FEDERAL FACILITIES PROGRAM

The Federal Facilities Program provides oversight of environmental assessments and corrective actions at current and former federal facilities, including U.S. Department of Defense (DOD) installations and Formerly-Used Defense Sites (FUDS). Federal Facilities Unit staff works with project managers and technical staff at DOD, EPA, USACE, local redevelopment entities, and their contractors to provide technical expertise and oversight of environmental investigations and cleanups, and to communicate state priorities and regulatory positions.

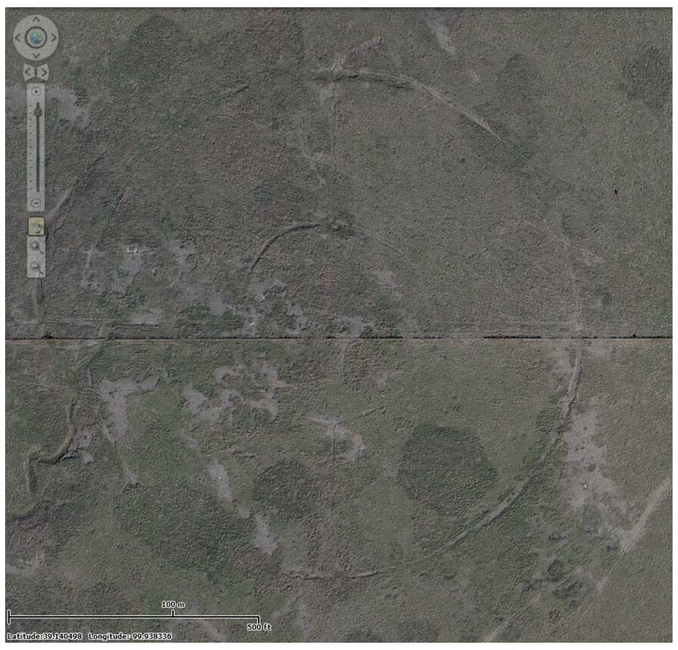
There are two major components to the program: the Installation Restoration Program (IRP) and the Military Munitions Response Program (MMRP). IRP addresses the types of contamination common to other programs at KDHE, such as chlorinated solvents, metals, and polychlorinated biphenyls. Military munitions and their constituents are investigated and addressed under MMRP. Some sites have active IRP and MMRP projects.

Most sites in Kansas fall under the IRP and many of them are on track to reach site closure within the next few years. There is a lesser number of MMRP sites; most of these already had site investigations done and a few will need remedial investigations due to evidence that munitions and explosives of concern (MEC) may remain onsite. DOD is rolling out a nationwide interim risk management program to address residual risk at these sites until all remaining investigative and remedial actions are completed.

Major DOD installations under this program include Fort Riley, Fort Leavenworth, and McConnell AFB. There are also two former Army ammunition plants, Sunflower AAP and Kansas AAP. The larger installations typically encompass multiple sub-sites. The FUDS inventory in Kansas is much more varied, with a significant number of World War 2-era airfields, air gunnery and bombing ranges, former prisoner of war camps, communication facilities, intercontinental ballistic missile (ICBM) sites, and small arms ranges. A final category of sites are designated as Non-DoD Owned, Non-Operational Defense Sites (NDNODS), formerly used by the National Guard.

Forbes Atlas E Site S-2, an ICBM facility operated by the US Air Force from 1961 to 1965, located 2 miles SW of Worden (USAF photo).

