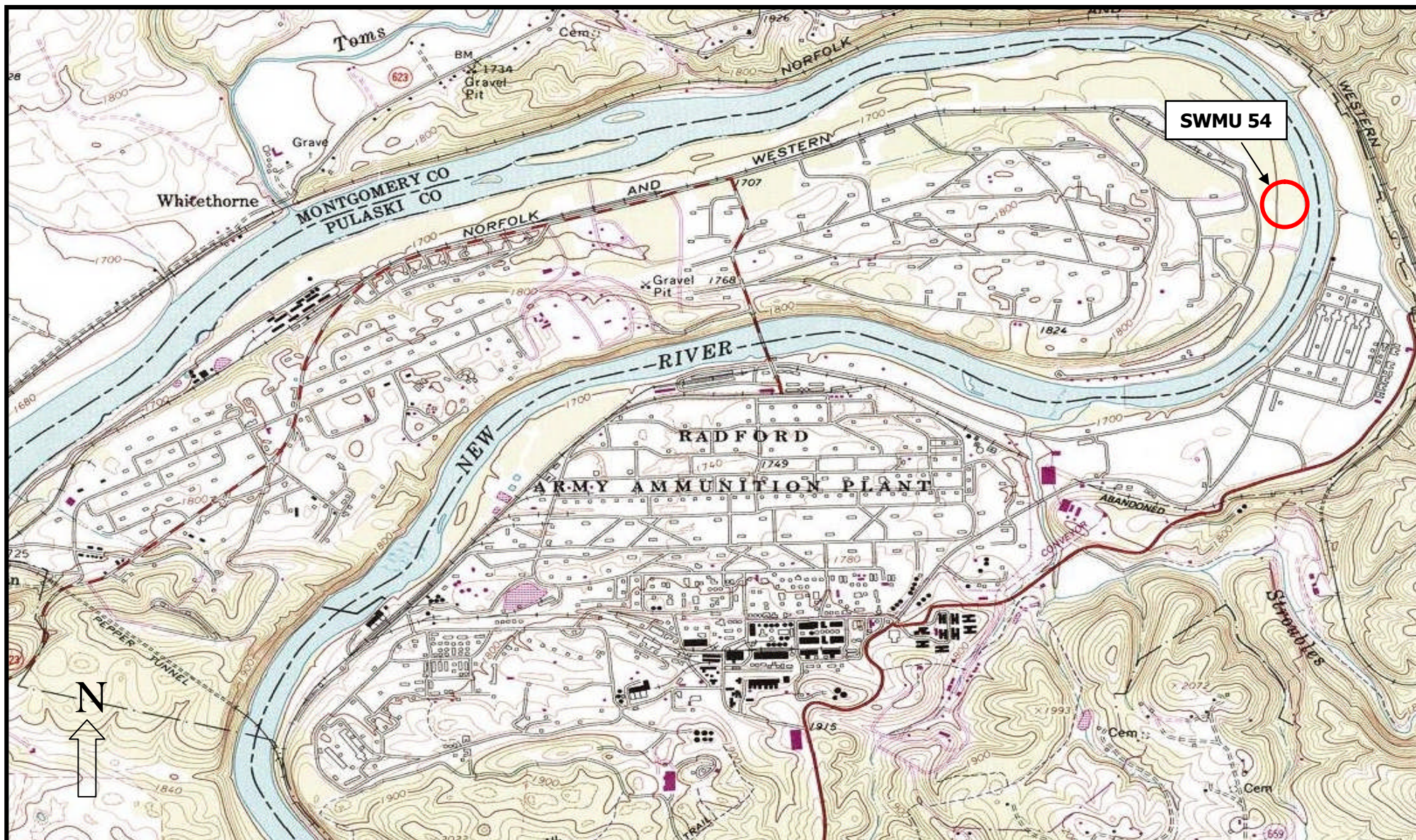


FIGURE 1

SITE LOCATION MAP

Date:
January 2006

Prepared by:
CLD

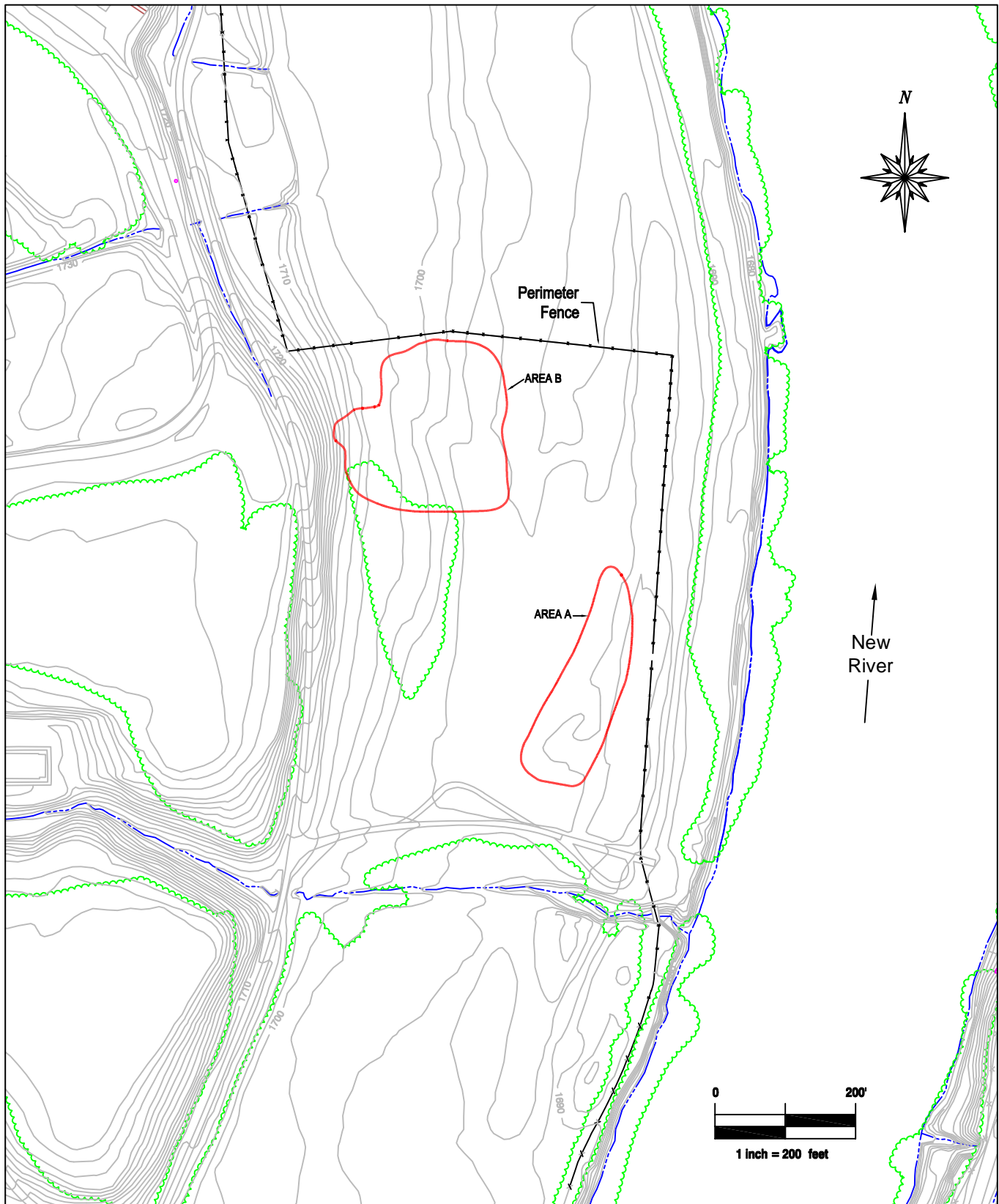
Scale:
 $1'' = 2000'$

Job Number:
21354893

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Radford Army Ammunition Plant
Radford, Virginia

URS

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Legend

