



A N D R E W S , T E X A S

**WCS Update for Waste Management
March 2017**



WCS Safety and Quality Focus

- WCS maintains a strong, overarching commitment to safety and quality.
- WCS promotes a safety culture consistent with the best nuclear utilities and DOE sites:
 - Trust-based organization
 - Open communication free from concerns over reprisal
 - All workers have *right and obligation* to report safety and quality concerns



ANDREWS, TEXAS

WCS Current Facilities



LSA Pad

Federal Facility

Byproduct Facility

Compact Facility

Hazardous Waste
Landfill

Administration Buildings and
Treatment Facility



Disposal and Service Capabilities

Commercial Waste

- In- and Out-of-Compact Class A, B, and C LLRW



Federal Waste

- Federal Class A, B, and C LLRW and MLLRW



Low Activity

- Certain low activity waste in Hazardous Waste Landfill



Transportation

- 3 state-of-the-art Type B Casks
- 2 Type A Casks



Processing

- Dewatering, Stabilization, Repackaging





ANDREWS, TEXAS

Compact Waste Facility





ANDREWS, TEXAS

Federal Waste Facility



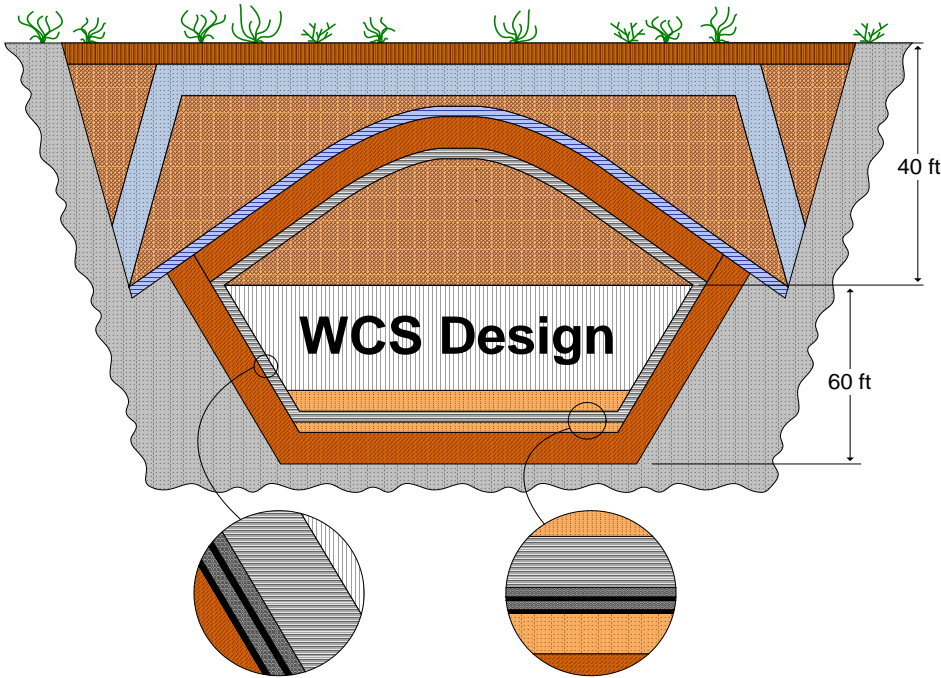


CWF and FWF Landfill Disposal Design



WCS CWF and FWF Landfill Design Andrews, TX

WCS Landfill Liner Design



- Multi-layered cover system up to 45 feet thick
- Depth to waste at least 25 feet below surface
- 7 ft. liner system on top of red bed clay which is less permeable to water than concrete and 600 feet thick
- Closest measurable water 225 feet

Legend	
	Undisturbed Ground
	Clay Liner (10^{-9} cm/s H.C.)
	Clay Liner (10^{-7} cm/s H.C.)
	Protective Soil/Sand
	Geosynthetic Liner
	Concrete Liner
	Low Level Waste
	Leveling Fill
	Biointrusion Layer
	Drainage Layer
	Evapotranspiration Layer

