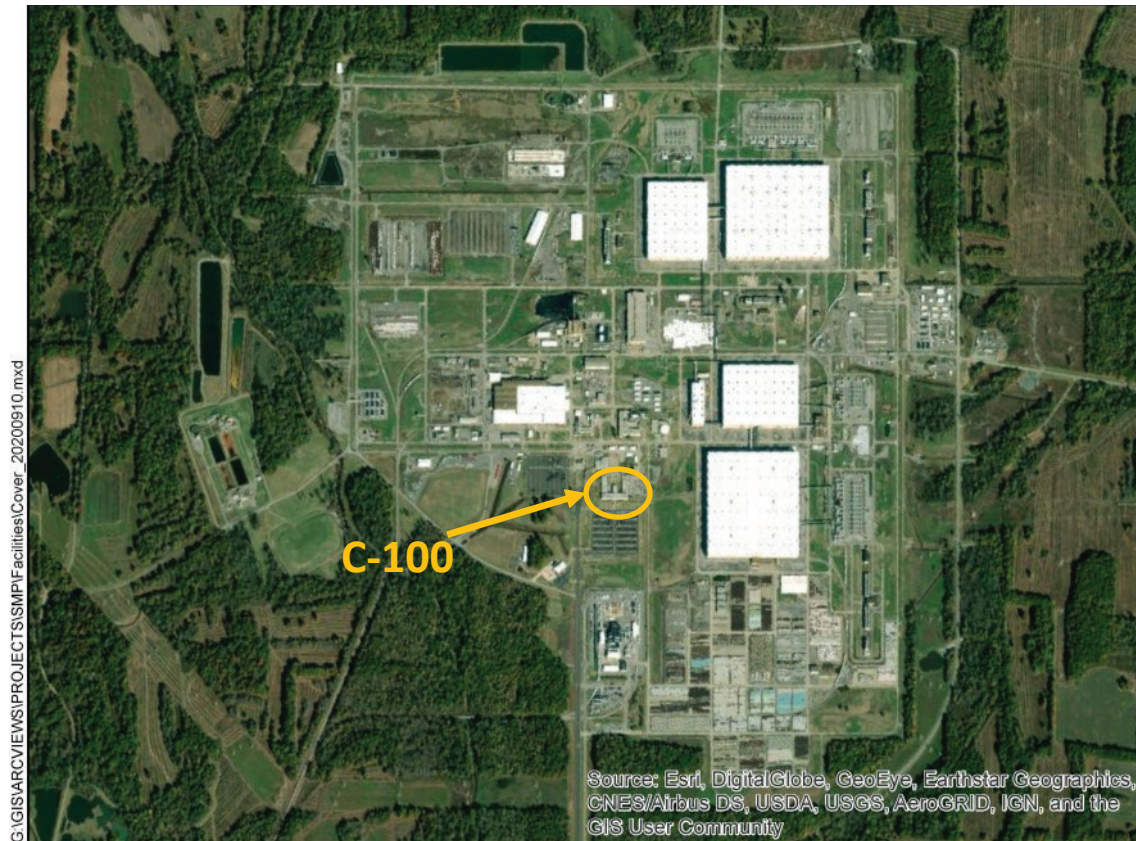


## C-100 Administrative Building



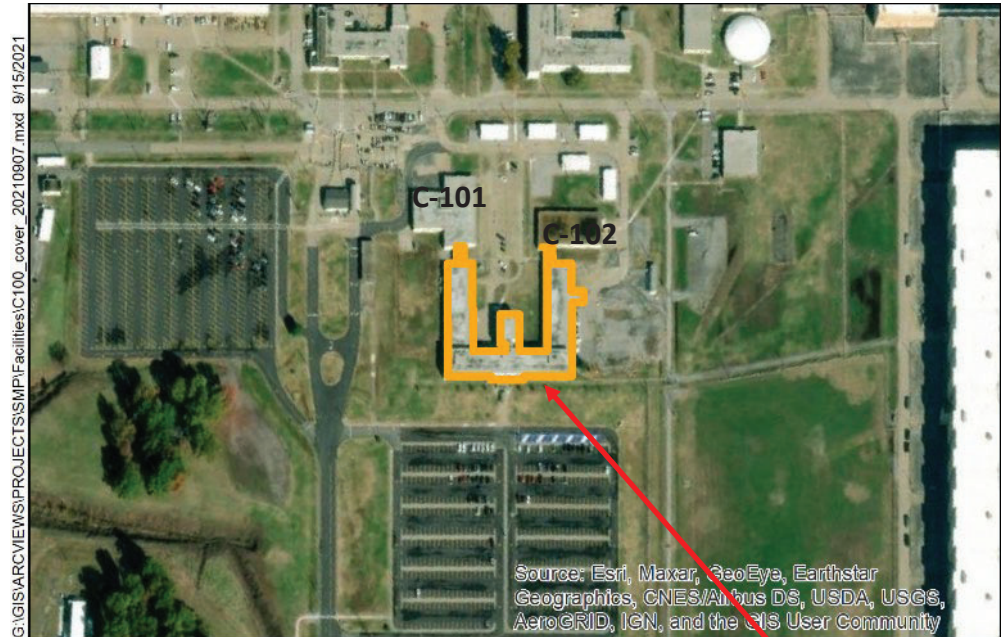
Facility Overview Briefing

November 9, 2021

Reflects consultation with EPA and Kentucky in accordance with the Site Management Plan that occurred on November 8, 2021, and includes incorporation of comments from those discussions.

# Purpose

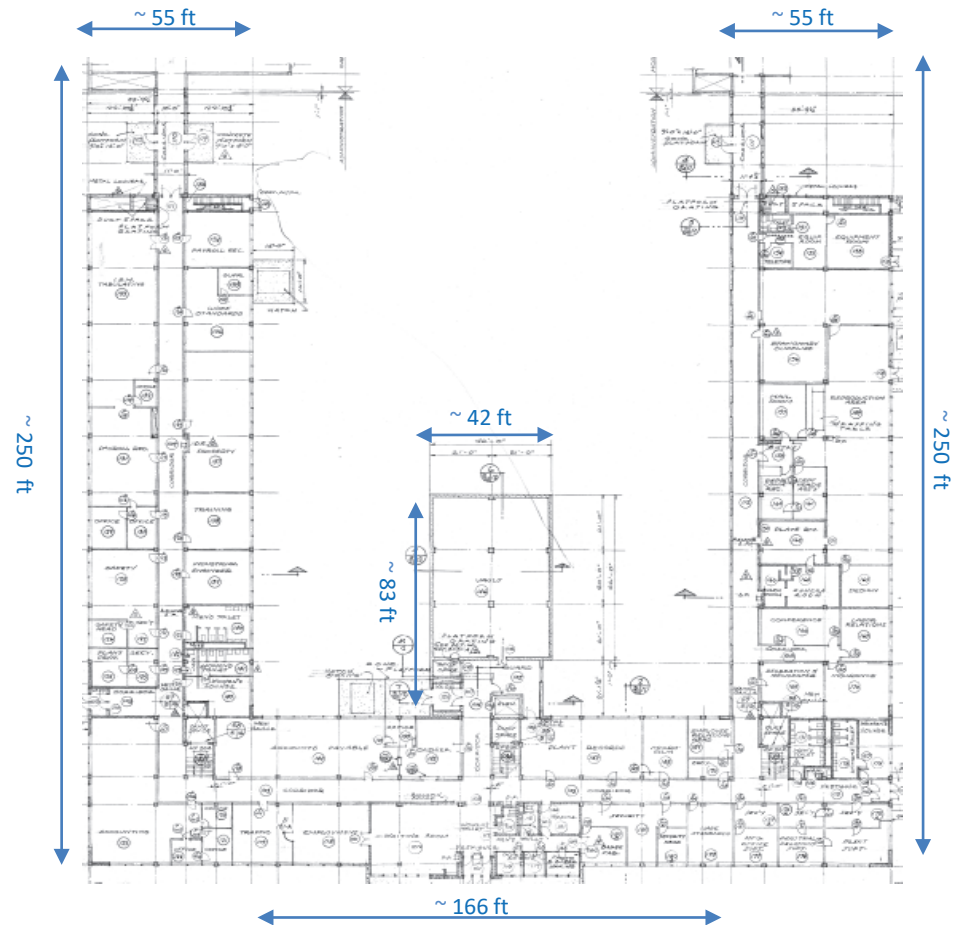
- The C-100 Administrative Building is a candidate for future demolition and disposal, contingent upon funding priorities.
- Listed in Appendix 6 of the Site Management Plan (SMP); requires consultation with EPA and Kentucky for CERCLA screening prior to demolition.
- This presentation is intended to serve as consultation, providing the basis for demolition and disposal of the aboveground structure outside of the FFA/CERCLA process.
- The slab/soils will remain and be subject to further CERCLA evaluation as part of a future site evaluation conducted under Appendix 4 of the SMP.