- **Approximate SWMU Boundary**
- **Topographic Contour**
- ~~~~~ **Vegetation**

FIGURE 2

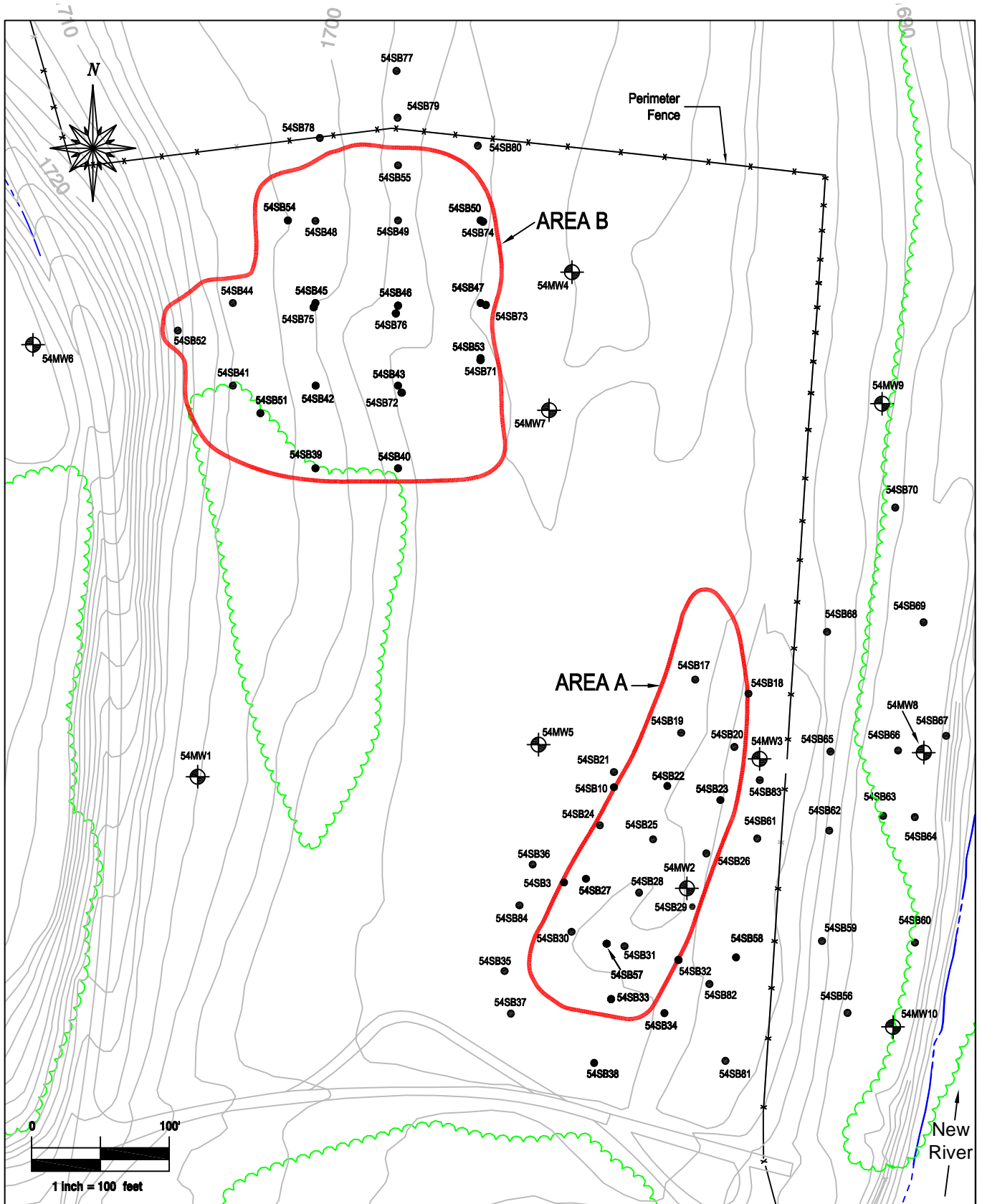
Site Layout

Date: September 2005	URS Project #: 21355035
Prepared by: DBC	Approved by: JOS
Scale:	File Name:

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Legend

- SWMU Boundary
- Monitoring Well Location
- Soil Boring Location