WCS CWF – Native Clay

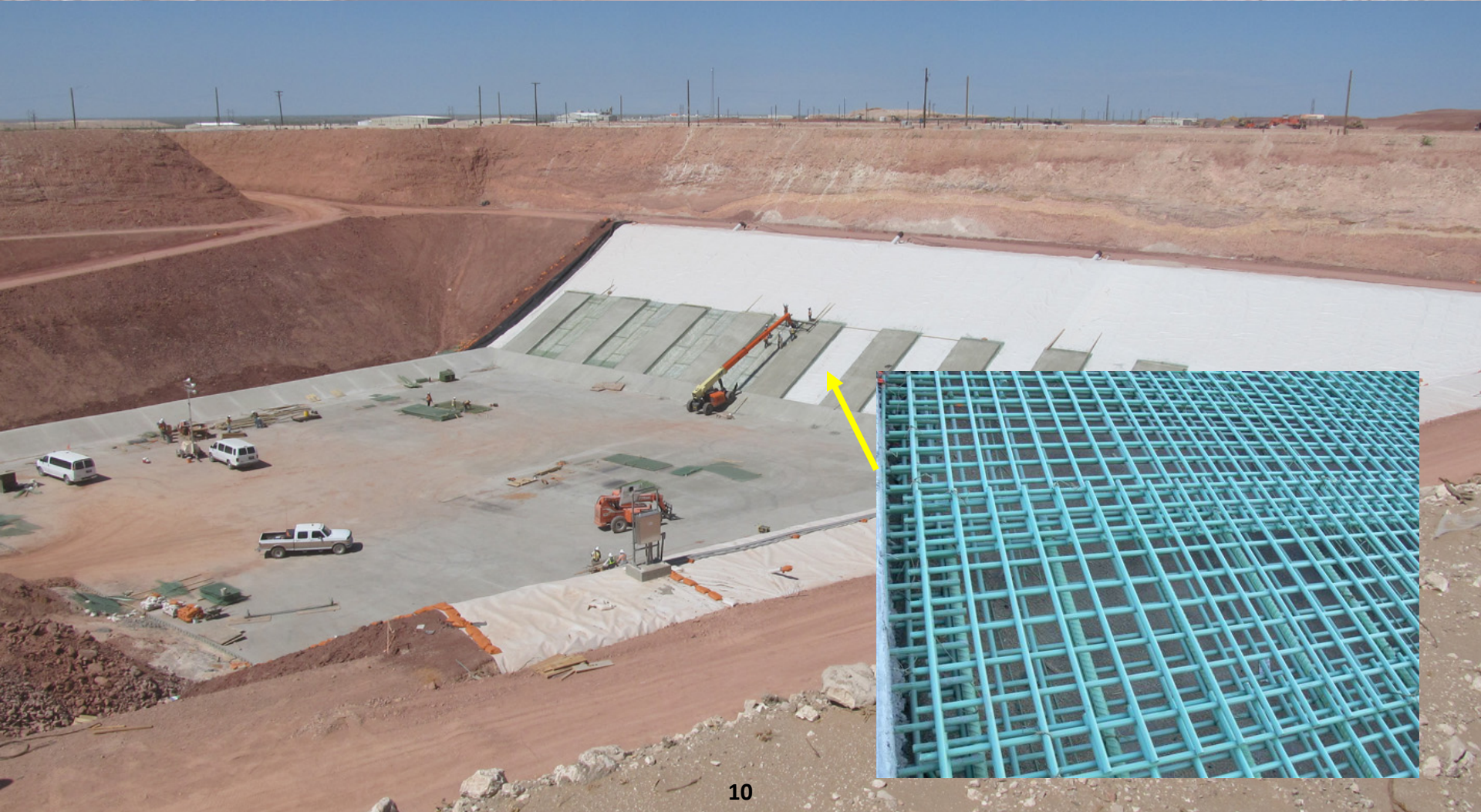


04/16/2011 09:22



ANDREWS, TEXAS

CWF During Construction





WCS Compact Facility (New Industry Standard)