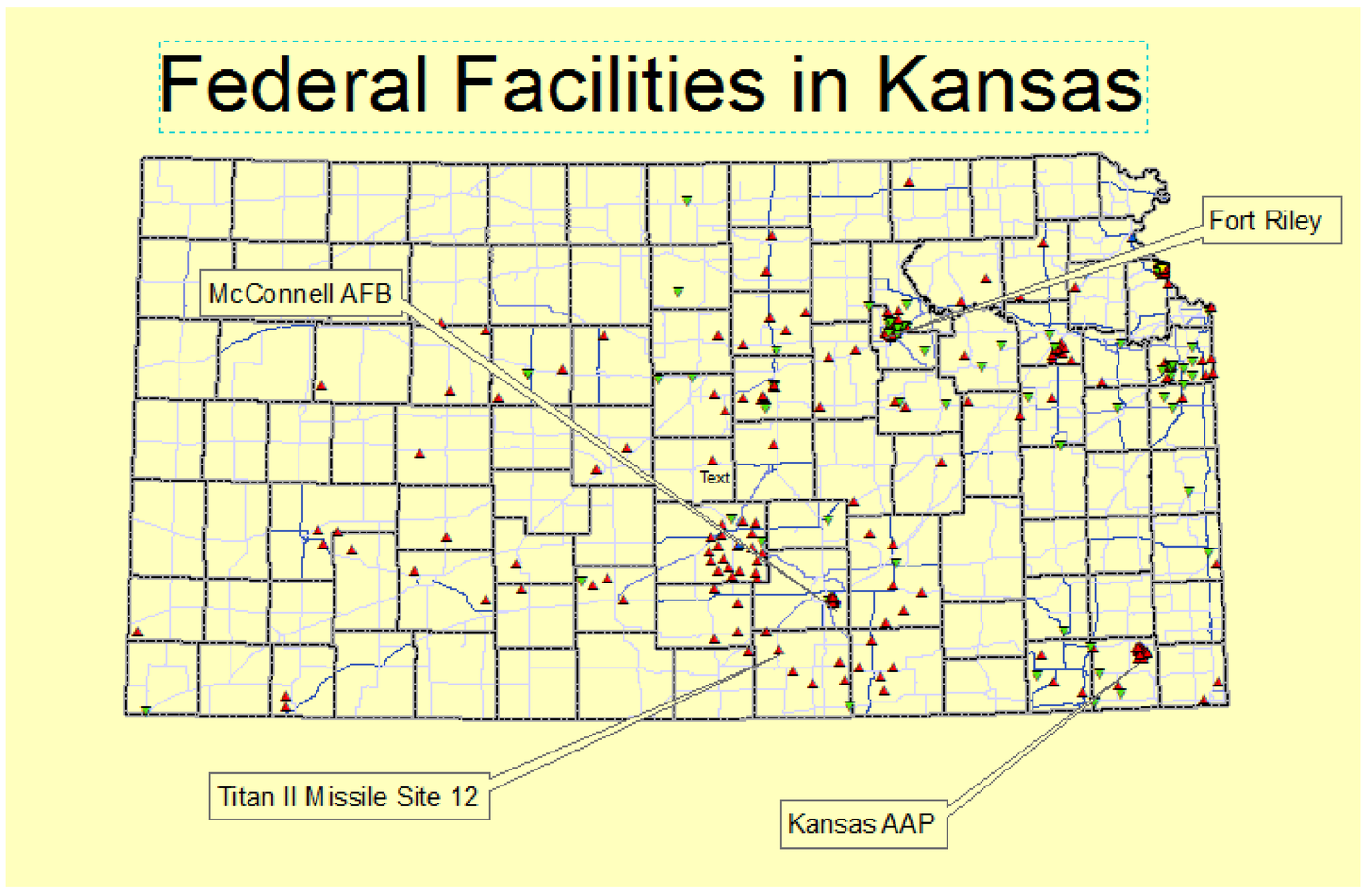
Forbes S-2 in its present condition (north is to the left); the Preliminary Assessment identified a potential trichloroethene release and USACE is currently preparing a Remedial Investigation work plan.