FIGURE 3

RFI Sample Locations
Soil and Groundwater

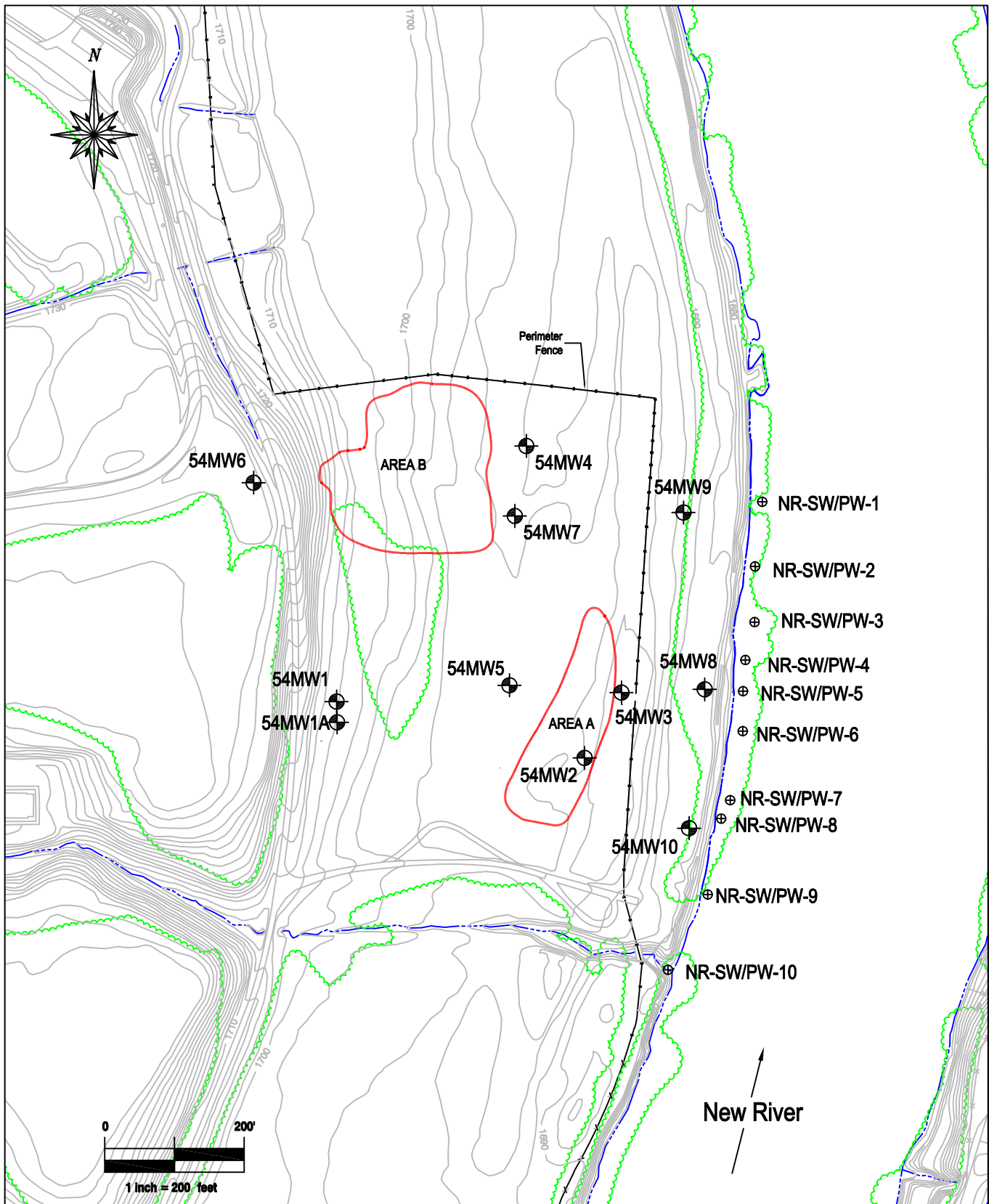
Date: July 2007	URS Project #: 21355035
Prepared by: DBC	Approved by: JOS
Scale: 1 inch = 100 feet	File Name: Fig.3-1 RFI Locs

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Legend

- Approximate SWMU Boundaries
- Monitoring Well Location
- Surface Water / Pore Water Sample Location

