



United States Army
Fort Jackson Operational Range Assessment Program
Open House Overview

Visit our
website for
program
updates



Welcome & Orientation

Thank you for coming to the Open House!

We've set up seven "stations" for you to visit to learn about the history of Fort Jackson, the Army's efforts to address the presence of RDX, and the path forward.

There are experts at every station ready to answer your questions!

Station 1: Fort Jackson & RDX: A Brief History

Station 2: Historical Missions of Fort Jackson

Station 3: Results from the Remedial Investigation: Soil & Groundwater Sampling

Station 4: Groundwater: Residential Sampling & Treatment

Station 5: RDX & Your Health

Station 6: The Path Forward

Station 7: Remagen Range: Protecting Groundwater

If you don't have a smart phone to scan the website code above, please use this link to access the Fort Jackson Operational Range Assessment Program website:
<https://home.army.mil/jackson/index.php/about/Garrison/directorate-public-works/ORAP>

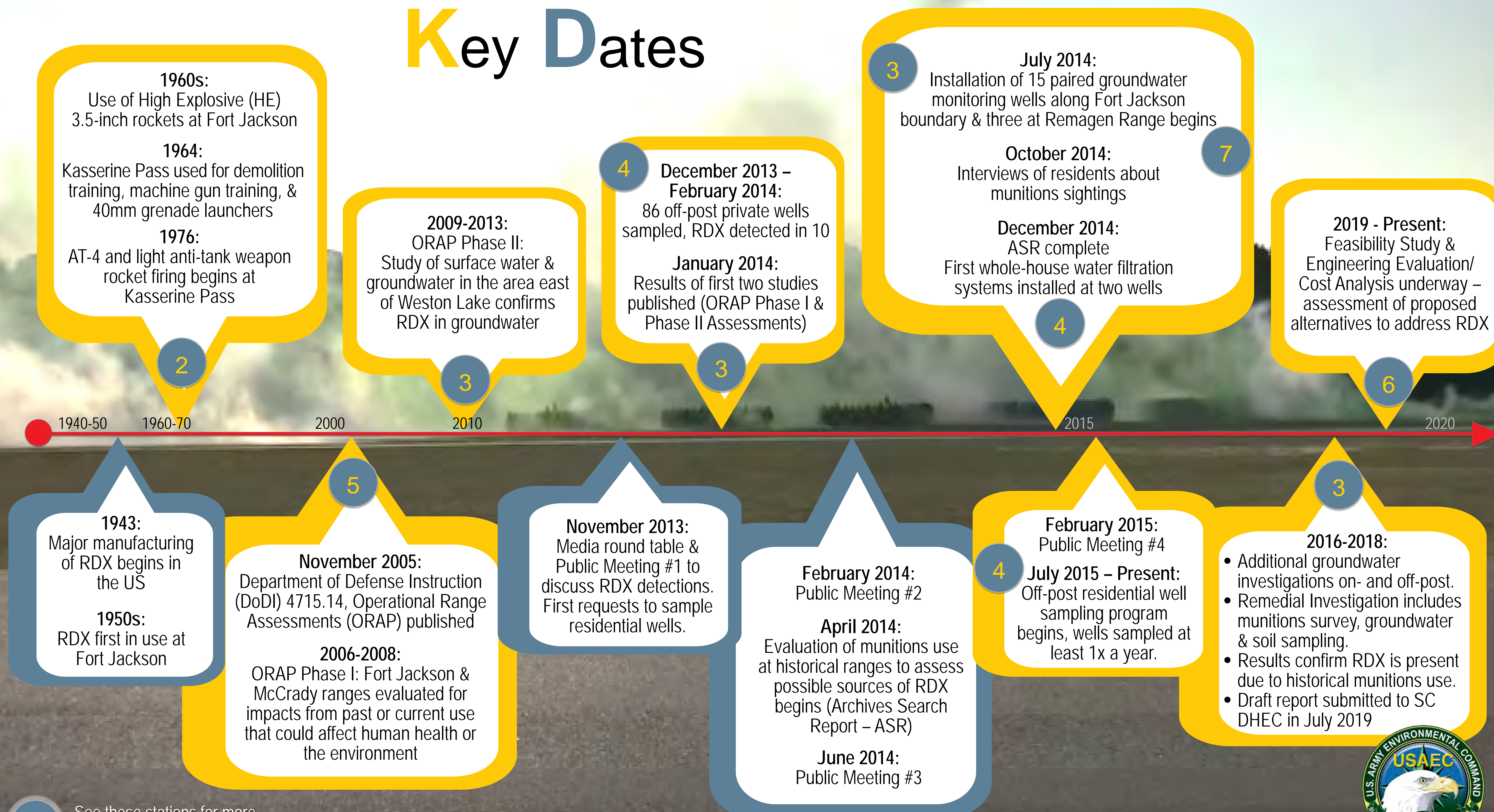




United States Army Fort Jackson Operational Range Assessment Program Fort Jackson & RDX: A Brief History

1

Key Dates



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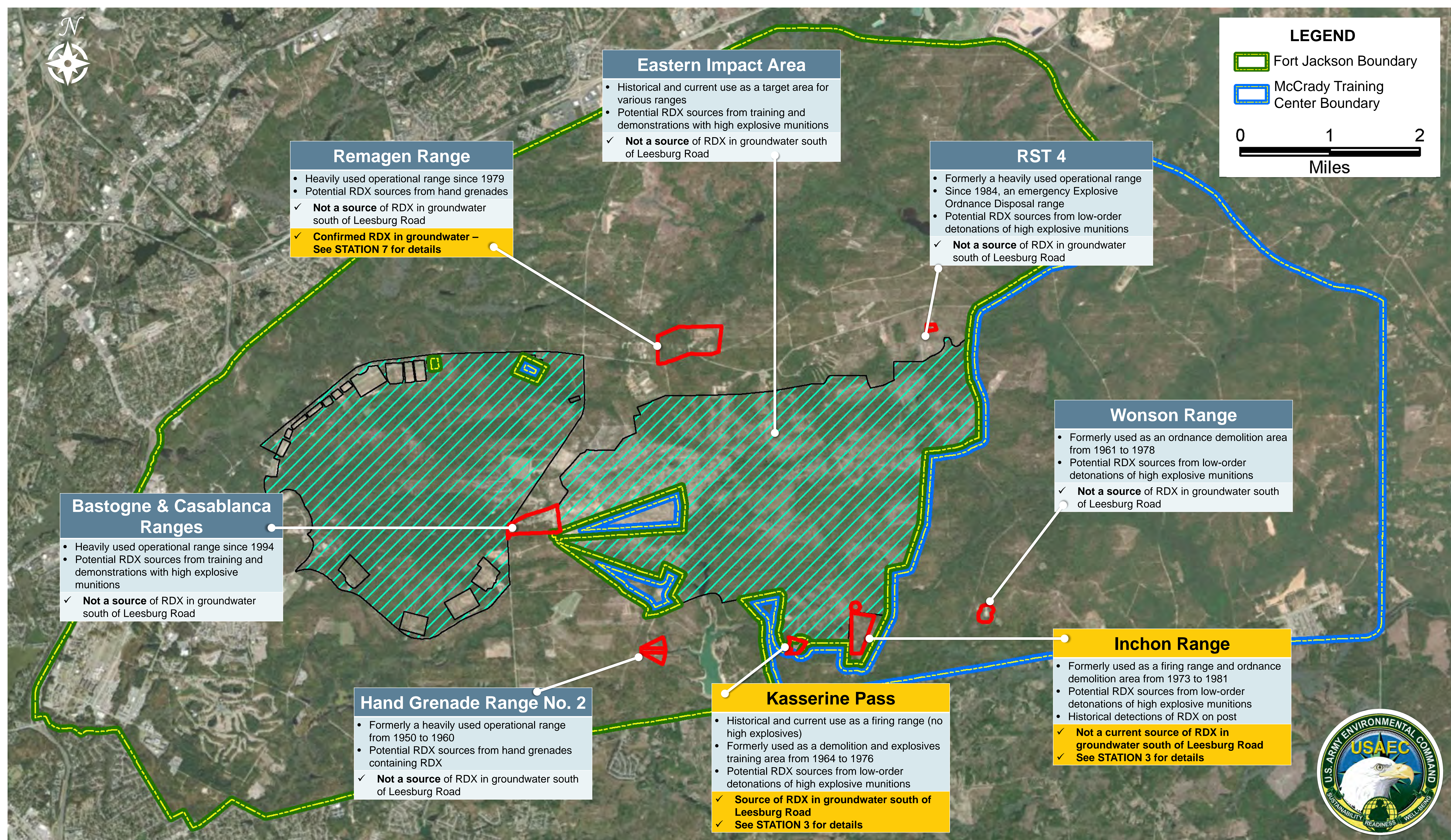
See these stations for more information on the topic mentioned





United States Army Fort Jackson Operational Range Assessment Program Fort Jackson & RDX: A Brief History

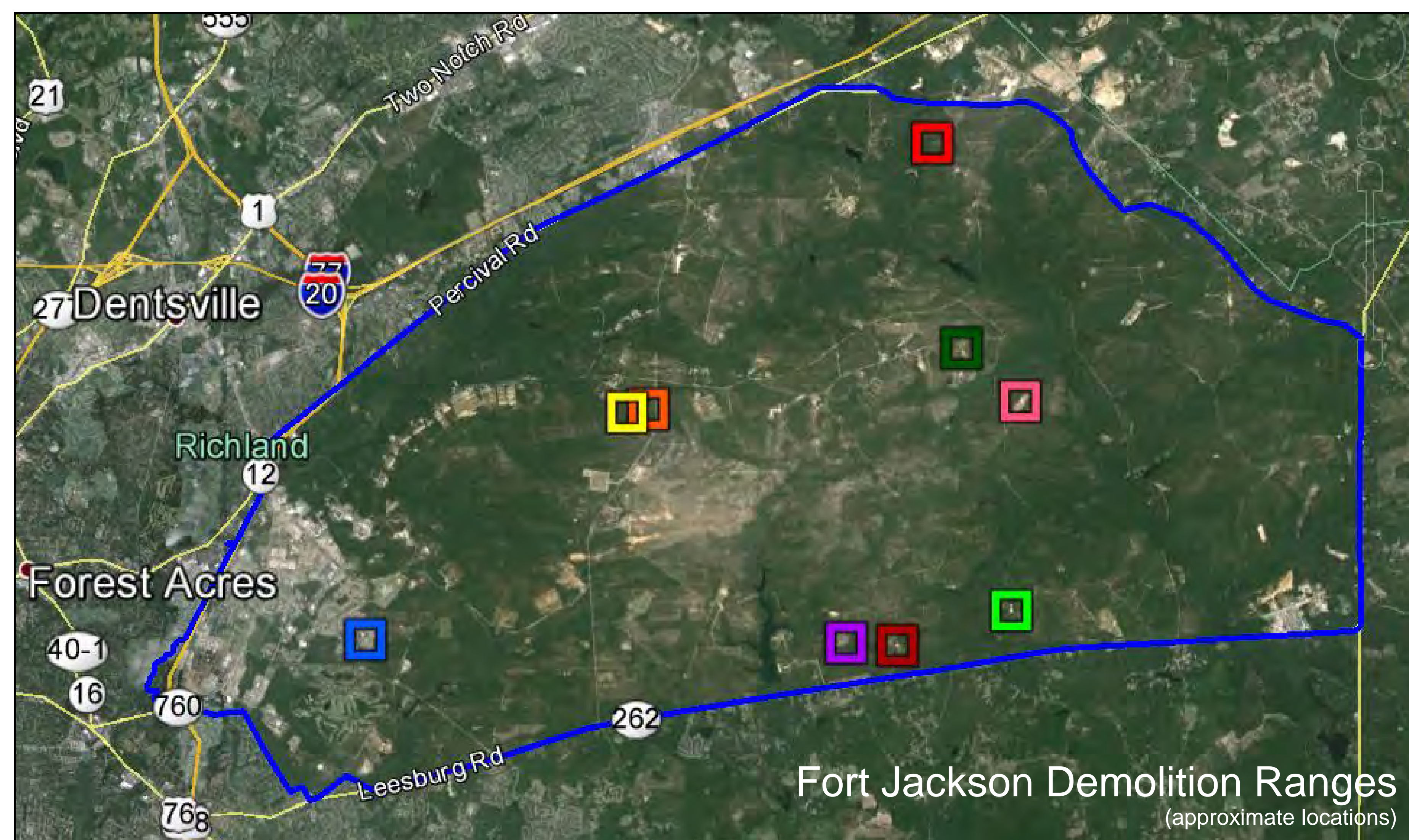
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United States Army Fort Jackson Operational Range Assessment Program Fort Jackson & RDX: A Brief History