C-100 Facility Photo: 8/2021

# Construction History

- C-100 is located outside the Paducah Site security fence, west of C-333. The facility was constructed in 1953.
- The facility is a U-shaped reinforced concrete structure on an 8-inch concrete slab with a network of partial basements/tunnels.
  - ❑ Main two-story structure with a basement, two-story vault, and an elevator.
  - ❑ Two single story east and west wings with below grade piping tunnels connecting each wing to the main two story structure basement and the partial basements located on the north end of each wing (these partial basements are also accessible via external hatches).
  - ❑ Enclosed corridors that connect C-100 to C-101 via the northwest wing and C-102 via the northeast wing.
  - ❑ The structure has multiple points of entry (pedestrian doors).
  - ❑ Floor drains and sump pits were included as part of the structure design and a facility walkdown has confirmed that floor drains and sump pits are present.
- The facility is approximately 76,200 ft<sup>2</sup>.
  - ❑ First Floor = ~ 37,616 ft<sup>2</sup>.
  - ❑ Second Floor = ~ 18,705 ft<sup>2</sup>.
  - ❑ Basement and Tunnels = ~ 19,034 ft<sup>2</sup>.
  - ❑ West Enclosed Corridor = ~ 415 ft<sup>2</sup>.
  - ❑ East Enclosed Corridor = ~ 430 ft<sup>2</sup>.



First Floor Plan View Excerpt from Engineering Drawing  
BI-5-A, dated 1953

# Operational History

- C-100 was originally built and operated as an administrative building from its construction in 1953 to present.
  - ❑ Originally used as office space for administrative personnel, for example:
    - Employment
    - Accounting
    - Computer Services
    - Administration
    - Reproduction
    - Engineering
  - ❑ Men's and Women's Restrooms
  - ❑ Two fireproof vaults
  - ❑ Camera Room/Dark Room Laboratory
    - Used for developing photographs for various in-plant activities.
    - The process included the use of a number of stop baths that contain fixers and developers.
    - Spent chemicals were stored in five gallon containers at a rate of 40 gallons per year and disposed of in accordance with regulatory requirements and site procedures.
  - ❑ Conference Rooms
  - ❑ Respiratory Facility
  - ❑ Historical GSAs and SAAs (e.g., batteries, developer/fixer solution, rags, and fluorescent bulbs)
- Two air emission points were identified in the 1992 air permit application.
  - ❑ Ammonia from blueprint reproduction equipment
  - ❑ Acetic acid, potassium hydroxide, and sulfuric acid as solution off-gas from the photography lab
  - ❑ Blueprint reproduction and the photography lab are no longer in service.
- Two air emission units (EU) are in the 2021 Title V Air Permit
  - ❑ EU 66 C-100-1 Emergency Generator (Diesel)
  - ❑ EU 67 C-100-2 Emergency Generator (Diesel)