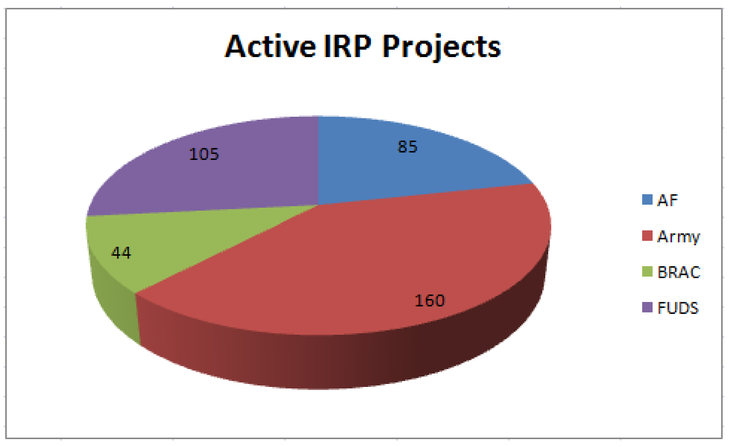


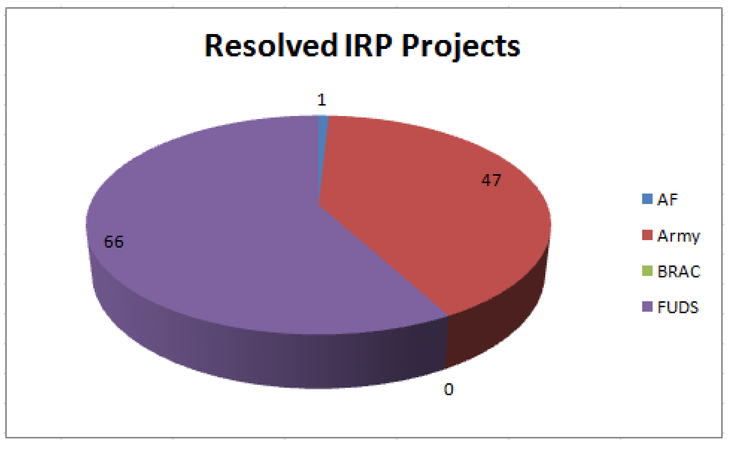
Hays-Walker Precision Bombing Range #3, used by US Army Air Force bomber crews between 1944 and 1945; location is about 8 miles NNW of WaKeeney. The MMRP Site Inspection (2008) recommended further investigation due to abundant evidence of practice bomb spotting charges.

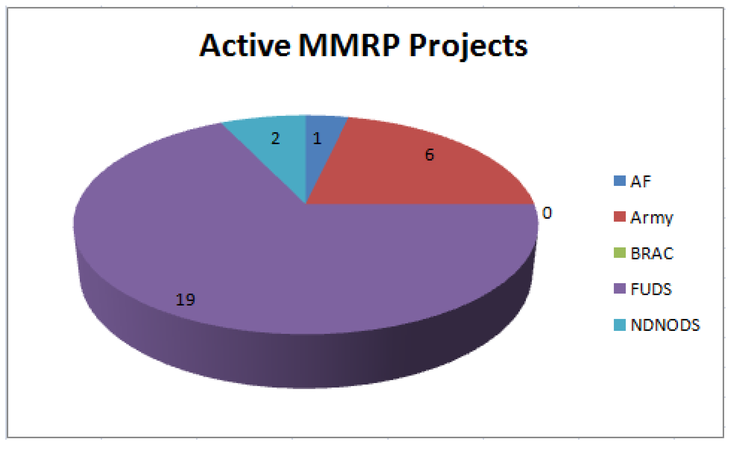
Olathe Naval Air Station, used by the US Navy from 1943 to 1970; it is now operated by Johnson County as the the New Century AirCenter. USACE is currently addressing a former fire training area, a dry cleaning facility, and a 100,000 gallon UST (USN photo ca. 1944).

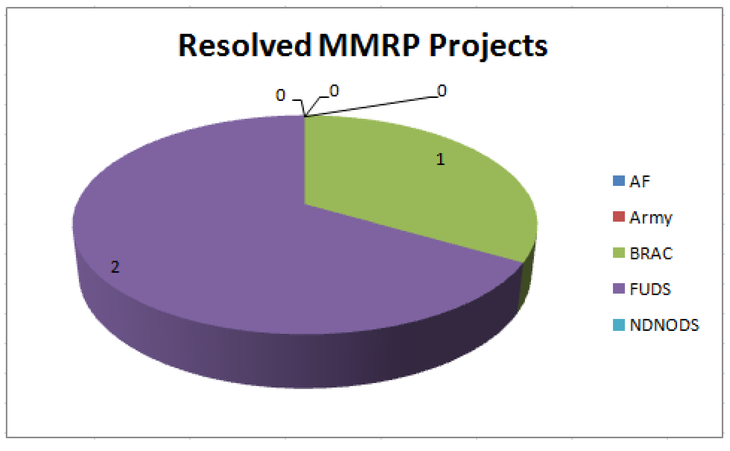
FEDERAL FACILITIES LOCATIONS AND STATISTICS











Unlike other programs at KDHE, project selection and execution timelines are largely dependent on DoD prioritization (in coordination with KDHE) and also on appropriation of funds by Congress.

Though most resolved IRP sites are at FUDS and Army installations, ongoing work at Kansas AAP and McConnell AFB will result in additional BRAC and Air Force projects reaching response complete or remedy in place status within the next few months and years. The MMRP program is less mature and that is reflected in the relatively few resolved projects. In addition, most FUDS with MMRP projects rank low in terms of residual risk and funding is limited.