1



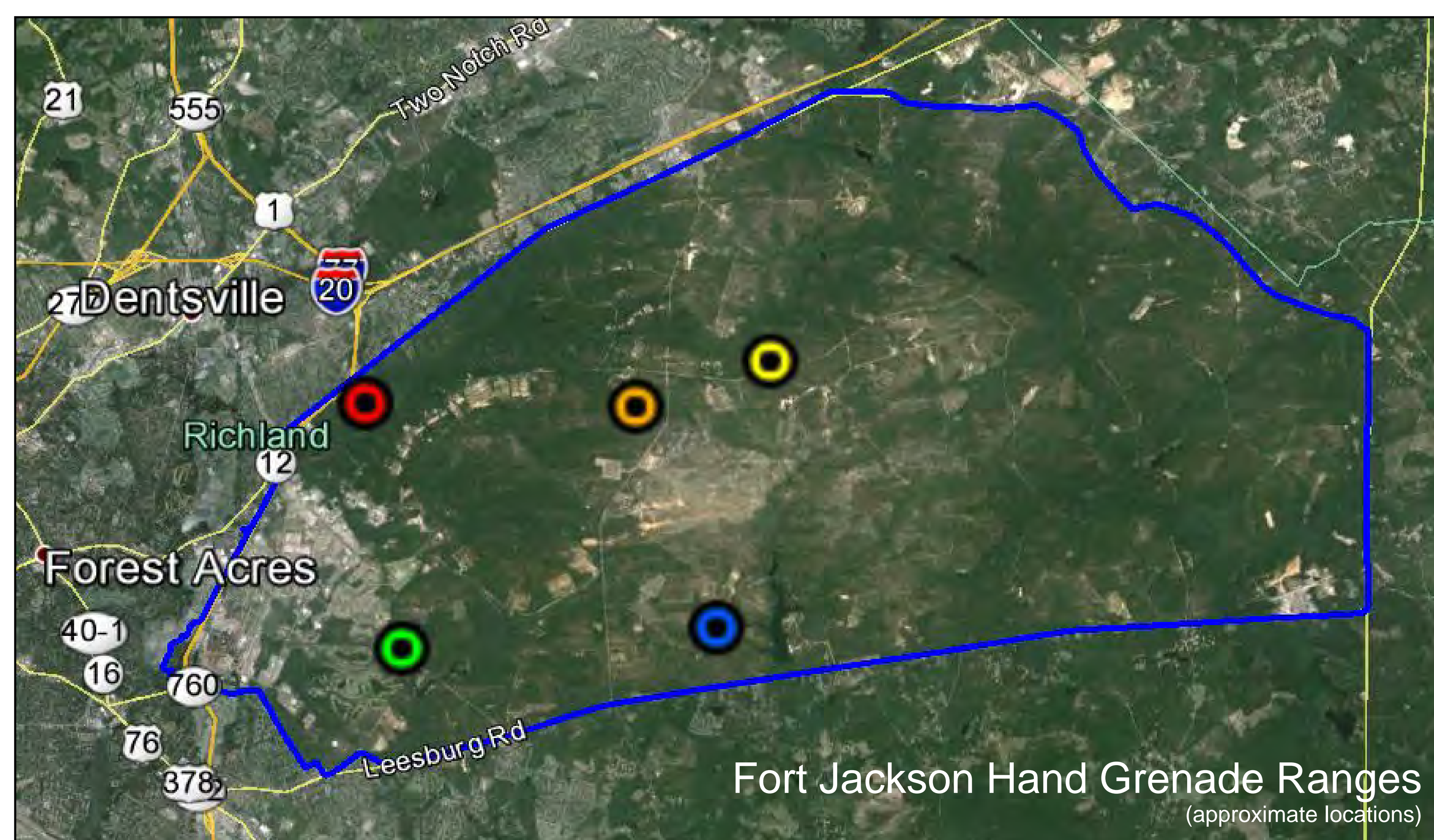
Approximate Years of Use:

- 1955 - 1959
- 1959 - 1980
- 1960 - 1971
- 1961 - 1978
- 1964
- 1964 - 1976
- 1973 - 1981
- 1984 - Present
- 2009 - Present



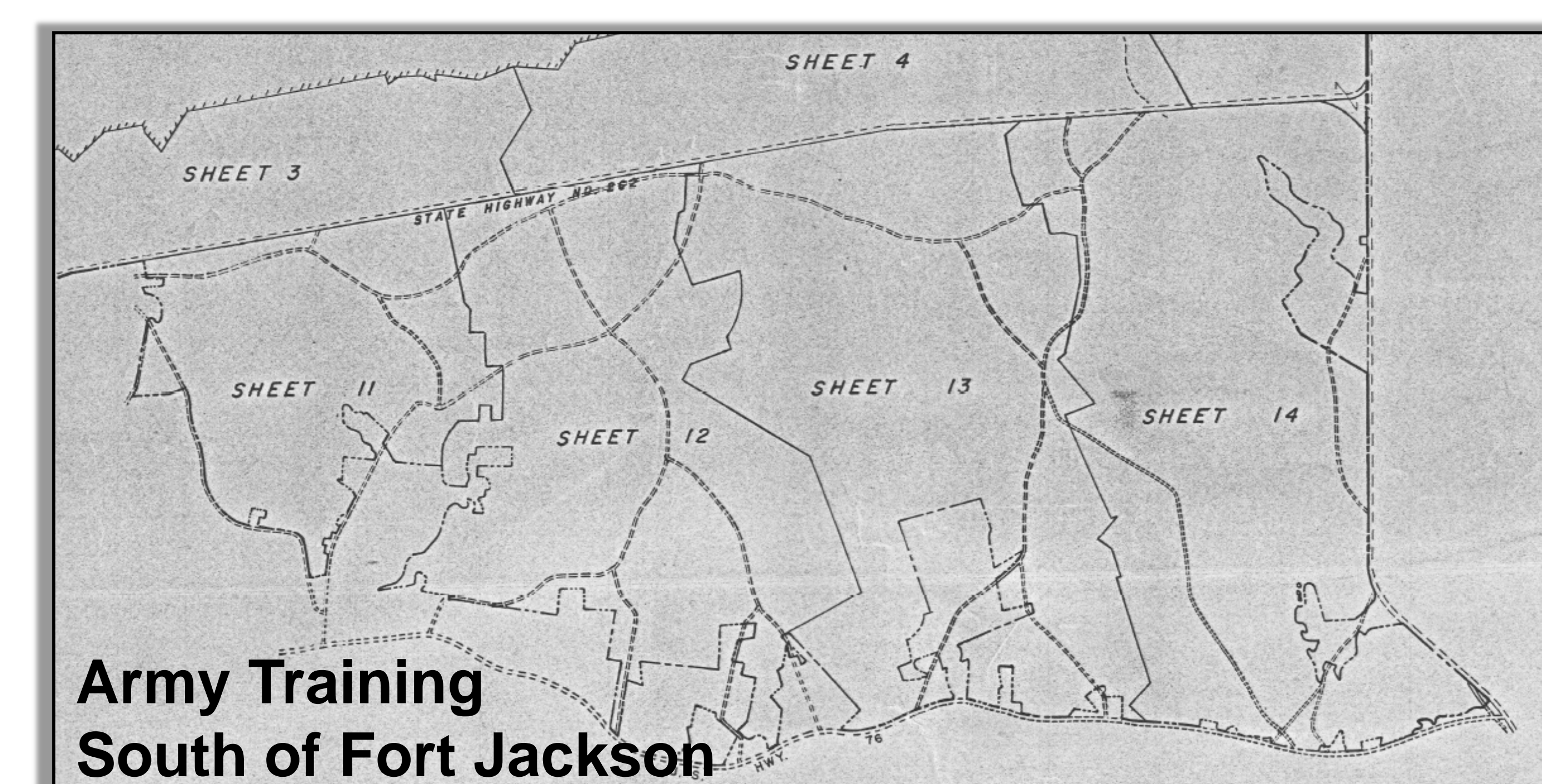
RDX is an explosive used in munitions. At Fort Jackson, it's been in the munitions we use for training soldiers since the late 1950s. As a result, RDX could be found in any of these areas:

- Rocket Ranges
- Mortar Ranges
- Artillery Ranges
- Recoilless Rifle Ranges
- Anti-Tank Range
- Anti-Tank & Antipersonnel Mines Firing Areas
- Rifle Grenade Ranges
- Hand Grenade Ranges
- Ordnance Demolition & Demolition Training Areas



Approximate Years of Use:

- 1943 - 1950 (No RDX Use Suspected)
- 1943 - 1979
- 1950 - 1960
- 1965 - 1975
- 1979 - Present