Exterior View,  
North Side



Program  
Manager's  
Office



Office Supplies in  
First Floor Vault Area

# Operational History

- The respiratory facility was located in the C-100 central zone basement area.
  - ❑ Used from late 1992 until C-205 began operations in 1996.
    - Respirator issuance
    - Visual inspection
    - Cosmetic cleaning (with water-based cleaners after facepieces were cleaned and disinfected in the C-400 respirator washer)
  - ❑ Aerosol penetrometer used to conduct aerosol particle leak-testing of HEPA filters and leakage of air-purifying respirator facepieces using small quantities of heated oil aerosols (dioctyl phthalate and dioctyl sebacate).
  - ❑ No known chemical spills or releases occurred within the respiratory facility.
  - ❑ All equipment, except for the installed canopy hood, was moved to C-205 in 1996.
  
- C-100 is equipped with an elevator.
  - ❑ The elevator pit periodically floods with storm water (a timeframe for the initial occurrence of flooding is unknown).
  - ❑ A drain in the elevator pit has been plugged (date unknown).
  - ❑ A tank containing hydraulic oil is stored in the elevator equipment room.
  - ❑ The elevator pit flooded most recently in August 2021.
    - A sheen was observed on top of the water in the elevator pit.
    - Water was removed from the pit and placed in generator staging area (GSA) G-100-02.
    - The water has been moved and is being stored in C-752-A pending characterization and disposition.
    - The GSA has been closed.

Office Space in Second Floor Vault Area



Engineering Offices



Elevator and Elevator Control Room in the Basement



# Operational History

- The basement houses facility infrastructure equipment (e.g., power supply, heat exchangers, air moving fans, steam system surge tanks, utilities, etc.).
- An RCW valve malfunctioned, which required cleanup of a portion of the basement (prior to 1993).
- Residual chromate may be in floor drains (quantity unknown).
- PCB spills
  - ❑ Three known light ballast spills/leaks (4/30/90; 4/8/91; 4/24/97).
    - Debris was removed.
    - Areas were decontaminated.
    - Areas were verified clean.
  - ❑ On August 1, 1991, water containing detectable PCBs spilled from a drum in the basement.
    - Contents were contained.
    - Area was decontaminated.
    - Area was verified clean.
- USEC leased the facility in the early 1990s and continued to use it until USEC ceased operations in 2014.
- The facility was transitioned from USEC to DOE in 2014.

Air Compressor  
Tanks in  
Southwest  
Equipment  
Room



Heat Exchangers  
and Air Movers in  
Central Equipment  
Room



Heat Exchangers, Air  
Movers, X-Fan in  
Northeast  
Equipment Room



# Current Status

- C-100 remains operational and is used as an administrative building (e.g., Program Managers Office; Engineering; Computer and IT Services; Human Resources; conference rooms).
- Walkdown inspections conducted in August and September 2021 and employee interviews confirmed no unusual conditions, except staining as noted below.
  - ❑ Connected to the sanitary sewer system for wastewater discharges, stormwater runoff, floor drains, and other water sources.
  - ❑ Sump pits are present in the basement and discharge to the storm sewer system.
  - ❑ Battery Room located in the basement.
  - ❑ Two dry-type electrical transformers located in the basement.
  - ❑ Asbestos-containing materials (ACM) and lead-based paint are located throughout the facility.
  - ❑ Ventilation duct gaskets impregnated with concentrations of PCBs that exceed 500 ppm, but no evidence of leaking.
  - ❑ Staining and cracks on basement floor.
  - ❑ No satellite accumulation areas (SAA).
  - ❑ Not used for radiological storage; however, the facility is within a Radiological Controlled Area.
  - ❑ No flammable storage cabinets.