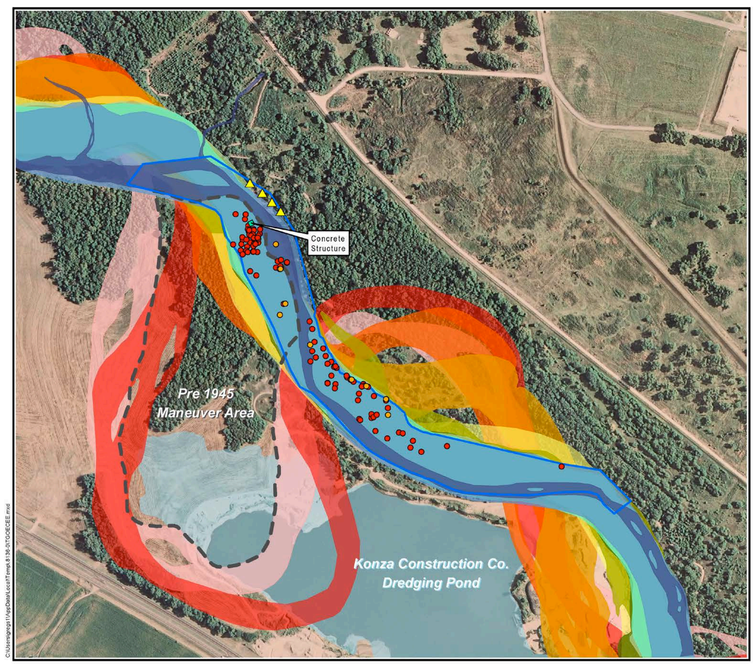
PROJECT SPOTLIGHT – Camp Forsyth Landfill Area #2 MMRP Site
Fort Riley, Kansas, Geary County

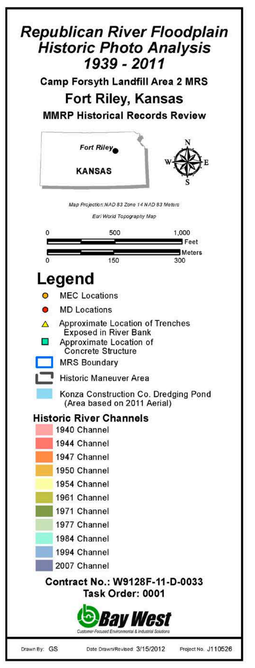
Fort Riley was established in 1853 as a U.S. Army Post to protect the western expansion of the United States. The fort occupies approximately 100,656 acres and is located in portions of Clay, Geary and Riley Counties.

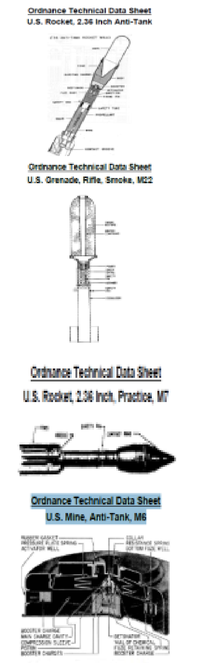
The Camp Forsyth Landfill Area #2 (CFLFA#2) was originally inspected in 1983 as one of (4) closed municipal solid waste landfills in the southwest region of the Fort. The Munitions Response Site (MRS) was later identified after the 1993 flood scoured the river valley, exposing several hundred munitions while also cutting into the landfill. The origins of these munitions would be debated over the next 15 years as the army fought to prove the landfill was not used for munitions disposal.

After extensive historical records research it has been accepted that the munitions originated from the sandbar near what appears to be a concrete vault in the middle of the river channel. Historical photos were used to help determine past military operation in the area. From these photos it was determined that the river avulsion occurred between 1950-1957, which redirected the river channel through an old training area in Camp Forsyth. The munitions were believed to have been used for training purposes and later consolidated and buried once the range was relocated.

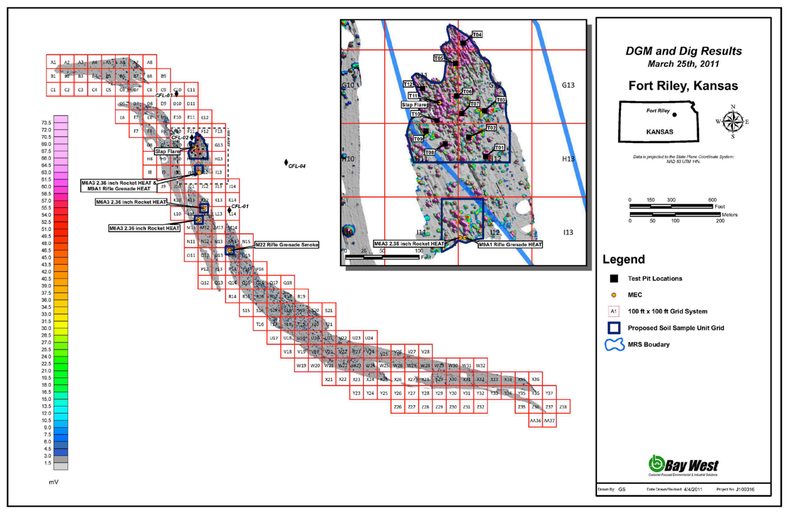
The original MRS boundaries were designated during the 1995 Preliminary Assessment. The Remedial Investigation(s) expanded these boundaries several times due to the continual discovery of additional munitions at the edge of the MRS. RI activities included vegetation removal , Digital Geophysical Mapping, and magnetometer exploration. The MRS was divided into 257 grids to allow better tracking of site anomalies. A dig list was developed by the geophysics for anomalies exceeding a set threshold, with quality control checks performed periodically to confirm resolution. Most anomalies required removal and disposal management as non-hazardous waste, with only a small percentage requiring management as Material Potentially Presenting an Explosive Hazard (MPPEH), which were blown in place (BIP) and disposed of as Munitions Debris (MD) at a metal recycler.