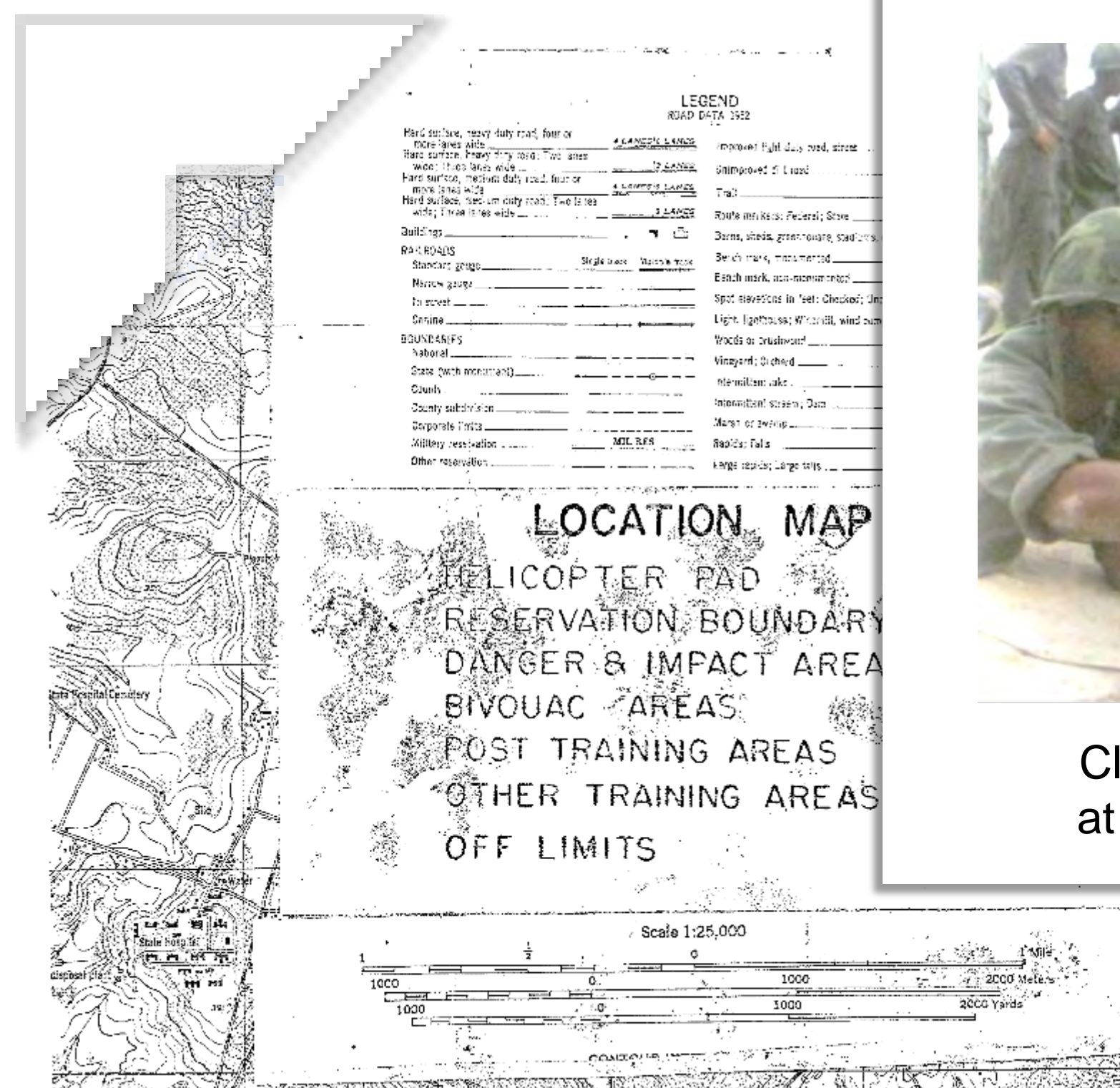
During the 1950s, the Army leased ~17,000 acres south of Fort Jackson for maneuvers. The munitions known or suspected to be used at the Southern Maneuvers Area included small arms (blanks), smoke grenades, and signal flares – none of which contained RDX.





United States Army Fort Jackson Operational Range Assessment Program Historical Missions of Fort Jackson

2



Claymore Mine training
at Fort Jackson in 1976



Gun Section Battery at Fort Jackson



Recruits training at Fort Jackson, 1934



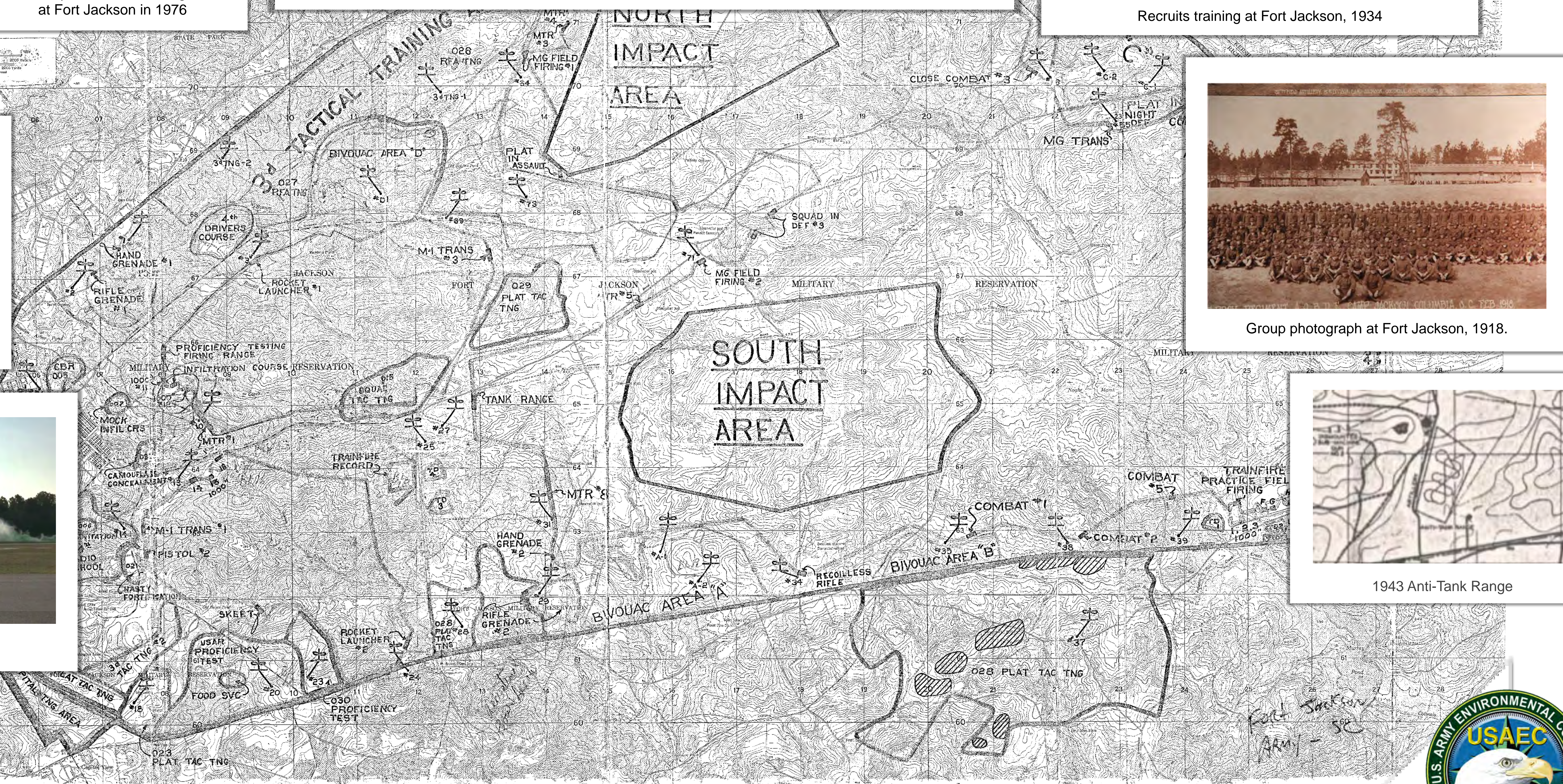
Recruits practicing close-combat exercises
at Fort Jackson in 1975.
Credit: Susan Meiselas/Magnum Photos



Group photograph at Fort Jackson, 1918.



Basic training graduation at Fort Jackson



1943 Anti-Tank Range



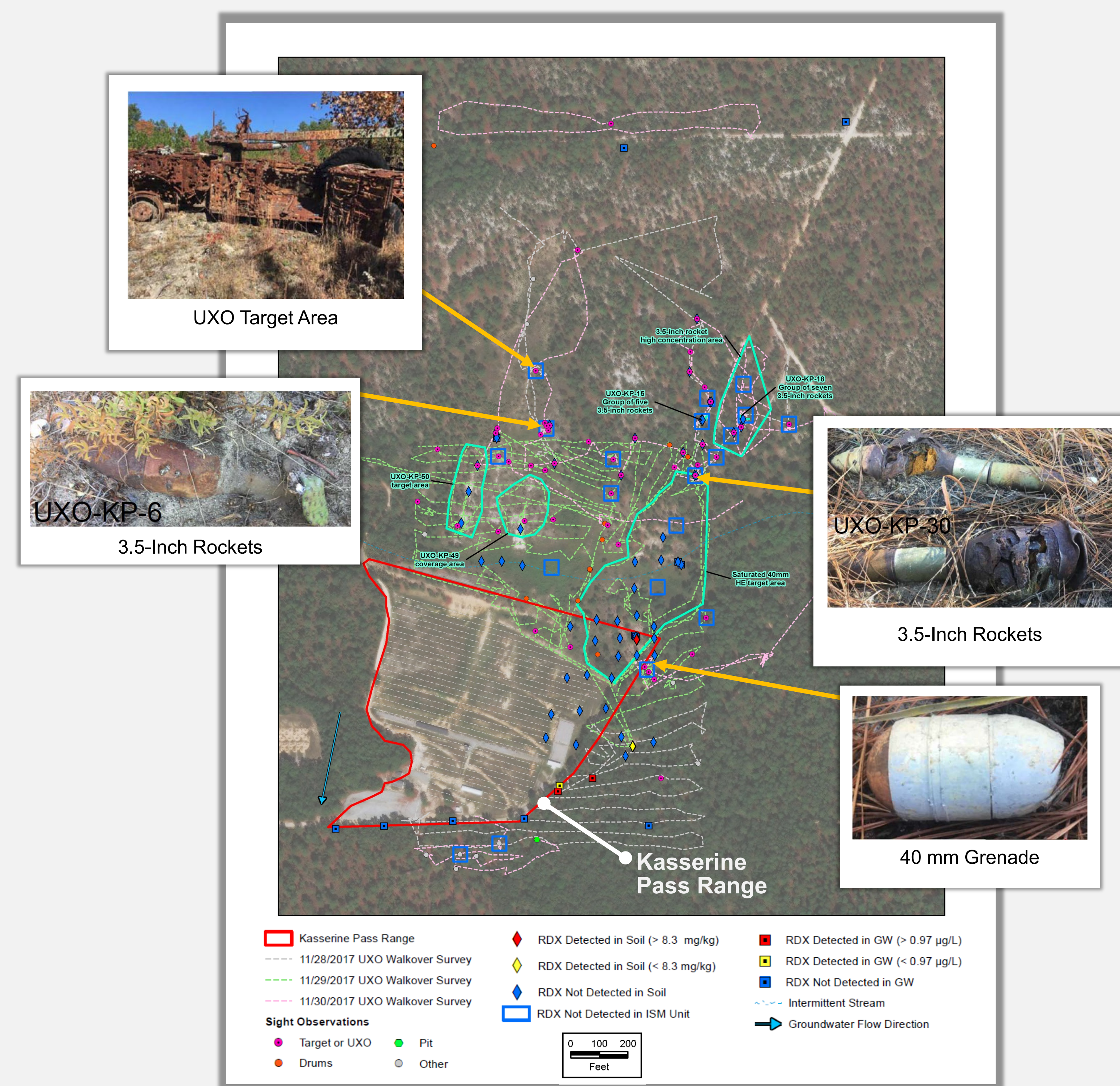
Fort Jackson was established in 1917 to train men of the 30th and 81st Infantry Divisions.
Today, Fort Jackson is the largest basic training installation in the nation, turning out 50% of all soldiers and 60% of the women entering the Army each year.