Utilities  
East Wing  
Tunnel

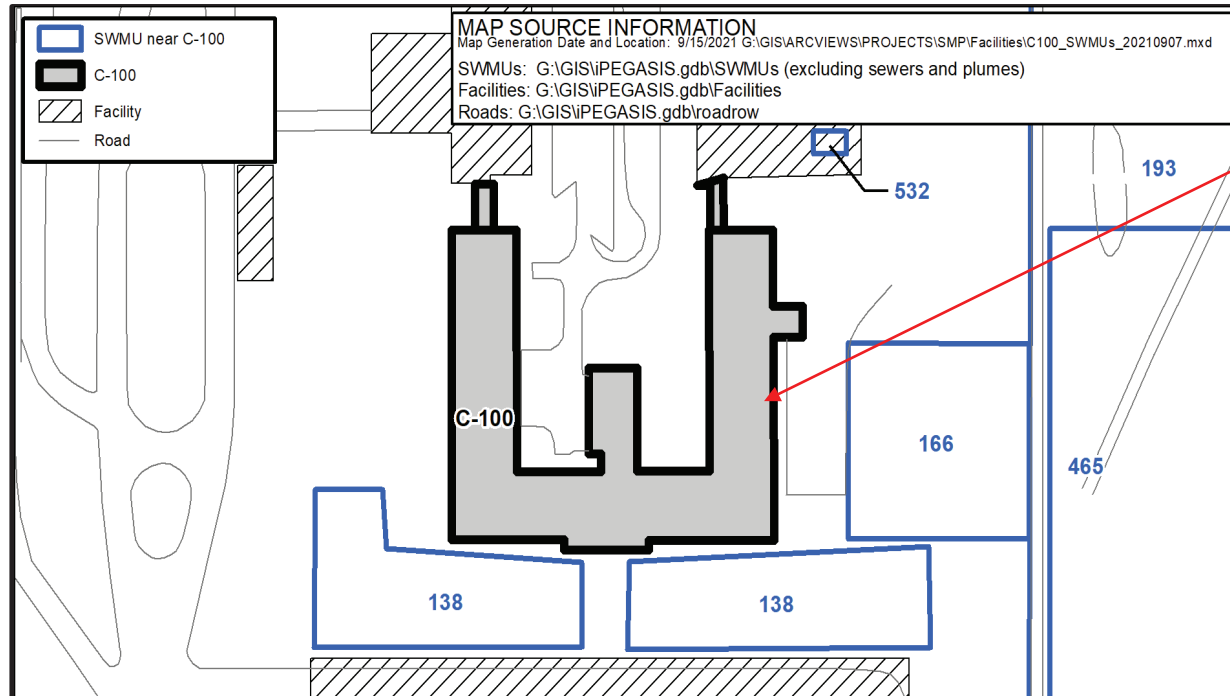


Floor Sump Pit  
in Central  
Equipment  
Room



Basement  
Northwest  
Corner Electrical  
Switchgear Room

# Environmental Impacts (Solid Waste Management Units)



- The C-100 Administrative Building is not designated as a SWMU/AOC.

SWMU No.	Facility Name	Current Status	NFA Approval By
138	C-100 Southside Berm	Soils OU	
166	C-100 Trailer Complex Soil Contamination (East Side)	Soils and Slabs OU	
193	McGraw Construction Facilities (Southside Cylinder Yards)	DUF6 Footprint Underlying Soils OU	
465	Yard Rubble Pile and Crushate Storage Area (G-Yard)	NFA	KDWM 10/13/2009
532	Photographic Solution Treatment Area in the C-102 Building	NFA	KDWM 5/21/2003



# Environmental Impacts

- No information to indicate a release or threatened release of a hazardous substance that would require a CERCLA evaluation for a potential response action for demolition of the aboveground structure to protect future public health or welfare or the environment.
  - ❑ C-100 was originally constructed and operated as an administrative building from its construction in 1953 to present.
  - ❑ C-100 is identified in the TSCA Compliance Agreement as potentially having impregnated PCBs in ventilation duct gaskets.
    - Confirmed not to be leaking; gaskets can be evaluated for removal during deactivation prior to demolition.
  - ❑ Building materials used for construction contain lead-based paints and ACM, both of which can be effectively verified during a pre-demolition inspection and properly managed using standard demolition and waste management practices.
  - ❑ An RCW valve malfunctioned, which required cleanup of a portion of the basement. Residual chromate may be in floor drains (quantity and date unknown).
  - ❑ In August 2021, there was a sheen on top of water in the elevator pit.