FIGURE 4

Monitoring Well and Surface
Water/Pore Water Sample Locations

Date:
June 2007

Prepared by:
DBC

Scale:
1 inch = 200 feet

URS Project #:
21355035

Approved by:
CLD

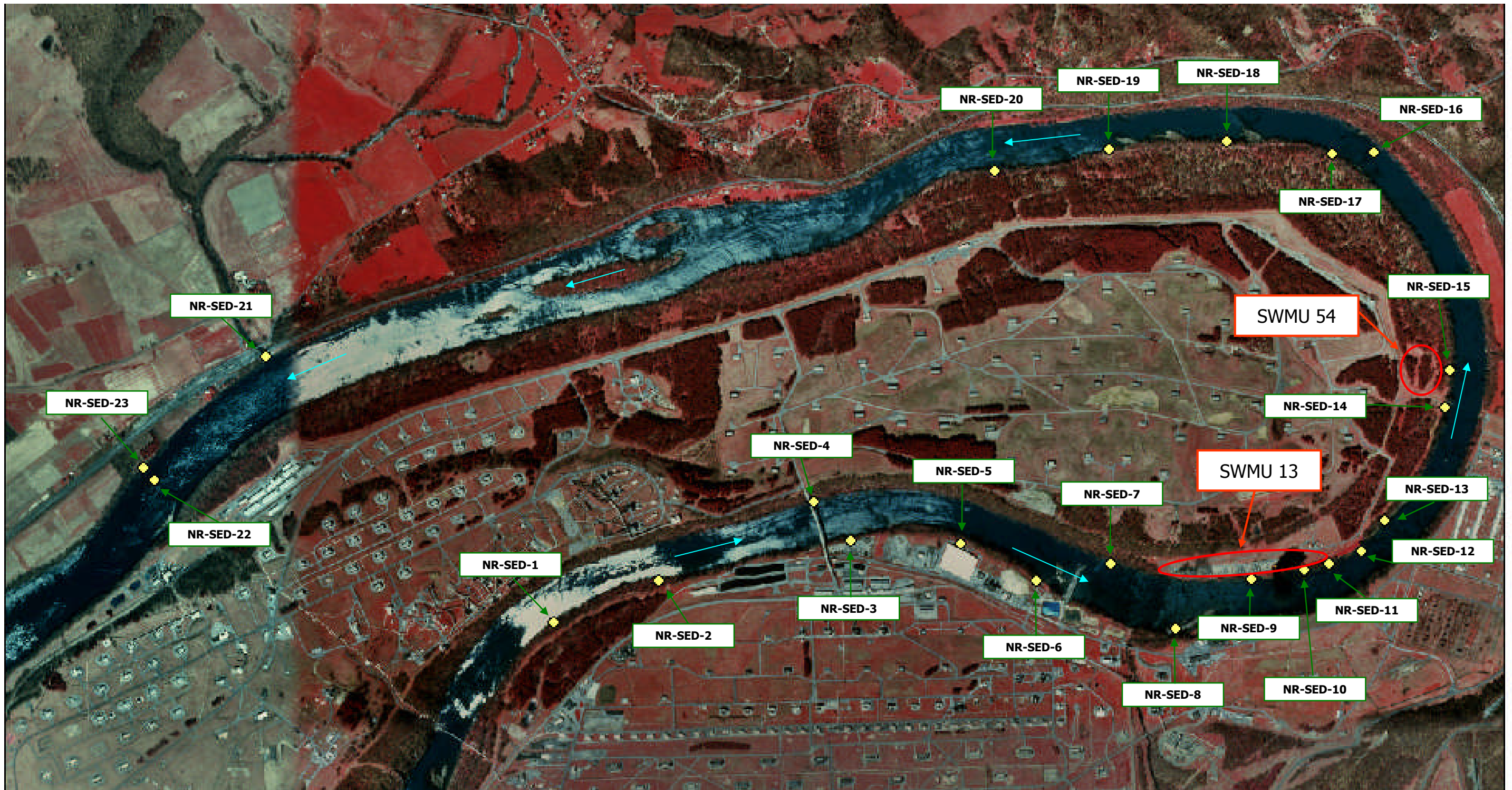
File Name:
Fig 3-3 SW/PW Loc

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Legend

- ◆ Sediment Sampling Location