Groundwater Monitoring

- Over 640 borings determined geologic characteristics and confirmed WCS is not over an aquifer
- Over 400 monitoring wells that are measured quarterly, many of which are dry
- Approximately 150 monitoring wells are laboratory sampled semi-annually, if there is enough water

Map of Borings/Wells

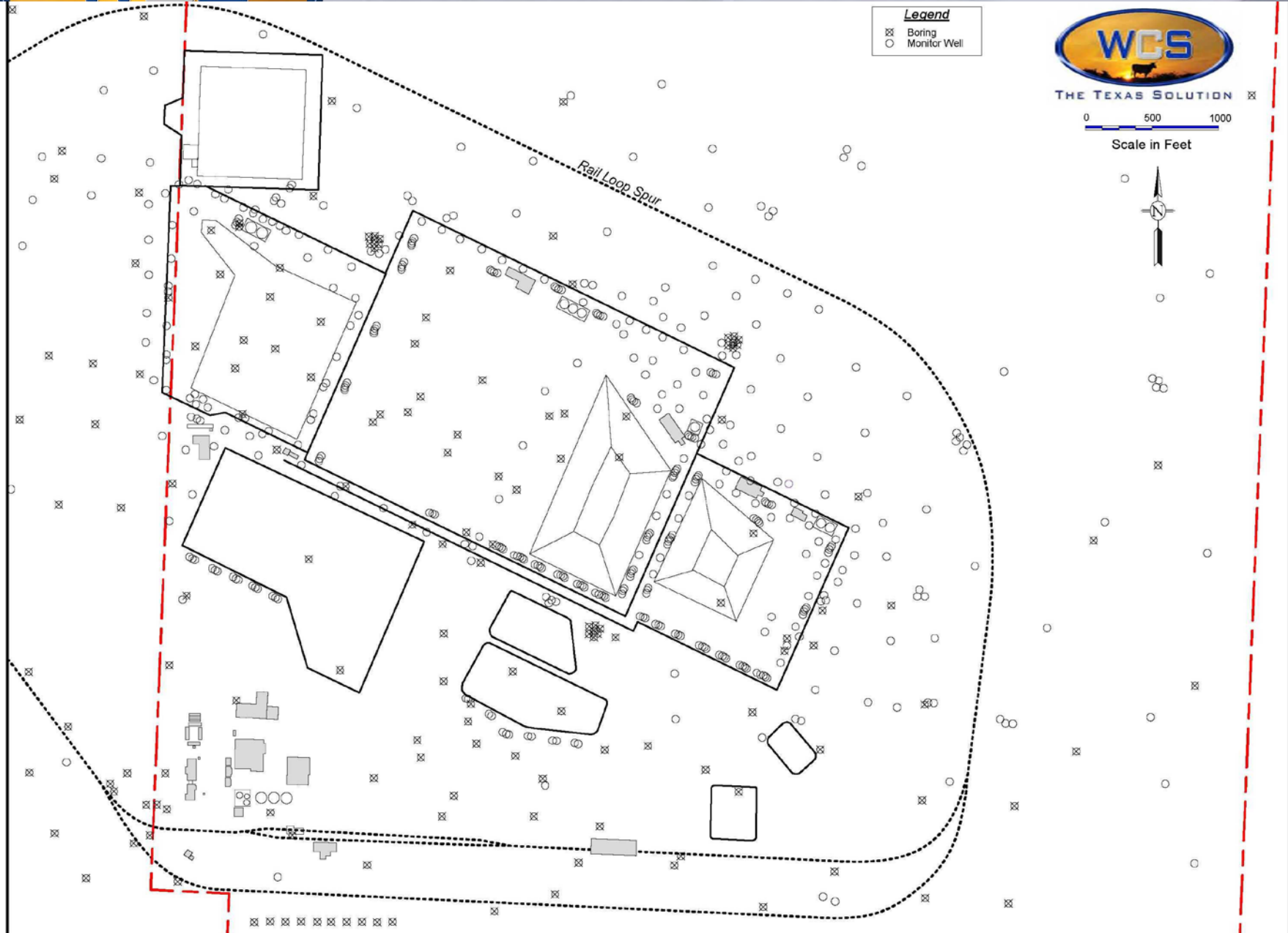


Legend
⊠ Boring
○ Monitor Well

WCS
THE TEXAS SOLUTION



Scale in Feet





Groundwater Characteristics

- WCS is not above or adjacent to any underground drinking water supply
- Texas Water Development Board map confirms site characteristics
- Hydraulic conductivity of clay is 1×10^{-9} cm/sec and the 225-foot zone is 1×10^{-8} cm/sec
- Horizontal groundwater travel is 4 feet (1.3 meters) per 1,000 years
- Groundwater is ~16,000 years old



WCS License Status and Capacity



Licensed LLW Disposal Capacity

- **TX Compact Waste Disposal Facility:**
 - 9,000,000 cubic feet and 3,890,000 curies
 - TCEQ has taken ownership of Texas Compact Landfill and WCS leases it back for operations
- **Federal Waste Disposal Facility:**
 - 26,000,000 cubic feet and 5,600,000 curies total
 - DOE signed Agreement to take ownership of the Federal Landfill after post-closure
- **License Term** – through September 2024 with provision for 10-year renewals thereafter



WCS RT-100 Type B Cask

- 3 RT-100 Type B casks commissioned in 2014
- RT-100 is 76,500 lbs; made of stainless steel with lead shielding and can transport containers up to 160 cubic feet with dose rates to 500R/hr.