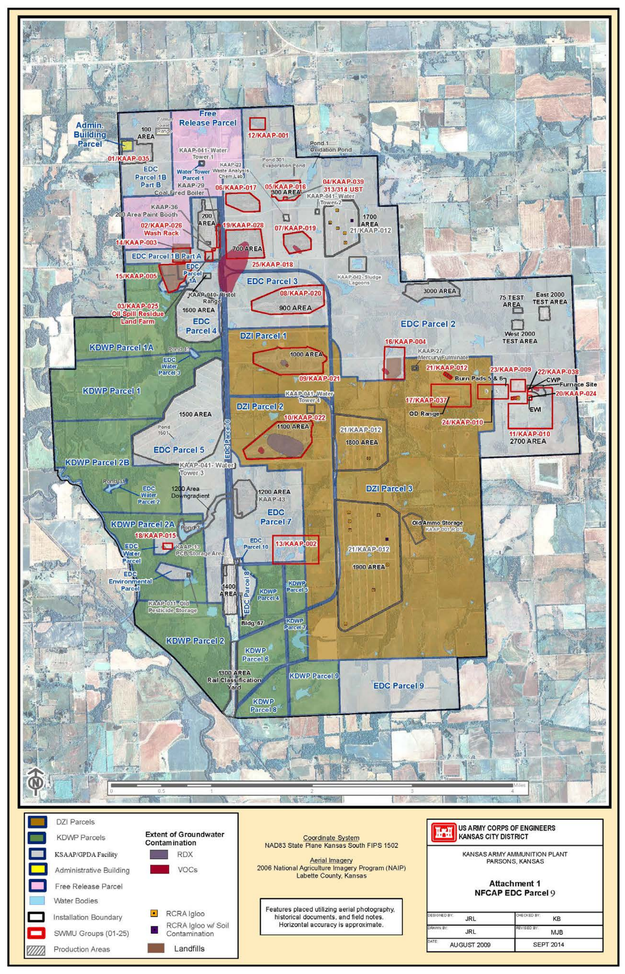
Soil samples were collected and analyzed for metal (6010) and explosives (8330) prior to and after the MEC was BIP to verify no release occurred. Groundwater, surface water, and sediment samples were also collected after all anomalies were removed. In total: 257 grids were investigated, 4,500 Mag and Dig anomalies, and 3,100 DGM anomalies were investigated. 1,100 pound of MD, 120 pounds of Small Arms Debris, and 420 pound of Range Related Debris were removed from the MRS.



To protect yourself, your family, and friends, DoD recommends you learn, teach your children, and remember the "3Rs" of explosives safety:

RECOGNIZE — when you may have encountered a munitions
RETREAT — do not touch, move or disturb it, but leave the area
REPORT — call 911 and advise the police what you saw and where you saw it.