# Conclusion and Recommendations

- Walkdown inspection of the facility, employee interviews, and other reviewed historical information did not identify any unusual conditions that would pose a potential threat of environmental release during future demolition of the aboveground structure.
  - ❑ Deactivation will include removal of any accessible loose items being stored (including safes) and ventilation duct gaskets (to the extent practicable) prior to demolition.
  - ❑ Any floor drains will be delineated, documented, and isolated prior to demolition.
  - ❑ An evaluation will be made to determine if any measures may be appropriate to stabilize and/or isolate the basement (or portions thereof) from the main floor prior to demolition.
  
- Pending ceasing of operation, deactivation, and availability of funding, proceeding with demolition and disposal of the C-100 facility (aboveground structure) outside of the FFA/CERCLA process, contingent upon the fact that no additional changes have occurred that would affect the CERCLA determination of the facility prior to demolition, is recommended.
  
- All applicable laws, regulations, and DOE procedures/protocols will be followed to ensure the demolition and disposal of the aboveground structure occurs in a safe, compliant manner, including conducting any additional radiological characterization through confirmation radiological surveys (as necessary) to support demolition and waste disposition.

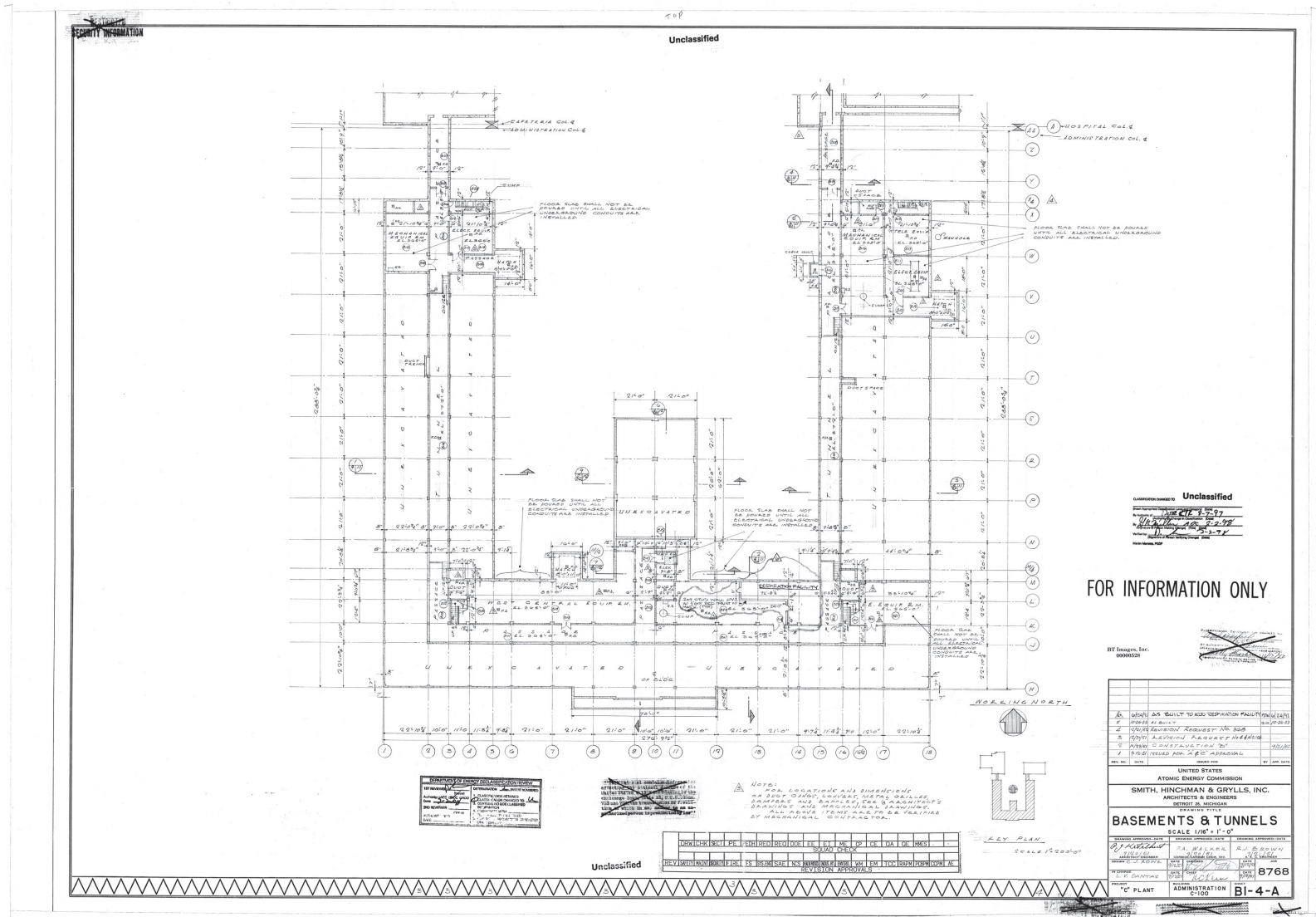
