



Paducah Gaseous Diffusion Plant
Citizens Advisory Board

Chair

Judy Clayton

Chair-Elect

Ralph Young

Board Members

John Anderson

Allen Burnett

Robert Coleman

David Franklin

Jonathan Hines

Shirley Lanier

Margaret Morgan

Dianne O'Brien

Elton Priddy

Alex Roman

Mark Sullivan

Don Swearingen

May Louise Zumwalt

Board Liaisons

Reinhard Knerr

DOE DDFO

Buz Smith

DOE Federal Coordinator

Ed Winner

Division of Waste
Management

Turpin Ballard

Environmental Protection
Agency

Tim Kreher

Fish and Wildlife Resources

Stephanie Brock

Radiation Health Branch

Support Services

EHI Consultants, Inc.

111 Memorial Drive

Paducah, KY 42001

Phone 270.554.3004

Fax 270.554.3248

www.pgdpcab.org

info@pgdpcab.org

Subcommittee Meeting Agenda

APRIL 15, 2010

6:00 p.m. – 7:00 p.m.

Groundwater Staff: Eric Roberts

Members: Maggie Morgan, Chair, David Franklin, Bobby Lee, Dianne O'Brien, Ralph Young

Agenda Item(s)

- CAB Member volunteers to participate in Eco-Fair May 11 & 12 (13 & 14 in case of rain-out).
- Surface Water Offsite

APRIL 15, 2010

7:00 p.m. – 8:00 p.m.

Community Outreach Staff: Eric Roberts

Members: Robert Coleman, Chair, David Franklin, Shirley Lanier, Elton Priddy, Alex Roman, Mark Sullivan, Don Swearingen

Agenda Item(s)

- CAB Member volunteers to participate in Eco-Fair May 11 & 12 (13 & 14 in case of rain-out).
- Eco-Fair

Future End Use Staff: Suzanne Clinton

Members: Ralph Young, Chair, Allen Burnett, Judy Clayton, Maggie Morgan, Dianne O'Brien, John Anderson, Jonathan Hines, May Louise Zumwalt

Agenda Item(s)

- CAB Member volunteers to participate in Eco-Fair May 11 & 12 (13 & 14 in case of rain-out).
- DUF6 Report
- KRCEE, Review Focus Group Activity

PUBLIC COMMENTS

8:00 p.m. – 8:15 p.m.

Solving Cleanup Challenges Through Risk Reduction

**Surface Water
Operable Unit
RI/FS Scoping**



**Briefing for Paducah
CAB Subcommittee**

April 15, 2010



Surface Water Overview

Two Actions

- On-site Hot Spot Removal (now underway)
- Off-site Remedial (in scoping)

Off-site Action Remedial Investigation Scope

- 16 Solid Waste Management Units (SWMUs) including
 - Bayou and Little Bayou creeks
 - Rubble piles, dams and rubble used for bank stabilization in creeks
 - Miscellaneous SWMUs (including a former monitoring station on Bayou Creek, Horseshoe Lagoon, and portion of Yellow Water line associated with the former Kentucky Ordnance Works)
- Sitewide baseline ecological risk assessment

Scoping Process

Purpose of scoping is to reach an understanding of sampling necessary to assess risks to human and ecological receptors and determine appropriate action

Scoping meetings -> Work Plan development

Scoping Team includes representatives from

- U.S. Environmental Protection Agency
- Commonwealth of Kentucky (Division of Waste Management and Radiation Health Branch)
- U.S. and Kentucky Fish and Wildlife Services
- West Kentucky Wildlife Management Area
- DOE and subcontractors

Scoping Approach

- Develop **scoping summaries** for each SWMU (what do we know about each SWMU already?)
- **Group** SWMUs into **SWMU types** so that a common approach is developed for each type (i.e., creek SWMU, rubble pile SWMU, etc.)
- Develop a desired **end state** of each SWMU type (who/what are we trying to protect and to what extent?)
- Develop **conceptual site models** for the various SWMU types (who/what is affected and how?)
- Develop **investigation approaches** for each SWMU type to develop data that answers the above questions
- Develop **Sampling and Analysis Plans** (SAPs) for each SWMU

Expected Results of Scoping for SWMUs

- What **data do we already have** that can help us get answers more quickly or will supplement new data?
- What **media** need to be sampled?
- What **types** of samples do we need? (i.e., discrete or composite? random or biased?)
- How **many** samples do we need? (for both nature of contamination and extent)
- What information might result in a decision for an **early action**?
- What do we need to analyze for (**chemical/physical properties**) and what are the appropriate analytical **methods**?