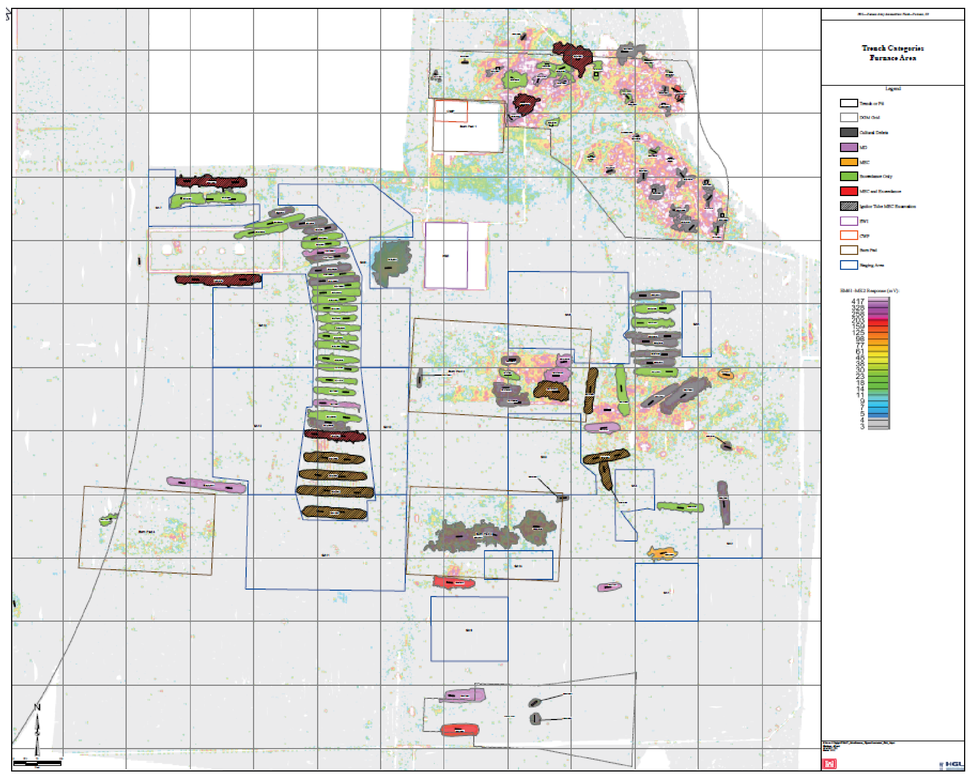
PROJECT SPOTLIGHT – 2700 Area
Kansas Army Ammunition Plant, Parsons, Labette County



Kansas Army Ammunition Plant (KAAP) was constructed on 17,215 acres in 1942-1943 to provide munitions for World War Two. The Army closed KAAP as part of the 2005 Base Realignment and Closure (BRAC) round on 31 December 2008. Portions of KAAP were transferred to the Kansas Department of Wildlife and Parks, Day & Zimmermann, Inc. (KAAP's former operating contractor) and Great Plains Development Authority (a local redevelopment group). Ongoing investigation and remedial activities are being conducted on property transferred to GPDA.

Munitions and explosive contaminated trash were destroyed at a variety of locations in the eastern portion (2700 Area) of KAAP including six burn pads, the furnace area, the explosive waste incinerator and the contaminated waste processor. The US Army's contractors discovered large area anomalies (buried trenches) in the area while conducting geophysical investigations.

The trenches were characterized as containing Munitions and Explosives of Concern (MEC), containing contaminated soil, both, or neither based on test pits. Contractors have been excavating the MEC and contaminated soil trenches near the burn pads. The excavated soil is sifted to remove possible MEC. Clean soil is returned to the excavations. Contaminated soil is disposed of offsite. MEC items are destroyed with explosives.



Due to explosive concerns, excavations are conducted with both up armored (left) and remote controlled (right) equipment

Progress up to March 2015

- 47 large area anomalies excavated to extent
- ~46,700 cubic yards of excavated and sifted
- 40 excavations backfilled
- ~ 619,700 lbs of Material Potentially Presenting An Explosive Hazard (MPPEH) processed
- 4,662 Munitions and Explosives of Concern (MEC) disposed of by intentional detonation
- Work in the furnace area will start this spring

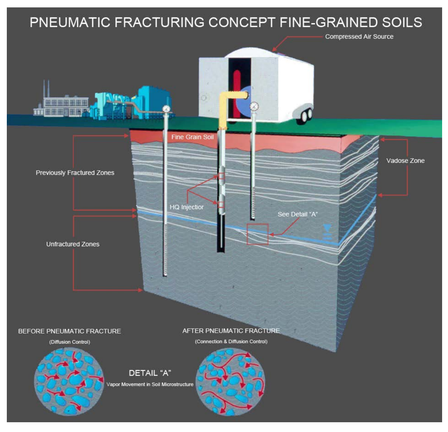
Controlled destruction of found MEC

PROJECT SPOTLIGHT – Fire Training Site 7
McConnell Air Force Base – Wichita, Sedgwick County

McConnell Air Force Base (MAFB) is a United States Air Force base located four miles southeast of the central business district of Wichita. The 22nd Air Refueling Wing (ARW) located at MAFB supports, flies, and maintains the KC135R "Stratotanker." The ARW provides air refueling operations worldwide for the United States and its Allies. The facility occupies approximately 3,100 acres of government-owned land, as well as easement land.

Site Description: Fire Training Area 7 (FT-07) is located on the southeast portion of the Base. Fire Training exercises consumed an estimated 600,000 gallons of flammable liquid waste at this site. During a typical training session, approximately 25 to 30 barrels of flammable materials were poured into shallow, unlined earthen ditches. The flammable material was ignited and then extinguished with protein foam, carbon dioxide, or water.