# Conclusion and Recommendations

- As part of the demolition of the aboveground structure, the appropriate best management practices (BMPs) will be evaluated and implemented (as needed) to prevent/minimize the pooling and/or migration of storm water that may come into contact with any contamination that may exist on the pad/subsurface structure(s). For example, the following BMPs will be implemented as necessary:
  - ❑ Radiological surveying will occur following demolition.
  - ❑ Decontamination and/or application of fixatives and/or barriers to contaminated surfaces above regulatory posting limits.
  - ❑ Isolation measures and other types of barriers to minimize and/or control runoff/pooling of contaminated storm water [e.g., seal inlets to drains/sumps/subsurface structure(s)].
  
- Based on the unknown quantity and date of a chromated water release in the basement; a sheen in water in the elevator pit; and floor stains and cracks in the basement floor, it is recommended that the underlying slab and soils undergo further CERCLA evaluation as part of a future site evaluation conducted under Appendix 4 of the SMP.
  - ❑ Consideration will be given to coordinate the timing of the future C-100 site evaluation to occur prior to removal of the C-100 aboveground structure. The development of a schedule for future site evaluations, including C-100, will be addressed as part of the fiscal year 2022 or 2023 SMP scoping.
  
- Removal of the C-100 facility will be documented in the appropriate annual SMP revision.