- Hauled by team drivers on a specially designed trailer using EPA certified zero emissions tractors





Potential Future WCS Operations



GTCC Disposal

- Waste that was not generally suitable for near surface disposal in the 1980s can be demonstrated suitable in 2017 at WCS.

At WCS:

- Deeper depth of disposal
- Multiple intrusion barriers
- Minimal rainfall
- High rate of evapotranspiration
- Lack of potable water, etc.
- Historical scenarios at other facilities do not reflect modern disposal practices, especially in an arid environment like at WCS.

Barnwell



WCS





Proposed Interim Storage Project Scope

- Environmental impacts analyzed with storage of 40,000 MTHM.
- 8 separate phases; storage of up to 5,000 MTHM in each phase.
- License for 40 years with multiple renewals of up to 20 years each.
- Initial SAR includes selected AREVA NUHOMS® and NAC International storage systems which prioritize shutdown sites.
 - Additional systems and sites to be added in future License Amendments.
 - Storage of used fuel from over 12 shutdown/decommissioned nuclear power plants will fit in Phase 1.
- Allows flexibility to transition beyond storage of fuel from currently decommissioned reactors.
- Ongoing discussions with DOE and the U.S. Congress on how to integrate the availability of an interim storage facility into the national strategy for used nuclear fuel management.

POTENTIAL SITE OF CONSOLIDATED INTERIM STORAGE FACILITY (CISF)

- ① Treatment & Storage
- ② Hazardous Waste Landfill
- ③ Byproduct Disposal Facility
- ④ Low Level Storage Pad
- ⑤ Federal Waste Facility
- ⑥ Compact Waste Facility