United States Army Fort Jackson Operational Range Assessment Program Results from the Remedial Investigation

3

Soil Sampling Results & Key Observations



Critical Observations:

- Kasserine Pass – Historical source of RDX in groundwater leaving the site
- Hundreds of 3.5-inch rockets observed – each contains at least 450 grams (1 pound) RDX
- Thousands of 40-mm grenades observed – each contains 1-2 grams RDX
- Hundreds of LAW Rockets observed – each contains 5.4 grams RDX

Key Findings:

- Not much RDX in the soil – found in just 3 soil samples
- RDX above soil screening level in only 1 sample
- The RDX has mostly moved to the groundwater – see the map on the upper right

Groundwater Sampling Results & Key Observations



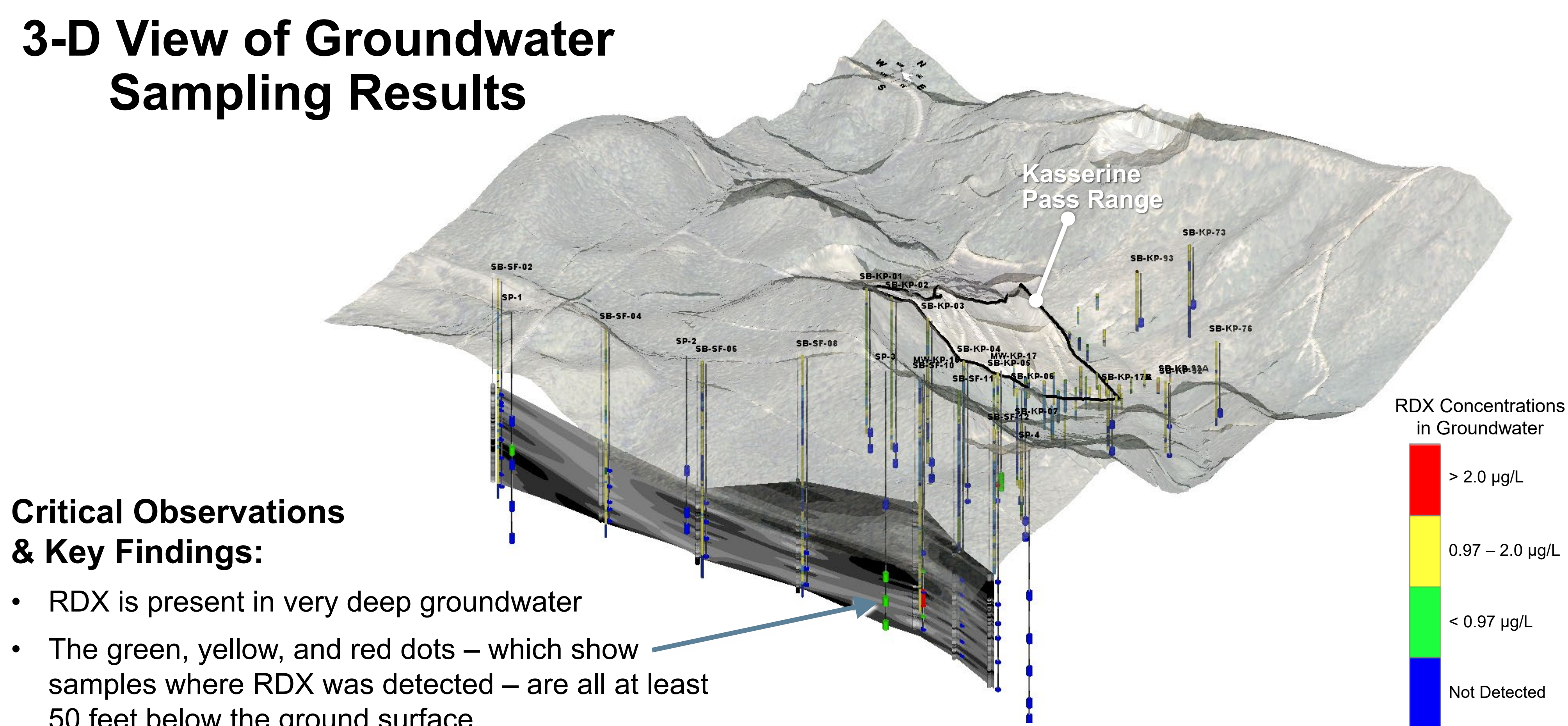
Critical Observations & Key Findings:

- RDX moves in groundwater (water that is underground) from the Kasserine Pass Range to the southwest, including off the post under the neighborhood south of Leesburg Road
- The Army has collected & tested many samples of groundwater in the area south and west of Kasserine Pass Range to identify the affected area
- Results from a Human Health Risk Assessment indicate that in some locations the Army must evaluate ways to address the RDX.

Is Cedar Creek Affected?

- Groundwater may discharge into Cedar Creek, but...
- RDX in groundwater is below screening levels before it gets to Cedar Creek, AND
- RDX is in groundwater that is much deeper than Cedar Creek – see the 3-D map below for a view of the RDX results by depth
- If any RDX does reach Cedar Creek, it is broken down by sunlight (a process called photolysis) in a matter of minutes to hours

3-D View of Groundwater Sampling Results



Critical Observations & Key Findings:

- RDX is present in very deep groundwater
- The green, yellow, and red dots – which show samples where RDX was detected – are all at least 50 feet below the ground surface

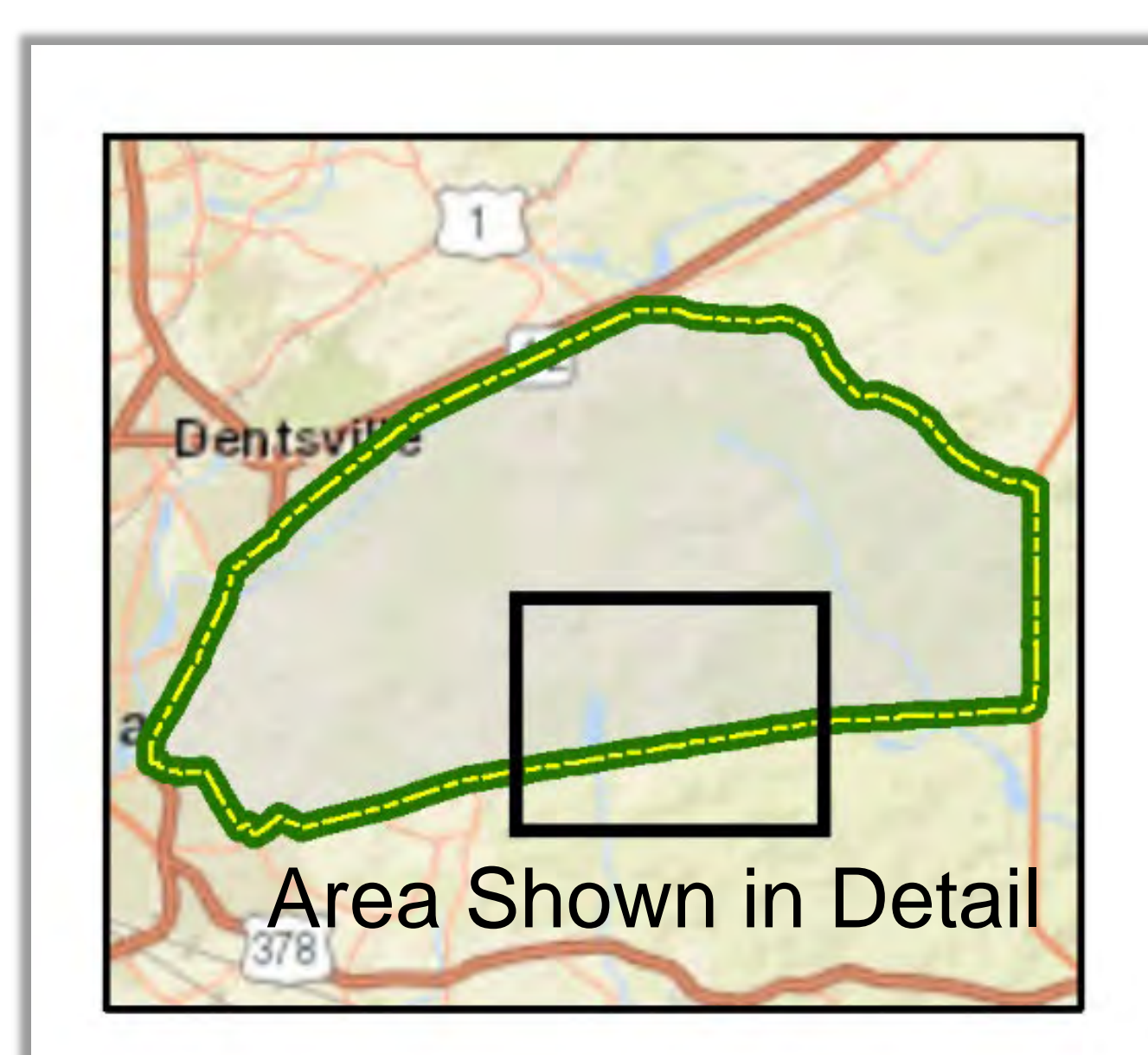


– Visit Station 6 for more information about the options to address RDX in groundwater –