Nature and Extent of Contamination: TCE, cis-1,2-DCE, and VC exceed their respective EPA MCLs and KDHE RSKs in groundwater. The footprint of the TCE plume covers areas where the daughter products (cis-1,2-DCE and VC) are present.

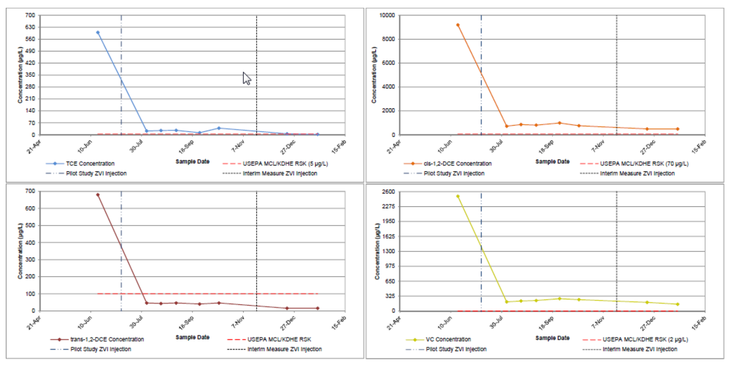


Remediation Technique: An interim measure (IM) is currently in place at FT-07. That IM uses a technique called ***Pneumatic Fracture and Emplacement (PFE)***. The technique is used to produce a dense network of small fractures throughout the subsurface contaminant zones. Following fracture, a zero-valent iron (ZVI) slurry was injected to create a reductive environment. Performance monitoring is used to monitor the effectiveness of the injections.

The initial fracturing process is accomplished by injecting Nitrogen gas into the subsurface at pressures exceeding the natural *in situ* pressures (i.e. overburden pressure and cohesive strength) and at flow volumes exceeding the natural permeability of the formation. This results in the propagation of fractures outward. This fracture network is designed to increase connectivity between existing fractures and mineral lenses, enhancing the overall effective bulk permeability of the formation and thus allowing the ZVI treatment to work more effectively.

An open borehole is used for the injection points. After the injection point has been installed, a down-hole PFE tooling assembly (consisting of a nozzle straddled by high-pressure packers) is lowered into the borehole to the lowest injection interval. Injection then proceeds from the bottom up. Each injection interval of approximately 3.5 feet is isolated using the packers. The packers are inflated to seal against the formation and isolate the fracture interval.

Following the propagation of fractures at each injection interval, a ZVI slurry is introduced into the nitrogen stream and dispersed into the formation. The nitrogen acts as a carrier fluid to atomize and "drive" the ZVI slurry into the formation and fracture network.



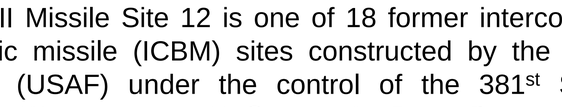
Performance Monitoring Results at FT-07:
The figure to the left shows the results of groundwater sampling at monitoring well MW-14.

The first point in each graph represents the baseline contaminant conditions prior to PFE injections. Following the PFE injections, there was a sharp drop off in the concentrations for each contaminant. Performance Monitoring will take place for a year to monitor for contaminant rebound. If there is significant rebound for contaminants, additional injections may be necessary.

PROJECT SPOTLIGHT – Titan II Missile Site 12
Conway Springs, Sumner County

Current site view showing concrete foundation of former building (in center of photo). MW-1S and MW-1D are shown at direct left, and MW-8S is shown at right, of concrete foundation.

Titan II Missile Site 12 is one of 18 former intercontinental ballistic missile (ICBM) sites constructed by the U.S. Air Force (USAF) under the control of the 381st Strategic Missile Wing based at McConnell Air Force Base in Wichita, KS, as part of the national cold war deterrent system. Site 12, which was constructed in 1961 and became operational in 1963, is a 9-acre tract of land located 35 miles southwest of McConnell AFB, near the city of Conway Springs in Sumner County. The site contained one Titan II missile, a launch silo, an underground control center, a sewage treatment plant, two concrete structures (hardstands) on which rocket fuel components were unloaded, a water plant, three electronic filter boxes that held dielectric fluid containing PCBs, underground storage tanks, antennas, and other support structures. Existing groundwater contamination is attributed to spills of fuel and solvent, which occurred during active use of the site from the 1960s to 1980s. During 1984 through 1987, the site was closed, dismantled, and sealed in accordance with protocols of the Strategic Arms Limitation Talks (SALT) Treaty. No structures remain at the site except remnants of concrete pads from various onsite operations. To date, no remedial activities have been performed at the site as a result of environmental investigations.