- NR-SED-1** Sampling Location ID
- Flow Direction

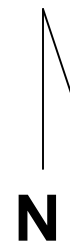


FIGURE 5

Date: May 10, 2007

Drawn by: TLD/LAM

Reviewed by: JOS

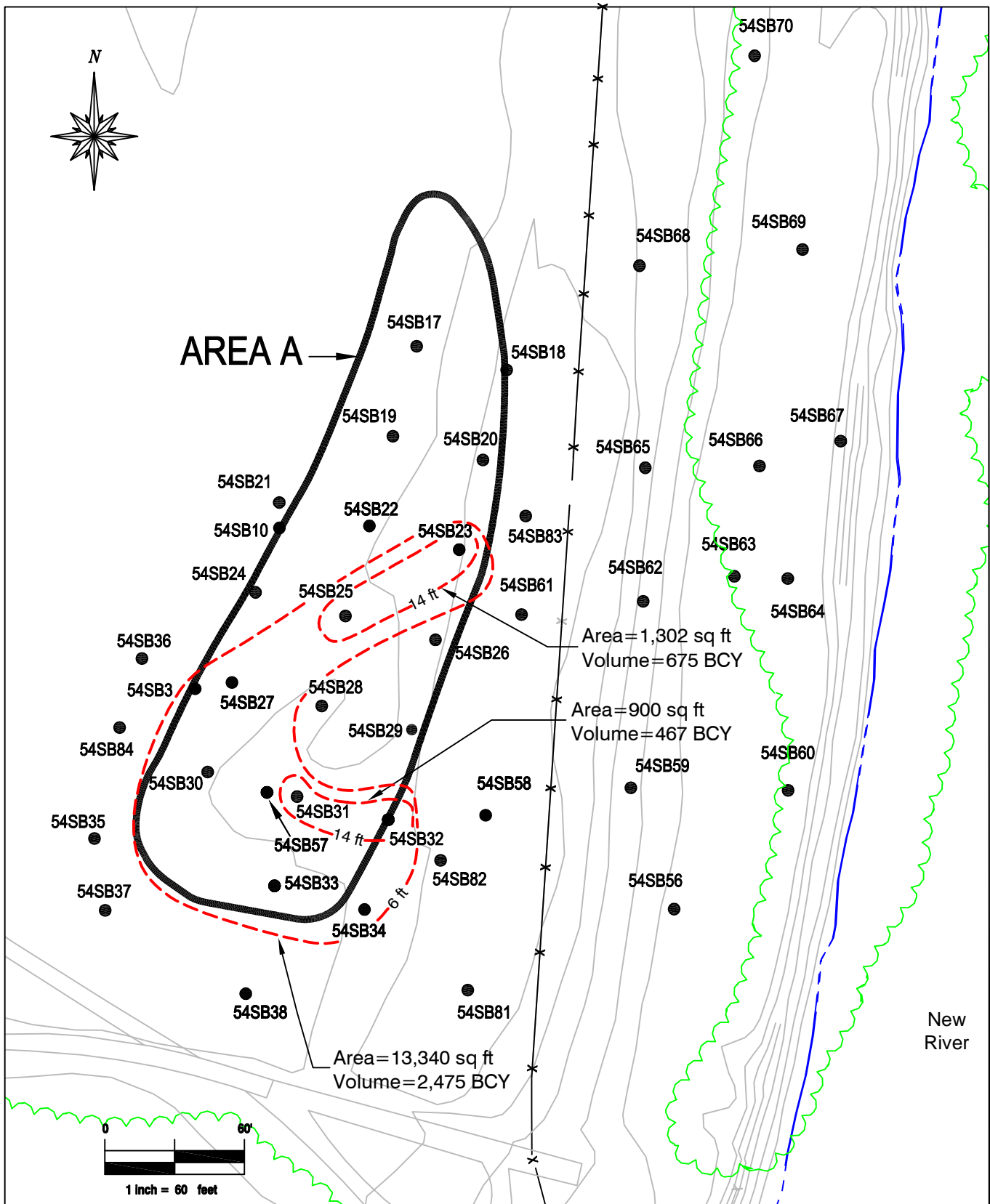
Not to Scale

NEW RIVER SEDIMENT SAMPLING LOCATIONS

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Legend

- Approximate SWMU Boundary
- Soil Boring Location
- Remedial Boundary