# C-100 Administrative Building

## BACKUP INFORMATION

# C-100 Engineering Drawings



Engineering Drawing B1-4-A\_0001\_0006, dated 1992

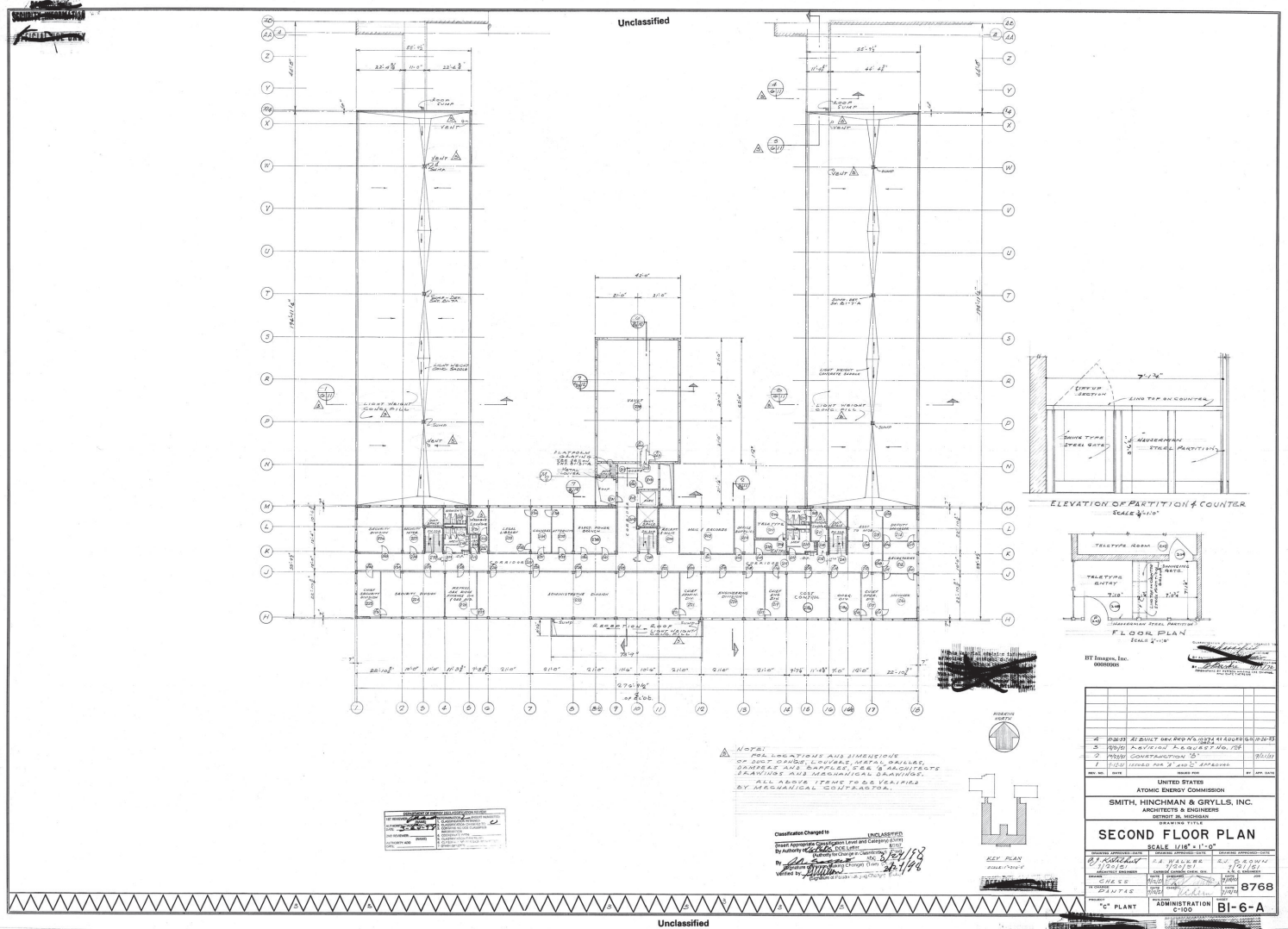








# C-100 Engineering Drawings



Engineering Drawing B1-6-A\_0001\_0004, dated 1953

# C-100 Sources

- Engineering Drawings:
  - Provided in presentation
- Databases:
  - USEC's BPS
  - Issues Management System
  - Regulatory Compliance Archive Spill Log (pre-2018)
  - PCB Database (1989 – 2021)
  - Active GSAs and SAAs Master List
- Employee Interviews:
  - Facility Manager (8 years plant expertise)
  - Compliance Subject Matter Expert (45 years plant expertise)
- Documents:
  - Existing Source Operating Permit Application May 11, 1992
  - Report for Environmental Audit Supporting Transition of the Gaseous Diffusion Plants to the United States Enrichment Corporation, DOE/OR/1087&V5, June 1993
  - Paducah Gaseous Diffusion Plant Sitewide Strategy Facility Background Information, FPDP-RPT-0021, May 2016
  - Final TSCA FFCA Modification May 30, 2017
  - Final Title V Air Permit, September 12, 2021