Sitewide Ecological Risk Assessment

- A sitewide ecological risk assessment was assigned into the Surface Water Off-Site scope per FFA managers
- Scoping team formed an **ecological working group** to develop sampling requirements to assess off-site comprehensive sitewide ecological risks
- Physical area of assessment is not limited to individual SWMUs but encompasses habitat for ecological receptors who might come into contact with soil, sediment, and surface water affected by PGDP activities
- Ecological working group discussions conducted beginning in December 2009 - ongoing

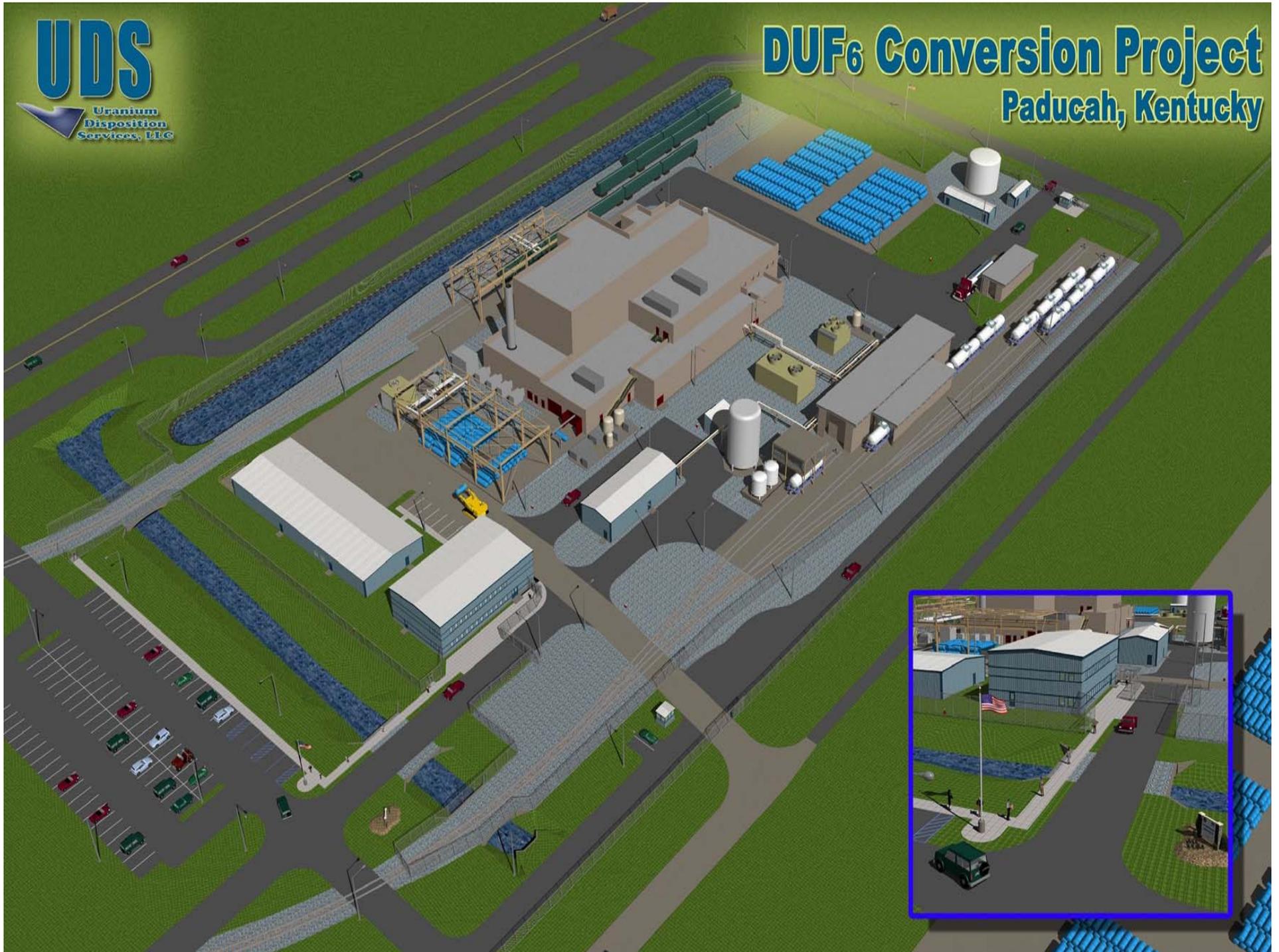
Project Schedule

- Scoping team meetings started October 2009–ongoing
- Scoping team determined no formal scoping document required to be submitted by DOE to regulatory agencies preferring to have a more open and continuous dialogue to ensure constructive progress; agreements reached during the scoping process are being documented
- Work Plan scheduled for April 2011