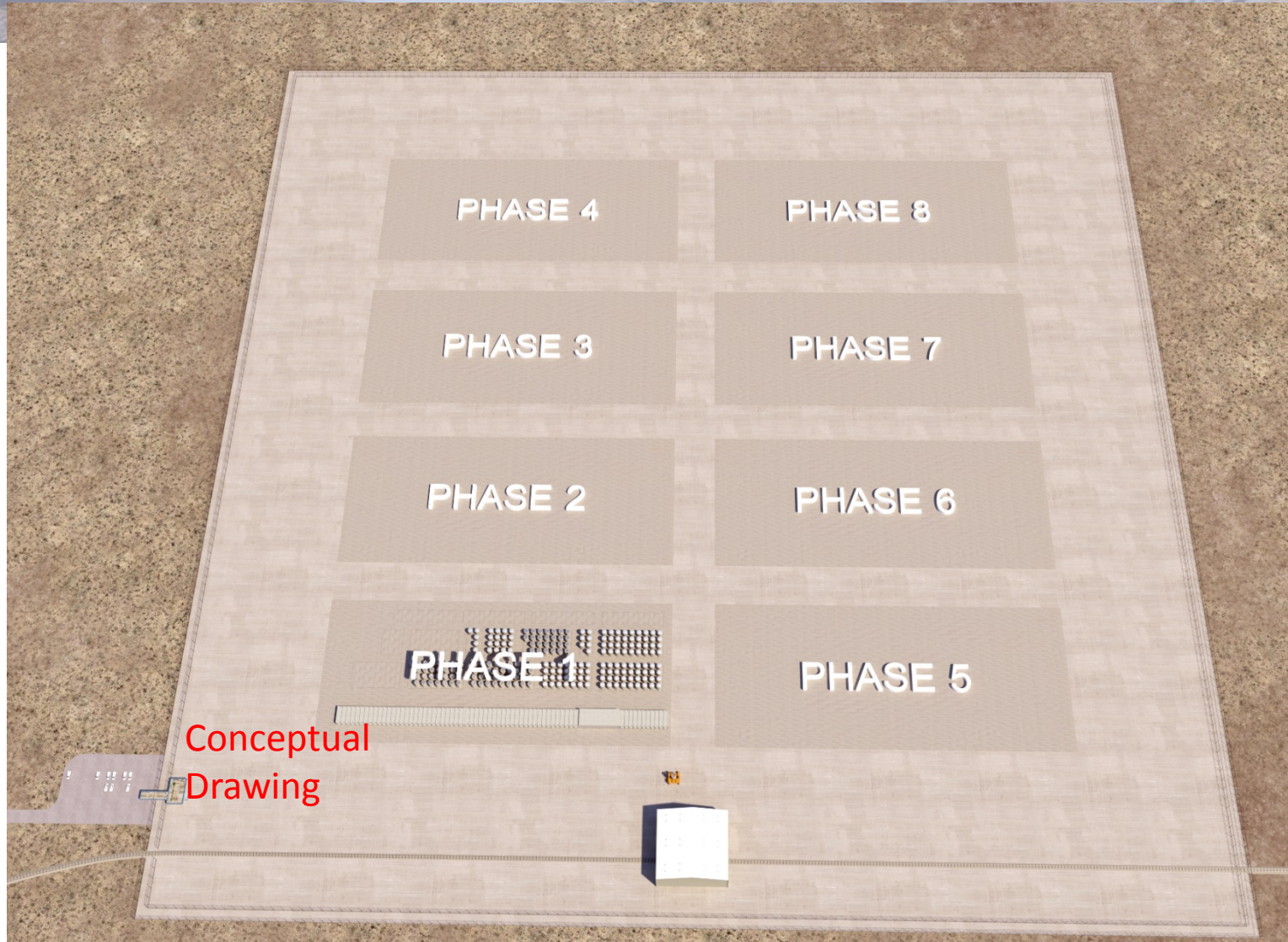
Project Scope: Store 40,000 metric tons heavy metal (MTHM) for 40 years or longer. There will be 8 separate phases of up to 5,000 MTHM in each phase.