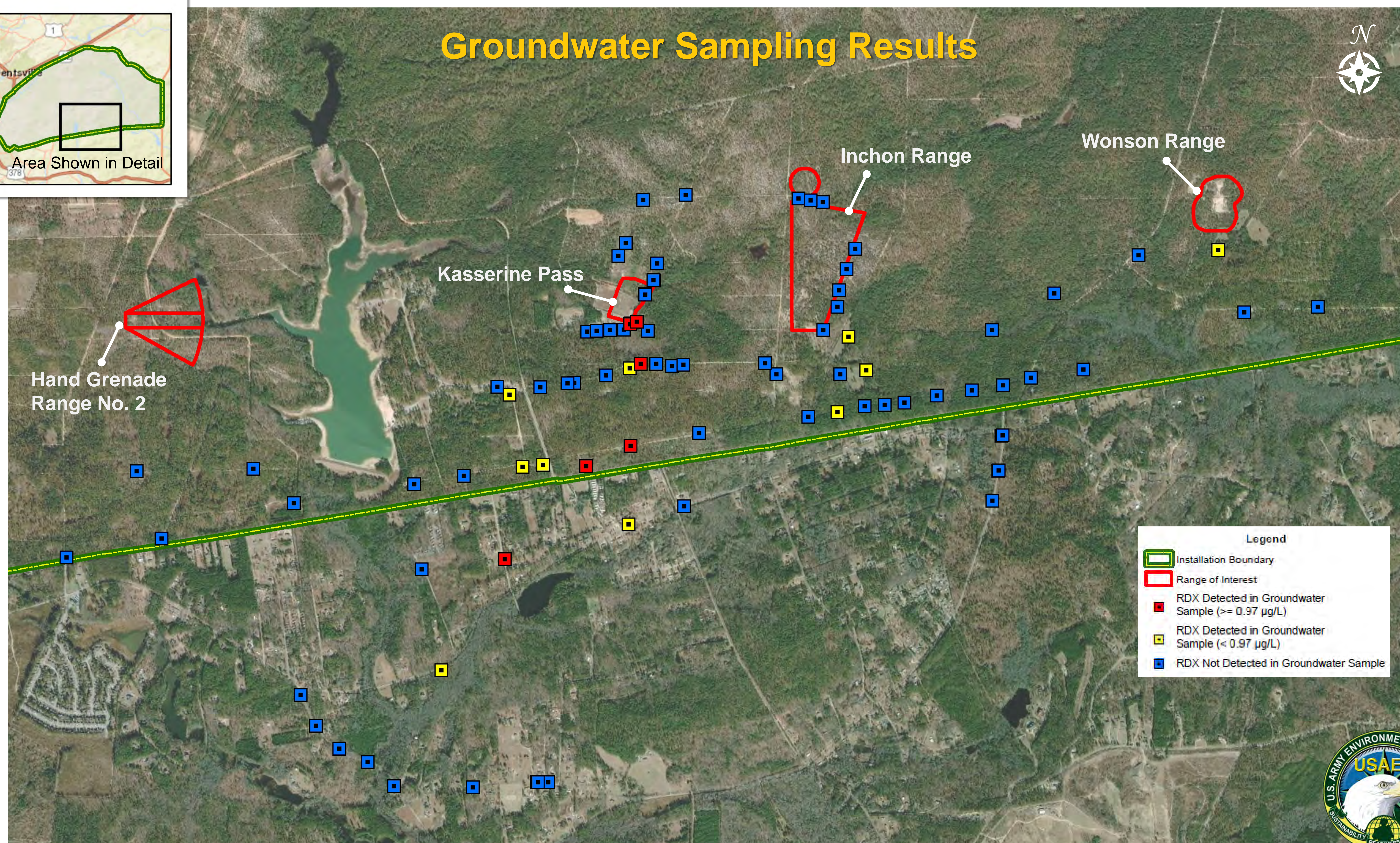


United States Army Fort Jackson Operational Range Assessment Program Results from the Remedial Investigation

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Groundwater Sampling Results



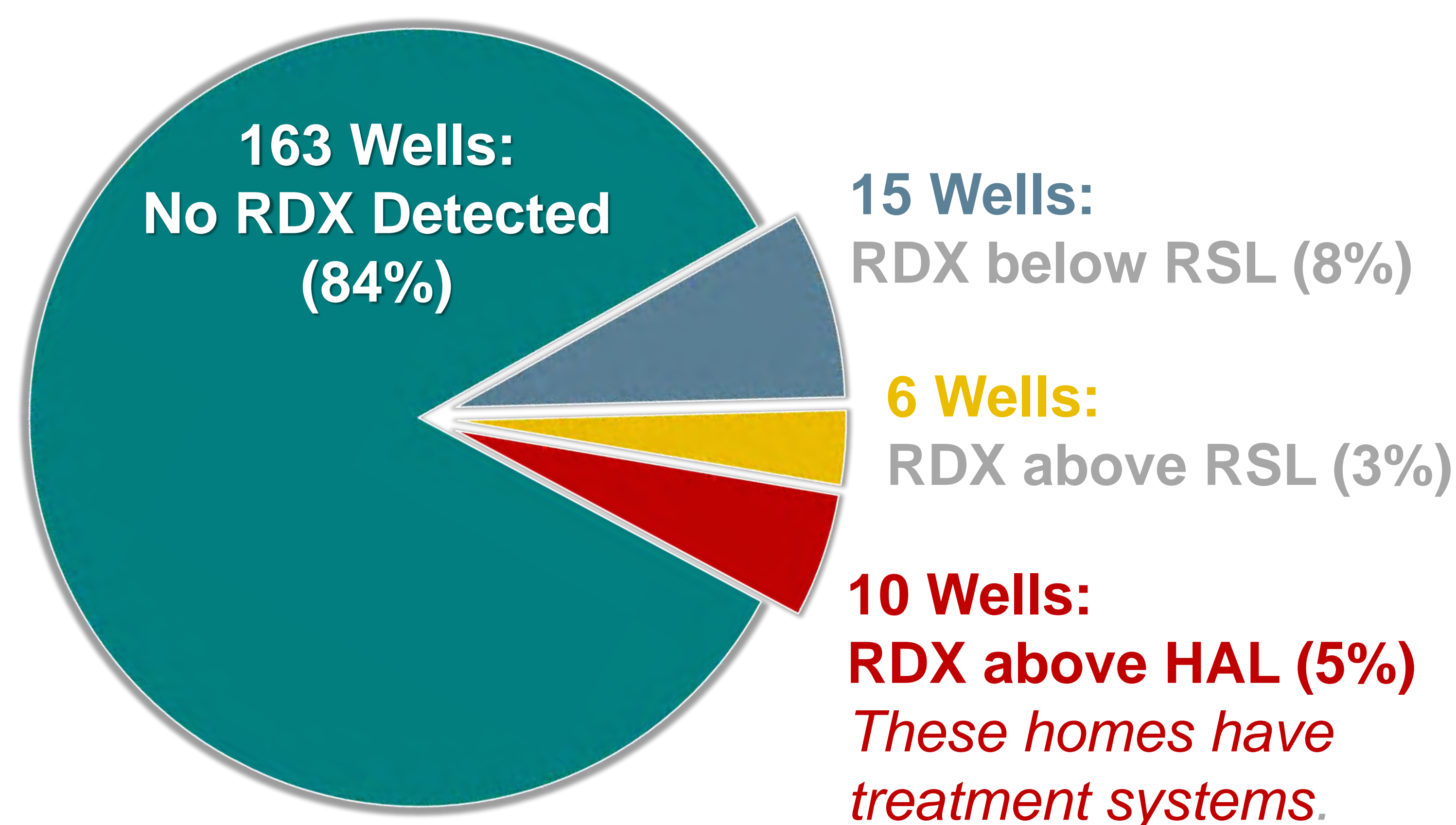


United States Army Fort Jackson Operational Range Assessment Program Residential Sampling & Water Treatment

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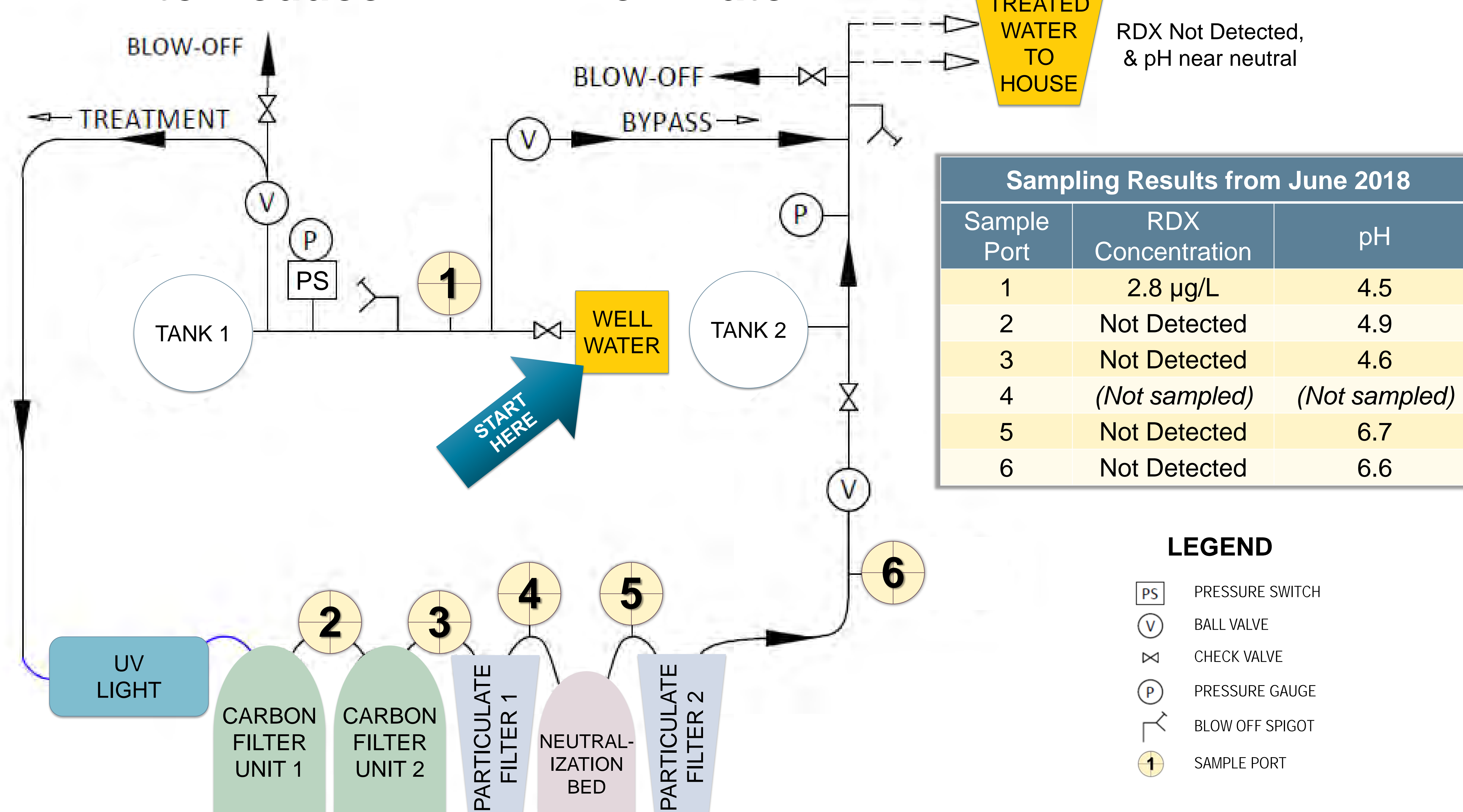
Quick Facts

- The most common way people near Fort Jackson might be exposed to RDX is by drinking water from local wells. See **STATION 5** for more information.
- To address this potential risk, the Army has collected 860+ samples from 194 wells near Fort Jackson over the past five years.
- The Army sends all samples to a laboratory certified by the SC Dept of Health & Environmental Control.
- The majority of wells – 163 of 194 – have no detectable levels of RDX.