UDS

Uranium
Disposition
Services, LLC

DUF₆ Conversion Project Paducah, Kentucky



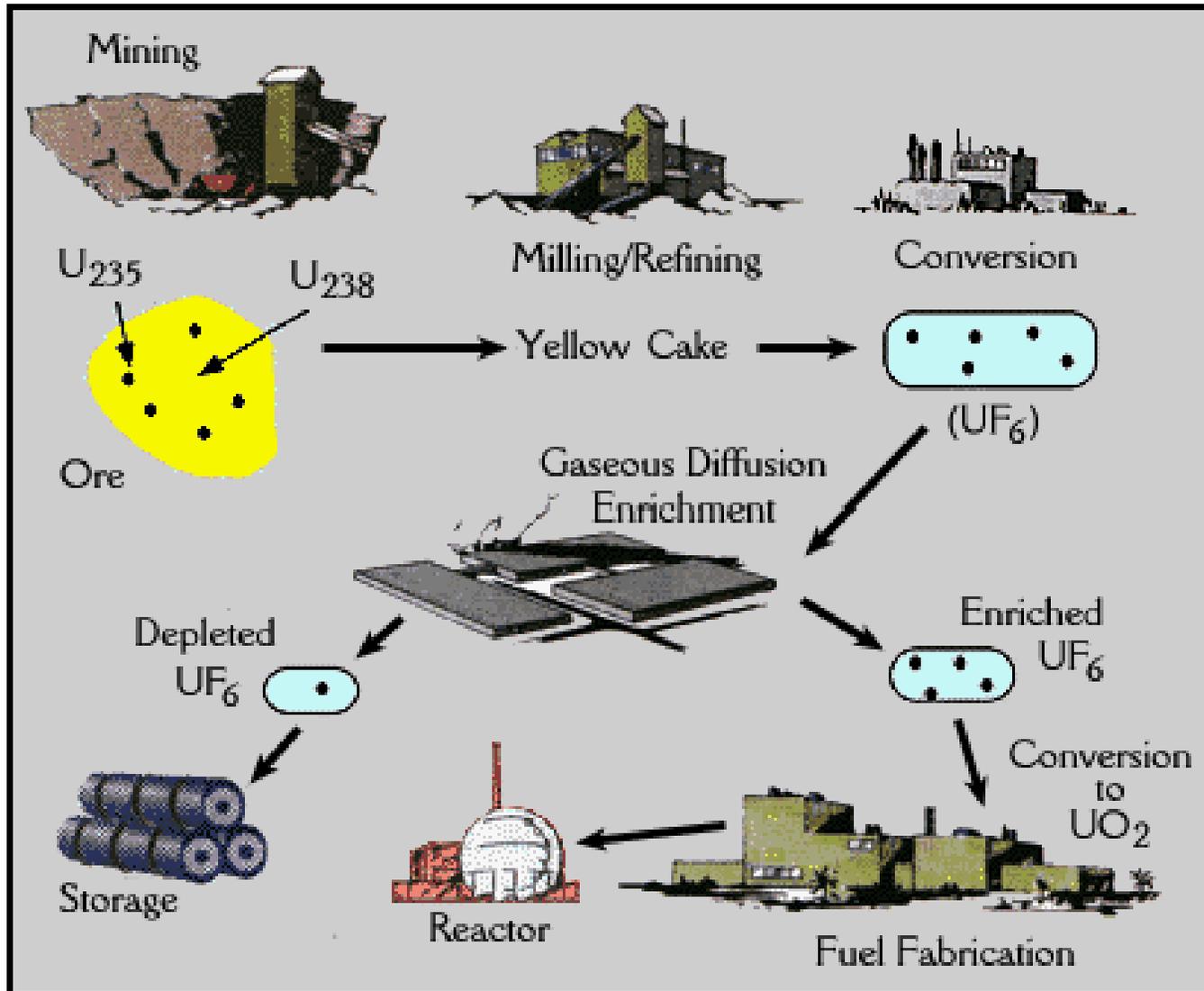


Agenda

- I. Introduction
- II. Brief History of DUF6
- III. UDS Project – Background
- IV. DUF6 Conversion
- v. Cylinder Work Flow
- VI. HF Purity
- vii. Full Production – Schedule Forward

Mark B. Mattheiss

Nuclear Fuel Cycle

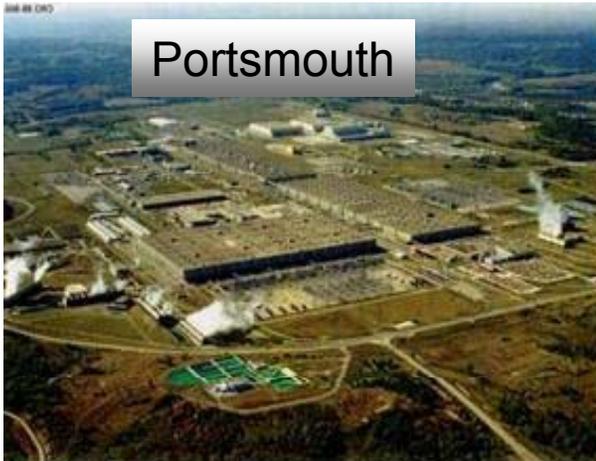


- Uranium occurs in nature as an oxide
- Converted to UF_6 to be enriched
 - Enriched has $> 0.7\%$ U-235:
 - Depleted has $< 0.7\%$ U-235
- Enriched U is converted back to oxide for reactor fuel
- Depleted U has been stored as UF_6 since it was produced



Purpose of Conversion Facility

- Convert the Department of Energy's (DOE) existing depleted uranium hexafluoride (DUF6) inventory to a more stable form, uranium oxide, for beneficial use/reuse and/or disposal.



This project addresses the DOE Depleted Uranium Hexafluoride Inventory

Location	Total Cylinders*	Total Depleted UF ₆ (metric tons)
Paducah, Kentucky	37,000	450,000
Portsmouth, Ohio	16,000	200,000
Oak Ridge, Tennessee	4,800	50,000
Total	57,800	700,000

* This project also manages cylinders containing LEU and NU

DUF₆ Conversion

- Based on a proven technology in use in Richland, Washington and Lingen, Germany
- Designed to process the current inventory of depleted UF₆ material in 25 years.
- Two-step chemical reaction
 - Steam and DUF₆ produce uranyl fluoride and HF acid