ANDREWS, TEXAS

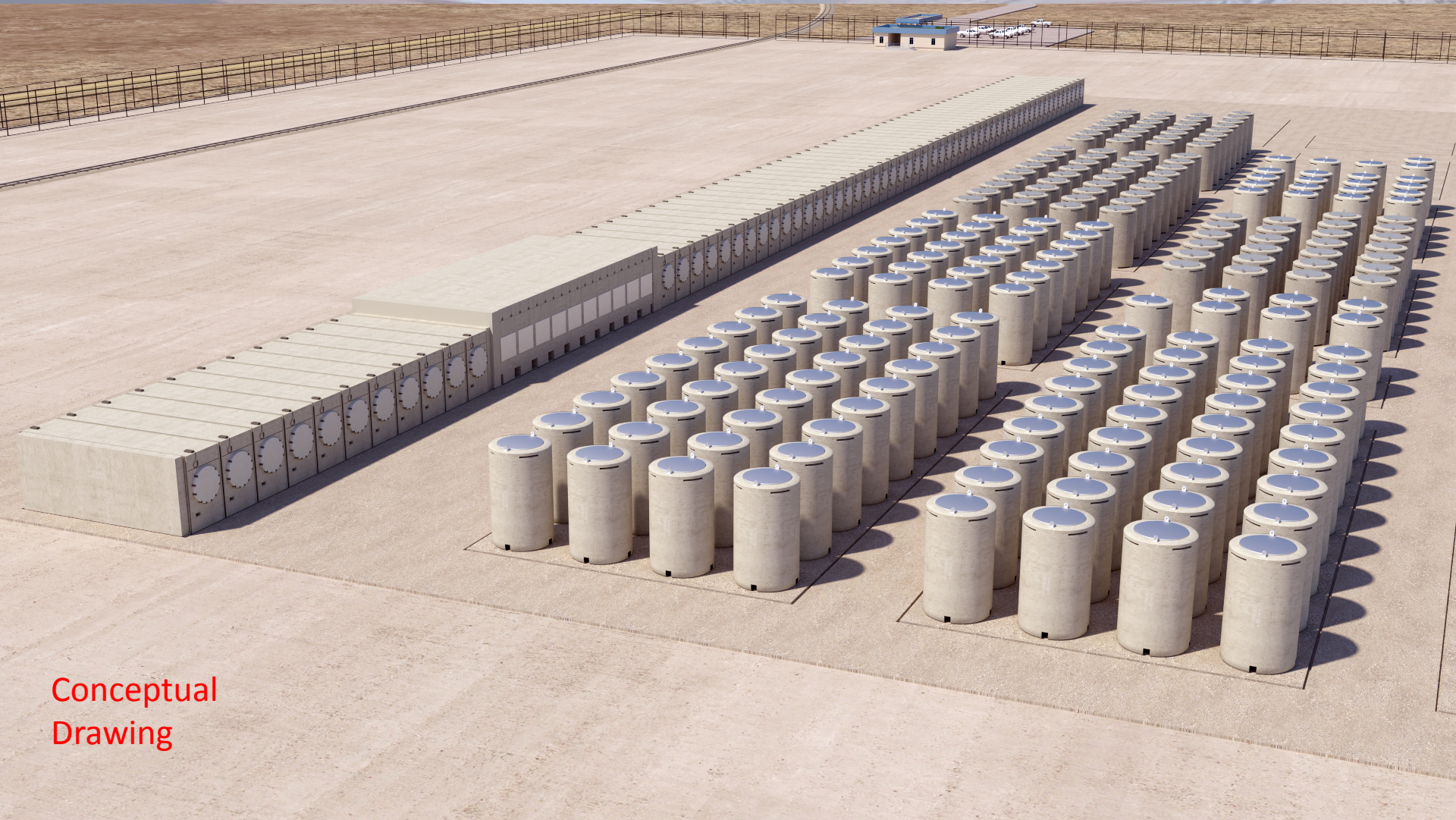
Proposed Pad Layout for CISF



Conceptual
Drawing



View of Deployed Systems for Phase 1 Pad



Conceptual
Drawing



Estimated Timeline

- **February 2015: filed the notice of intent**
- **April 2016: filed license application**
- **Late 2016: responding to NRC requests**
- **Late 2019: NRC issues license application**
 - Assumes a three year review period
- **Late 2019: Construction begins**
- **January 2021: Operations begin**



ANDREWS, TEXAS

Questions?