- At the **10 locations with RDX above the Health Advisory Level**, the Army has installed water treatment systems.
- The Army will continue to test and maintain the treatment systems into the future. See **STATION 6** for information on the Path Forward.

Layout of a Water Treatment System to Reduce RDX in Well Water



Critical Elements of the Water Treatment System, as installed





United States Army Fort Jackson Operational Range Assessment Program RDX & Your Health

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What we know about RDX & health



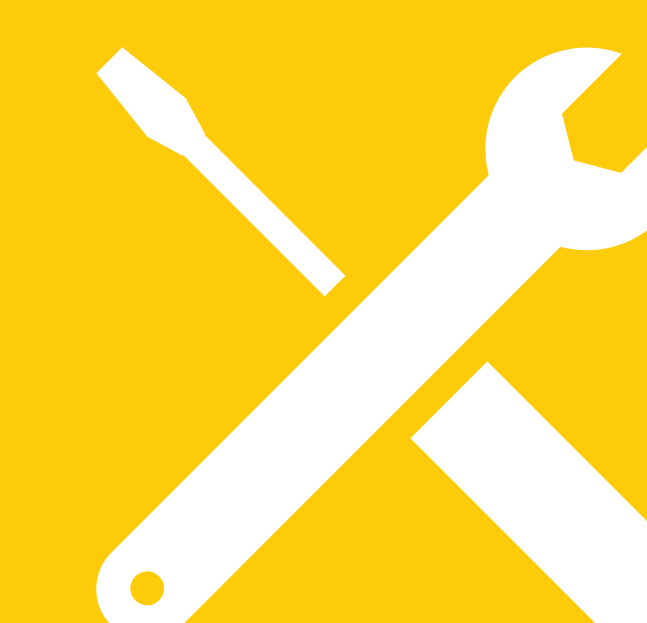
1. The most common way people near Fort Jackson might be exposed to RDX is by drinking water from local wells.
2. RDX does not build up over time in the bodies of people or fish, but some plants grown in soil contaminated with RDX do accumulate the chemical. There is no evidence that there is RDX contamination in soil near Fort Jackson.
3. If large amounts of RDX are breathed in or ingested, people and animals can get sick – it affects the nervous system and can cause seizures, muscle twitching, or vomiting. The levels of RDX that cause these effects are not found at or near Fort Jackson.
4. The United States Environmental Protection Agency has established a Health Advisory Level (HAL) for RDX of 2.0 micrograms per liter and a Regional Screening Level (RSL) of 0.97 micrograms per liter.
5. The HAL means that even if you are exposed to RDX for a full lifetime, as long as the levels are at or below 2.0 micrograms per liter, there are no expected negative effects on human health.
6. The Army has collected 860+ samples from 194 wells near Fort Jackson over the past five years. The majority of wells have no detectable levels of RDX, and 10 were above the HAL.

What we don't know about RDX & health



1. There are no studies of cancer in people exposed to RDX. Based on studies of mice, the United States Environmental Protection Agency has classified RDX as having suggested evidence of carcinogenic potential.
2. There is no information available about whether children are more sensitive to RDX than adults.
3. See the RDX Fact Sheet for more health-related information.

Actions you can take

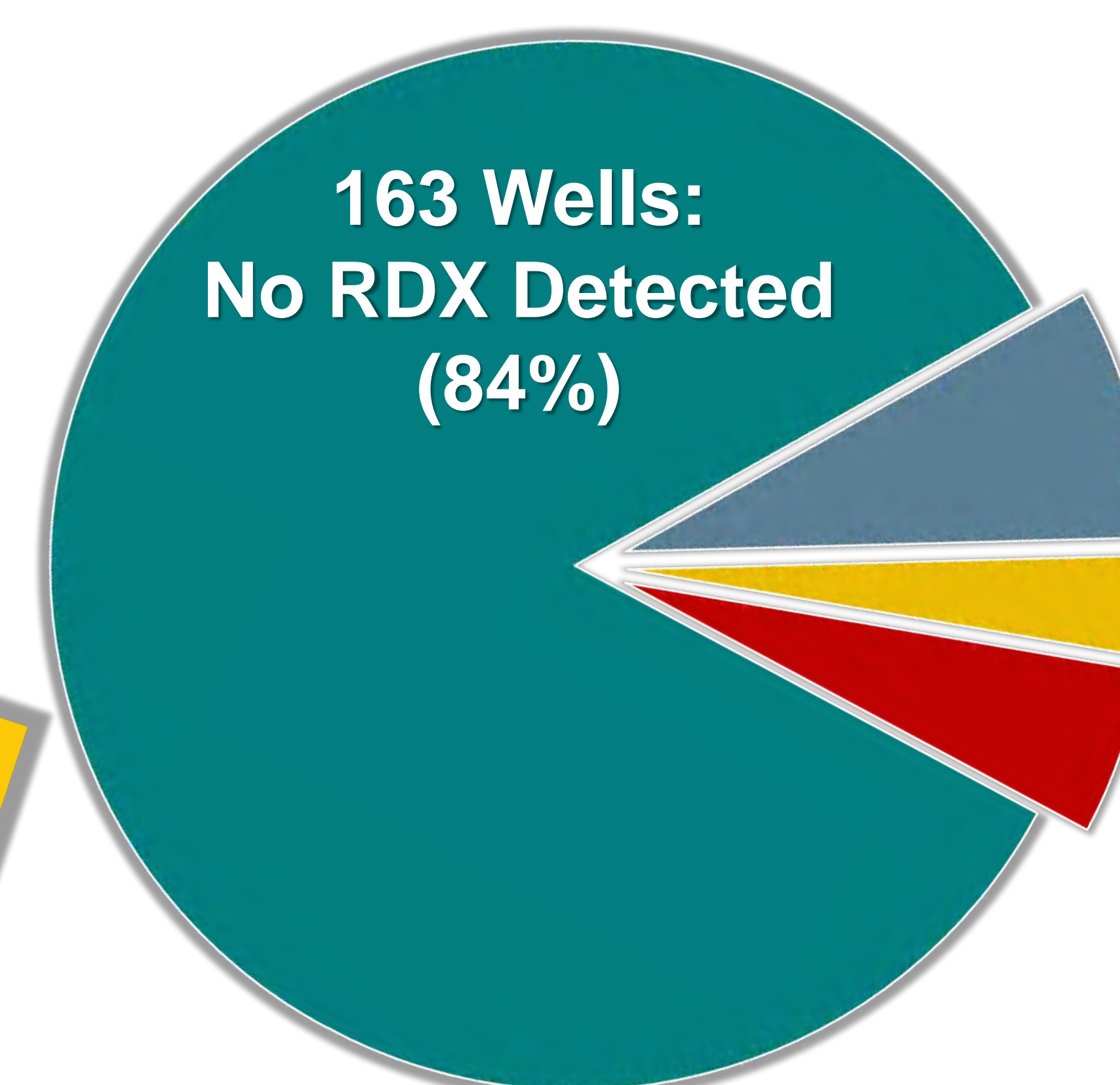


1. **Get your well water tested!** You can sign a Right-of-Entry form & start the process tonight!
2. If test results show that levels of RDX are **above** the Health Advisory Level (HAL), the Army will install a treatment system at your home, free of charge. The Army will also provide bottled water while the treatment system is designed, built, and tested.
3. If RDX is detected but it's below the HAL, you may choose to drink or cook with bottled water, or install a commercially-available activated carbon water filter approved by NSF International.



Scan this code to visit the NSF site on drinking water filters

RDX Sample Results from Off-Post Wells



15 Wells:
RDX below RSL (8%)

6 Wells:
RDX above RSL (3%)

10 Wells:
RDX above HAL (5%)
These homes have treatment systems.

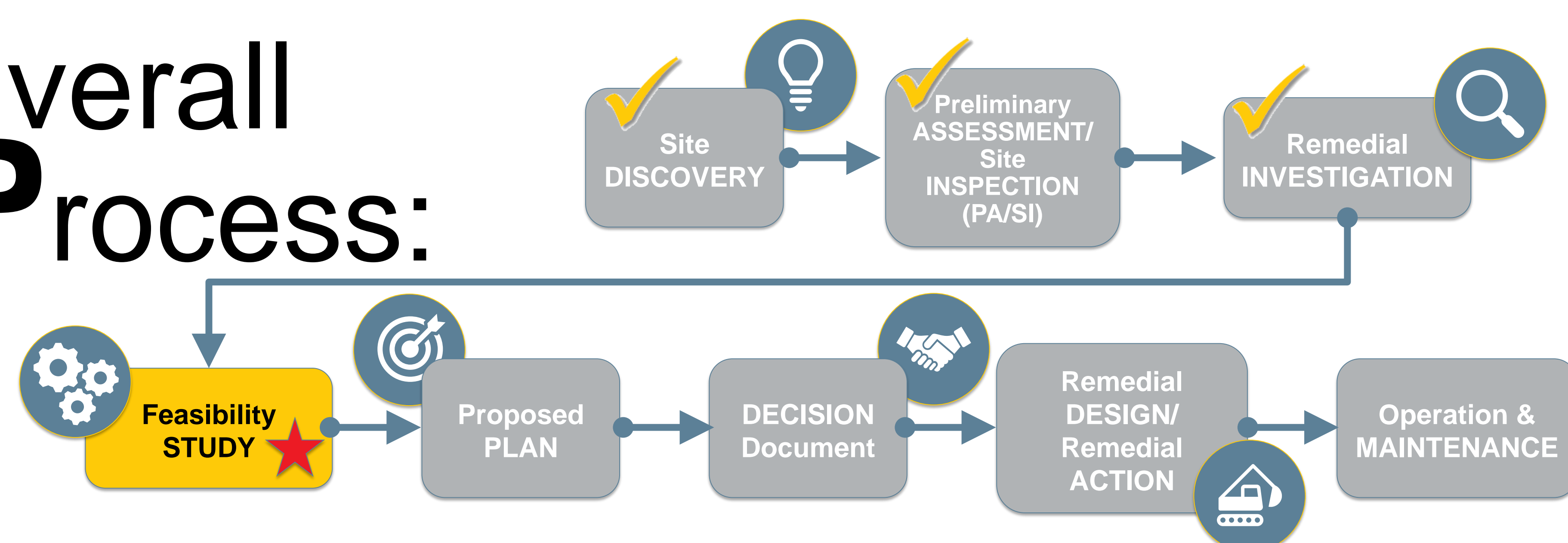




United States Army Fort Jackson Operational Range Assessment Program The Path Forward

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Overall Process:



Current Situation:

1. Kasserine Pass was a **historical source of RDX** to off-post groundwater (see STATION 3).
2. The Army **collected water samples** from 194 wells near Fort Jackson, and **installed drinking water treatment systems** at 10 properties (see STATION 4).
3. A Feasibility Study is underway to develop and assess long-term solutions. The **Army is evaluating multiple options** (called alternatives) to address RDX in groundwater above the Regional Screening Level (see STATION 5).
- ★ 4. The public has formal opportunities to comment on both the Feasibility Study & the Proposed Plan. **Let us know what you think tonight!**

ALTERNATIVE 1

No
Further
Action

Alternative 1 Summary:

- Will not address the human health threat posed by RDX in groundwater
- Inclusion of No Further Action is required by the US Environmental Protection Agency

ALTERNATIVE 2

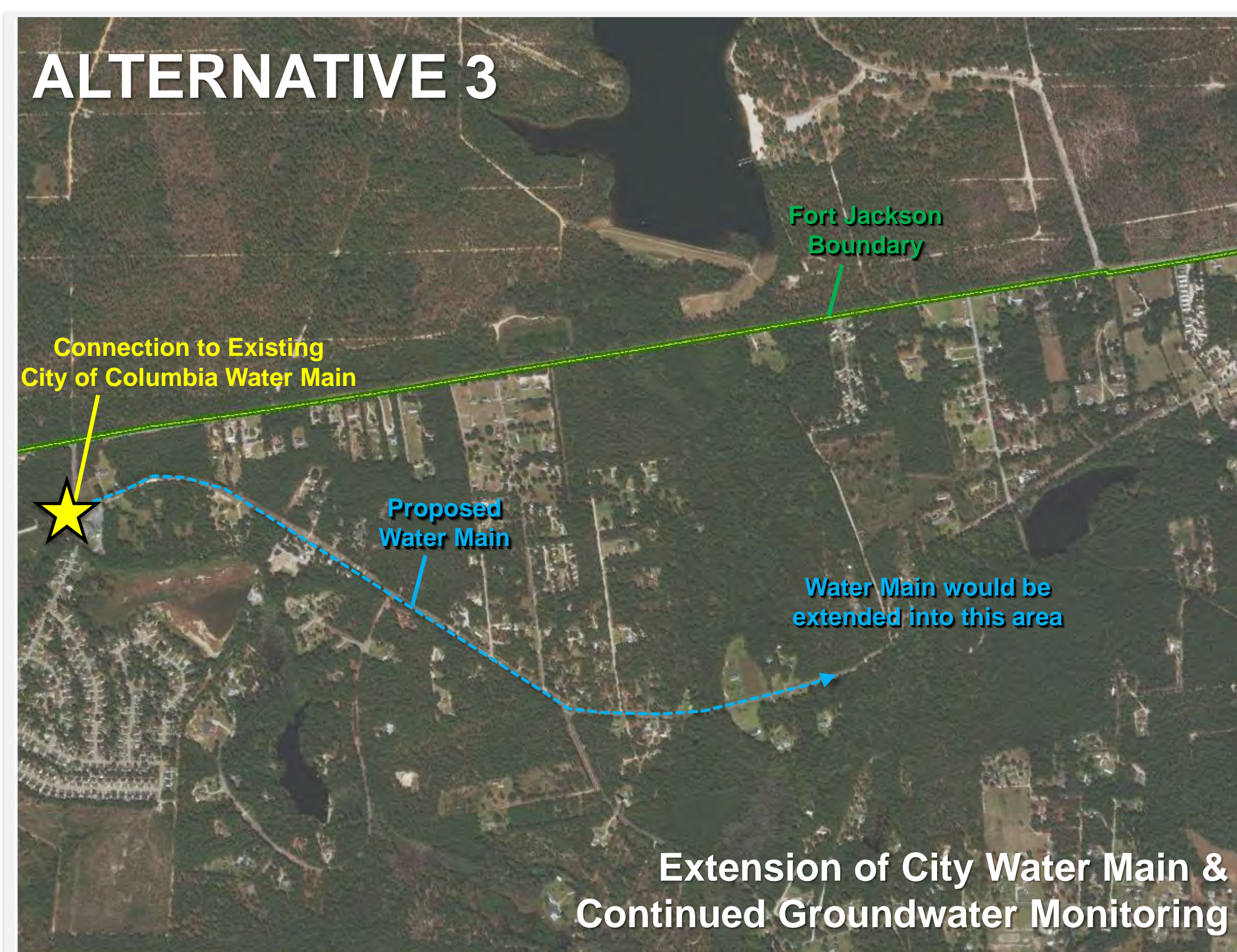


Operation & Sampling of Treatment Systems, Continued Groundwater Monitoring

Alternative 2 Summary:

- Current residential treatment systems will be operated & maintained by the Army
- Systems will be sampled at least once per year
- Annual off-post groundwater monitoring program will continue to evaluate RDX in residential drinking water
- Will install additional residential treatment systems as necessary, based on well sampling results

ALTERNATIVE 3

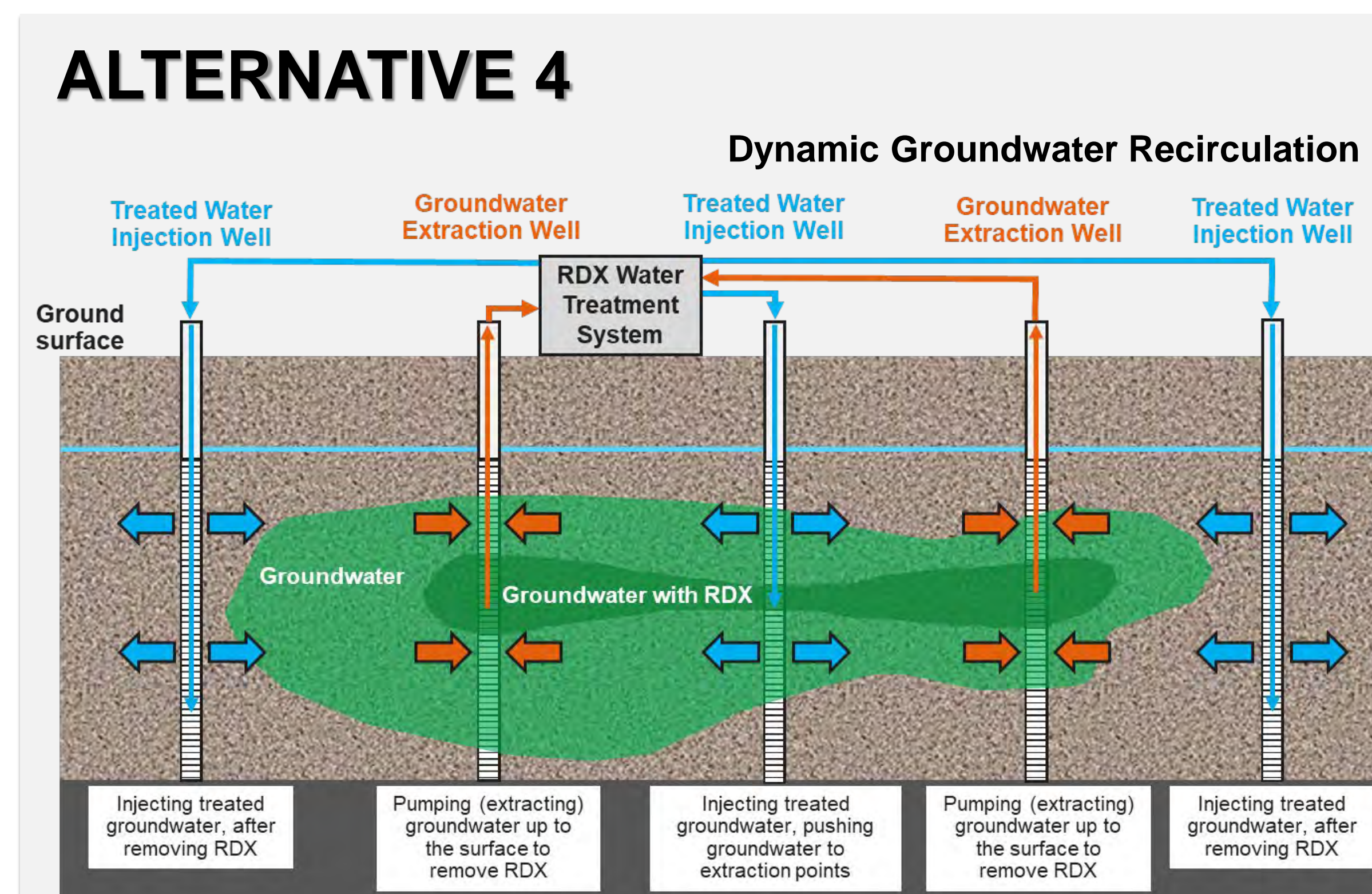


Extension of City Water Main & Continued Groundwater Monitoring

Alternative 3 Summary:

- City of Columbia water main line will be extended to the area where homes have treatment systems, and treatment systems will be removed
- Additional property owners may choose to connect to City water, if desired
- Off-post groundwater monitoring program will continue to evaluate RDX in residential drinking water

ALTERNATIVE 4



Dynamic Groundwater Recirculation & Operation/Sampling of Treatment Systems for 10 Years

Alternative 4 Summary:

- Dynamic Groundwater Recirculation System will be constructed & operated by the Army
 - Includes installation of 15 extractions wells with treatment systems, plus 30 reinjection wells
 - Groundwater will be captured, treated, tested, and injected back underground
 - RDX targets are expected to be achieved in 10 years
- Current residential treatment systems will be operated & maintained by the Army for 10 years
- Well installation would be both on- and off-post, permission from property owners would be necessary

Evaluating the Alternatives:

The **critical factors** that the Army and SC Dept of Health & Environmental Control must consider while developing the potential options for addressing RDX in groundwater include:

1. How quickly and effectively will the alternative protect public safety and the environment?
2. What level of protection and effectiveness would the alternative provide in the short term?
3. Will that protection and effectiveness be maintained over the long term?
4. Does the alternative satisfy all the key rules and regulations?
5. Are the right people and equipment available to actually build and maintain the alternative?
6. Is the alternative likely to be accepted by local groups? What about governmental acceptance?
- ★ 7. **Community acceptance is also a key factor** – let us know what you think about these options, keeping in mind that the alternatives described here could be carried out individually, or in combination.