- 6 ft/14 ft Estimated Average Depth of Removal
- BCY Bank Cubic Yards

Figure 6

Area A - Remedial Boundaries for Soil

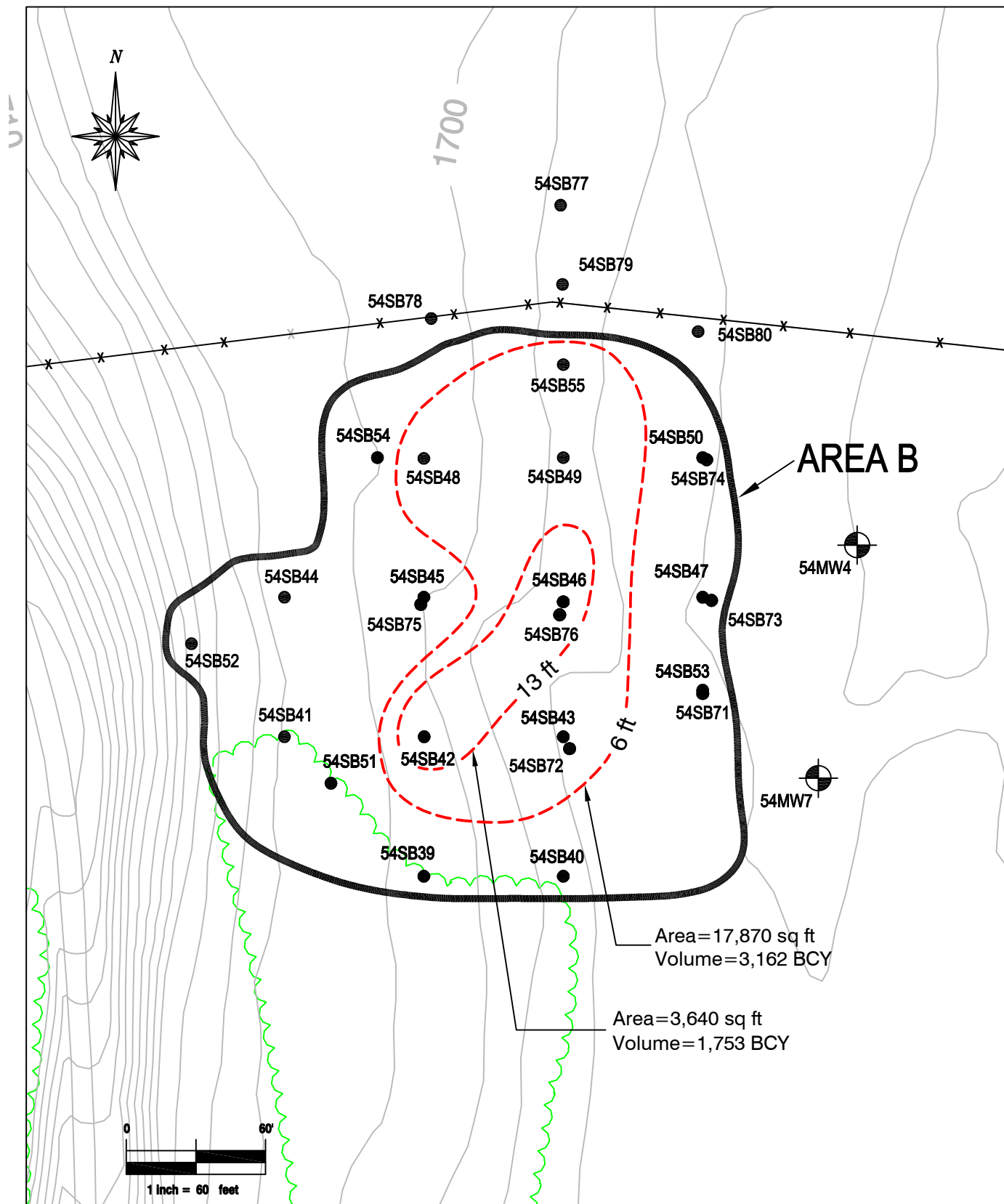
Date: April 2007	URS Project #: 21355035
Prepared by: DBC	Approved by: CLD
Scale: 1 inch = 60 feet	File Name: Fig8-1 A Rem Bound

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Legend

- Approximate SWMU Boundary
- Soil Boring Location
- Remedial Boundary
- 6 ft/13 ft Estimated Average Depth of Removal
- BCY Bank Cubic Yard

Figure 7

Area B - Remedial Boundaries for Soil

Date: April 2007	URS Project #: 21355035
Prepared by: DBC	Approved by: CLD
Scale: 1 inch = 60 feet	File Name: Fig8-3 B Rem.Bound

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