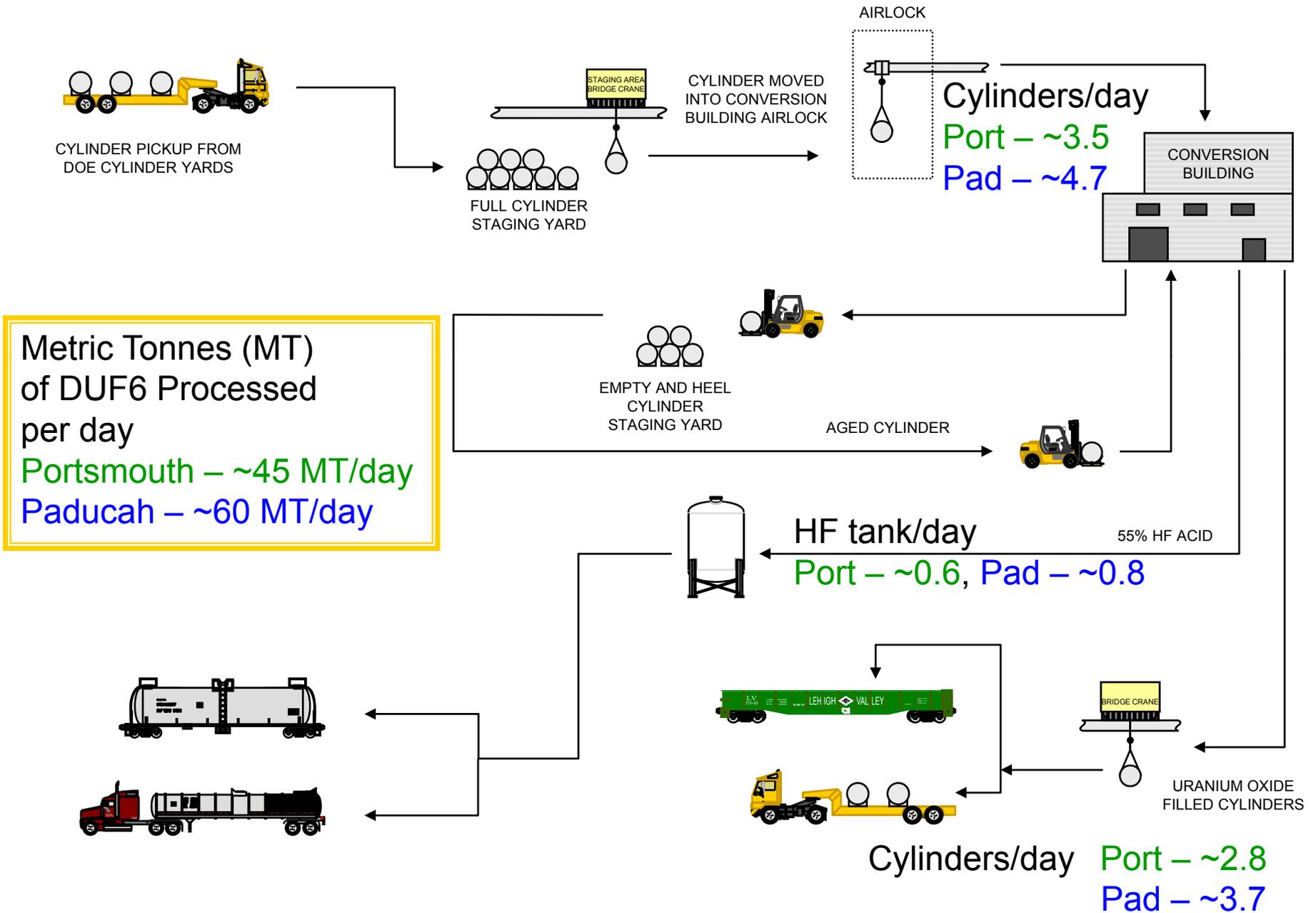


- Uranyl fluoride is densified and defluorinated with hydrogen and steam producing uranium oxide



- The Uranium oxide will be processed for disposal unless a re-use is found
- The aqueous HF acid will be sold to a commercial supplier for industrial use

Cylinder and By-Product Work Flow



Uranium concentration in natural materials

Material	U Concentration, pCi/g
Hydrofluoric Acid from DUF ₆ Conversion	<2.6 (3 pCi/mL)
Soils ^a	0.24 - 5.8
Shale ^b	2.2
Beach Sand ^b	2.2
All Rock ^b	0.41 - 3.3
Phosphate fertilizer (P ₂ O ₅) ^c	220

^a T. E. Myrick, et. al, , ORNL/TM-7343, Nov. 1981.

^b National Research Council, *Evaluation of Guidelines for Exposures to Technologically Enhanced NORM*, 1999.

^c World Information Service on Energy, Uranium Project.

Transportation - Aqueous HF

- Shipments will be a combination of both truck and rail
- Each truck shipment will contain approximately 4000 gallons
 - Maximum of 14 shipments each week
- Each railcar shipment will contain approximately 18,000 gallons
 - Maximum of 3 railcars each week





Looking Forward

- **Upcoming Milestone Dates:**

- **April 2010**
 - Management Self Assessment (MSA)
- **June 7, 2010**
 - Contractor Operational Readiness Review (CORR)
- **July 6, 2010**
 - Department of Energy Operational Readiness Review (DORR)
- **August 23, 2010**
 - Authorization to Introduce DUF6