United States Army Fort Jackson Operational Range Assessment Program Remagen Range: Protecting Groundwater

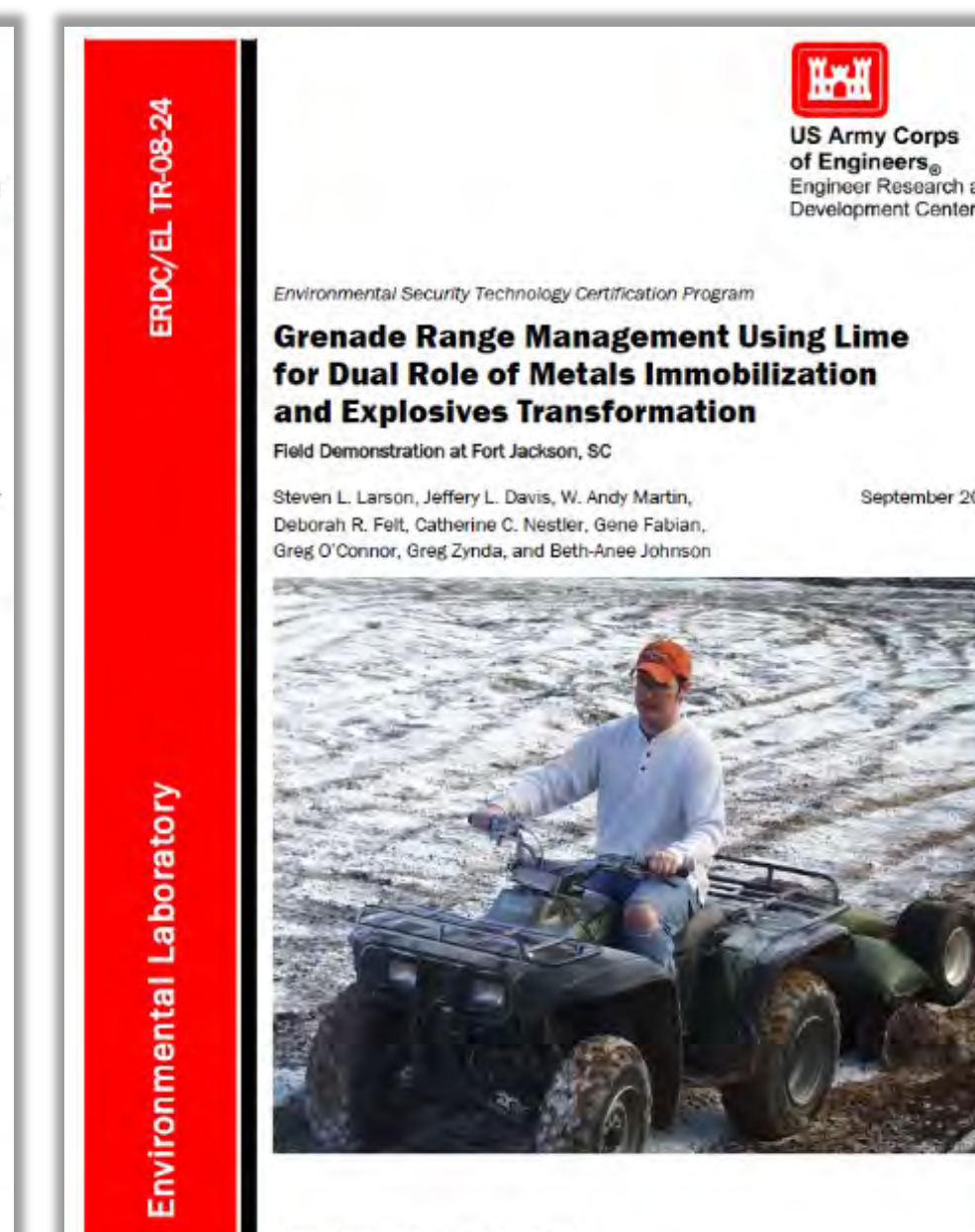
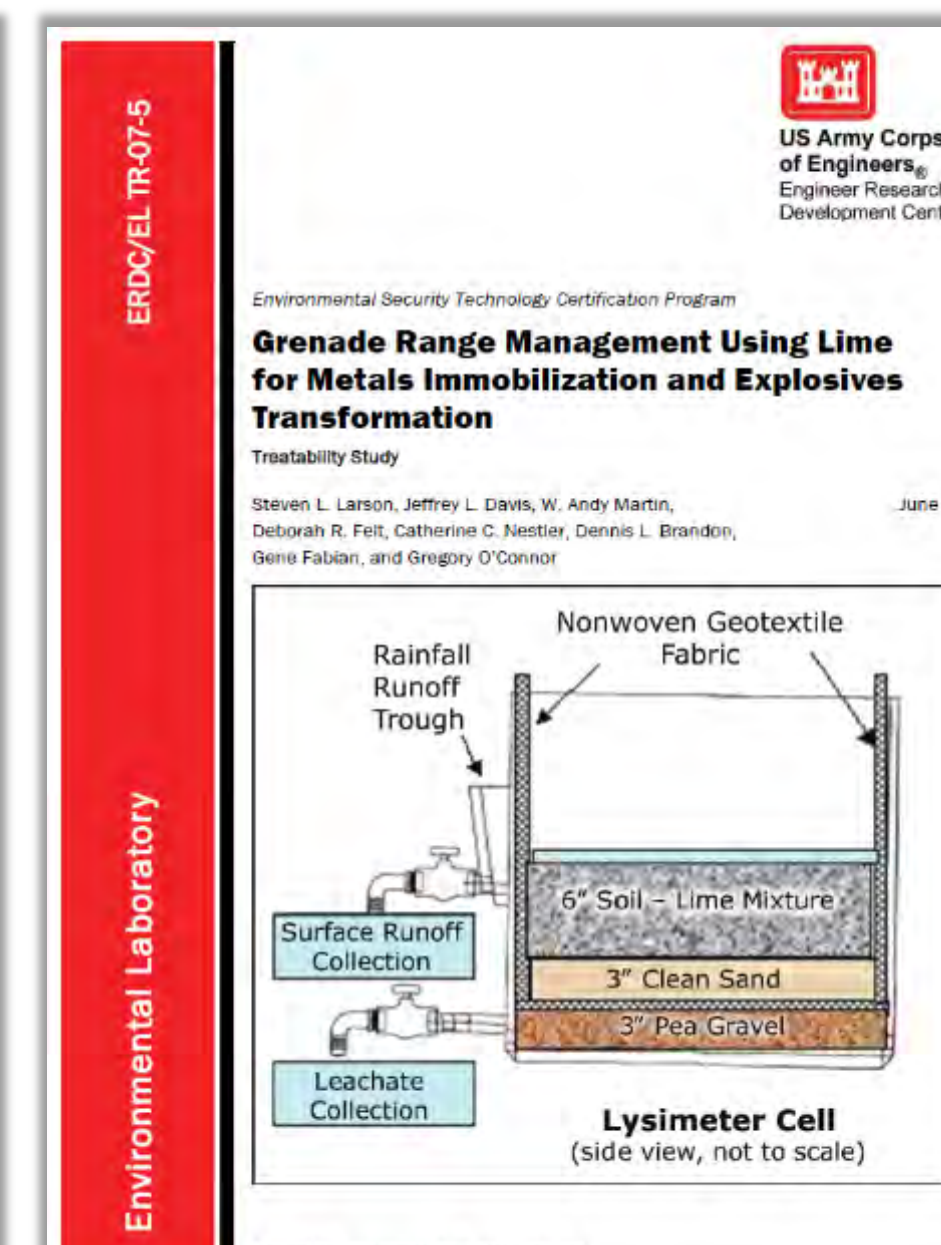
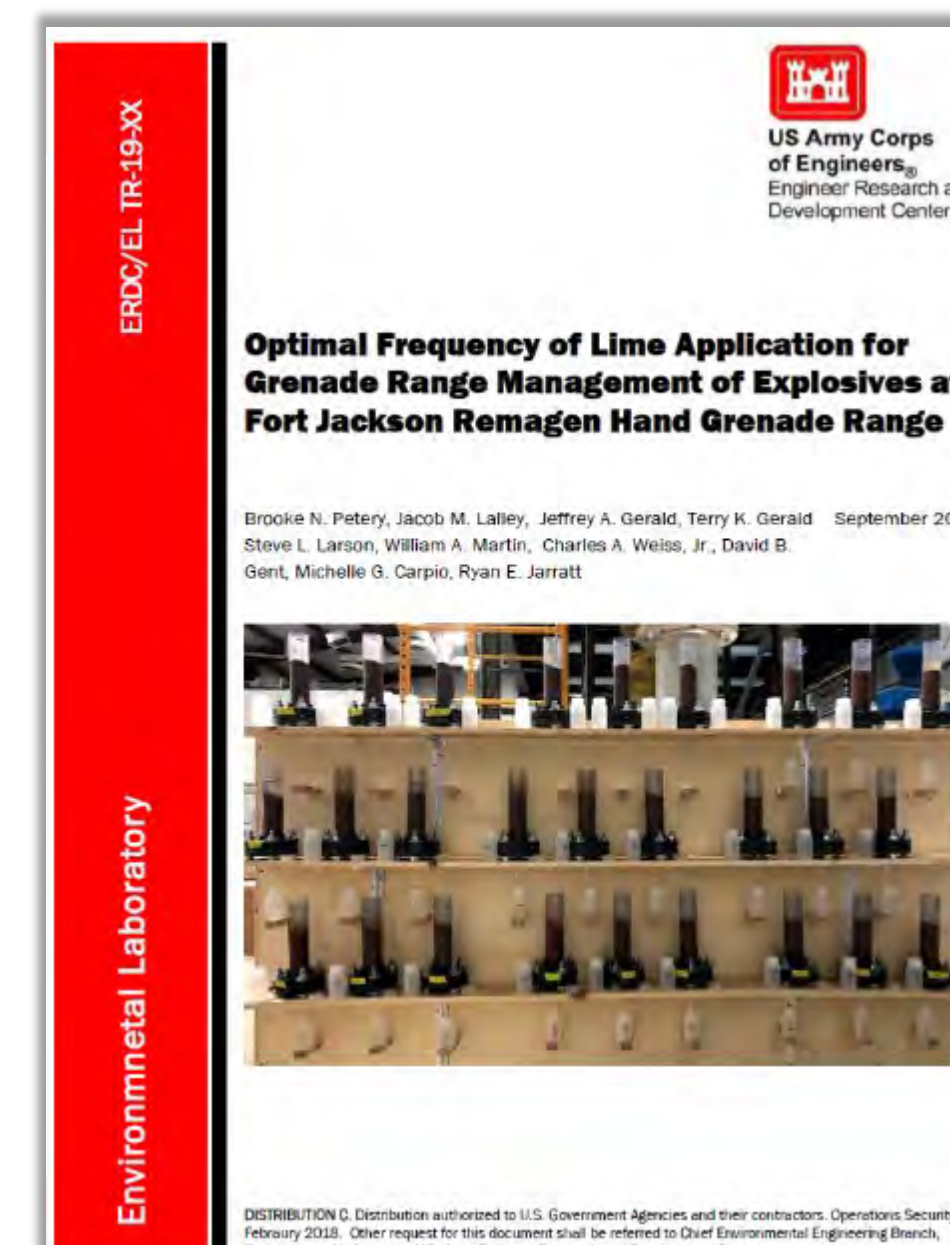
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Quick Facts

1. Fort Jackson is the largest basic training installation in the country, and the ongoing use of Remagen Range for munitions training is mission critical.
2. We must continue to train our soldiers, but we can also protect the environment and our neighbors.
3. Current use of RDX for munitions training at Remagen Range does **NOT** contribute to the presence of RDX in groundwater south of Fort Jackson. There is RDX in groundwater under Remagen Range from historical hand grenade use.
4. The Army has confirmed through multiple studies that applying hydrated lime as a best management practice to munitions training ranges raises the pH of the soil – this significantly reduces RDX and other explosives from getting into the groundwater.
5. The Army is adding lime to Remagen Range on a regular basis, and has verified the effectiveness of this work.



Continuing munitions training for our soldiers is mission critical



Completing studies on the best process for liming and measuring effectiveness



Applying lime powder to Remagen Range to raise the pH of soil and prevent explosives from getting into our groundwater