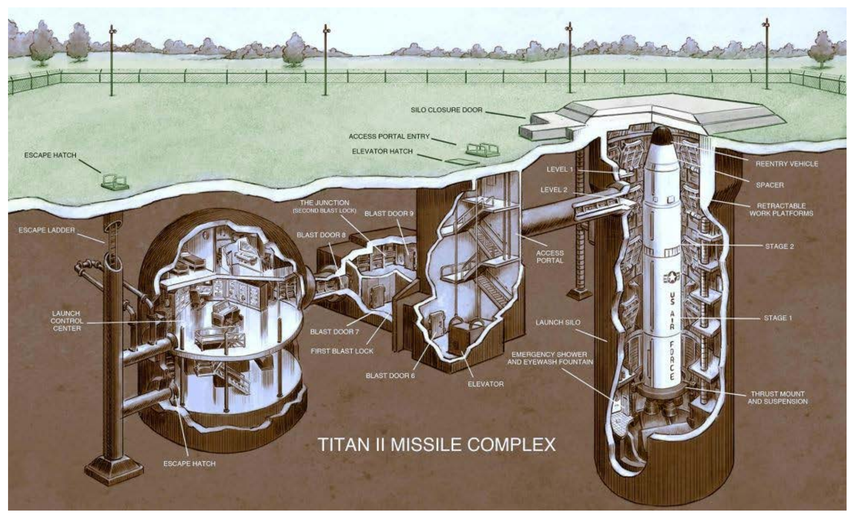
TITAN II Missile Facts:

The TITAN II was a two stage, liquid-fueled Intercontinental ballistic missile (ICBM). At 110 feet in length and 10 feet in diameter, it was the largest ICBM in U.S. Air Force inventory.

The TITAN II took 6 minutes to go from launch to 100 nautical miles into space.

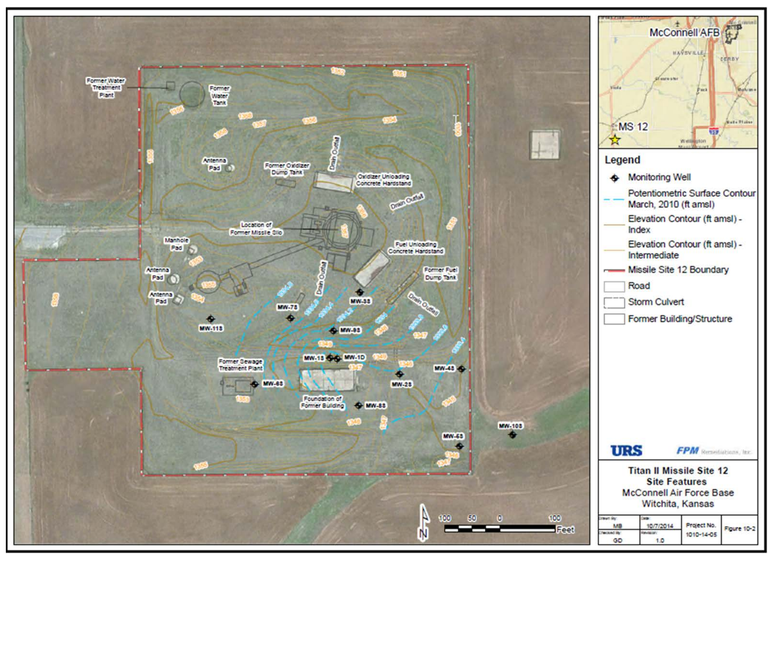
The weight of the TITAN II was 341,000 lbs.

The TITAN II weapon system was deactivated on May 5, 1987, after which the missiles were retrofitted for spacelift duty.



Historical Site Features – Example Illustration

Previous investigations at Titan II Missile Site 12 determined that PCE and TCE concentrations exceeded USEPA MCLs in shallow bedrock groundwater both on- and off-site. A recent in-situ chemical oxidation (ISCO) Treatability Study demonstrated that in-situ activated sodium permanganate chemical oxidation is capable of degrading PCE and TCE in groundwater to below USEPA MCLs. Following the collection of baseline groundwater samples at 12 existing monitoring wells, ISCO injections will be conducted at depths of 20 to 40 feet below ground surface (bgs). Performance monitoring will be conducted following ISCO injections and, based on those results, additional injections will be performed if needed. Performance monitoring will continue for a period of up to three years and recommendations for site closure will be made upon treatment completion.



In situ permanganate oxidation