

DuPont Chambers Works FUSRAP Site Proposed Cleanup Plan Meeting Agenda

- Greetings and Introductions
- Project History/Overview
- Proposed Cleanup Plan
- Questions
- Public Comment



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Meeting Logistics

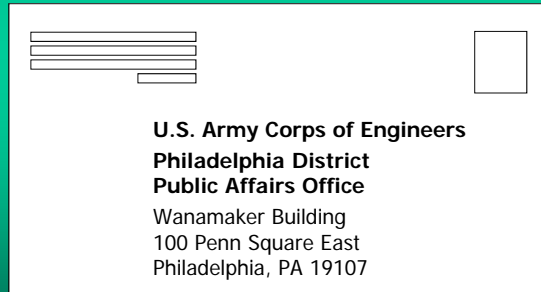
- ✓ Meeting transcript
- ✓ Questions?
- ✓ Formal comment period*for the record*



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3 Ways to Provide Input

- ✓ Tonight during formal comment period
- ✓ Written comments postmarked by Feb. 16th
- ✓ Email comments received via website



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Public Affairs Office
Wanamaker Building
100 Penn Square East
Philadelphia, PA 19107

<http://www.nap.usace.army.mil/missions/fusrap>



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Manhattan Engineer District (MED) Background

- ✓ Work in support of Nation's early atomic energy program
- ✓ 1940s – 1960s
- ✓ Several federal and private sector facilities
- ✓ Research and production level activities

More than 40 locations across the country supported the Nation's early atomic energy program.



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MED Activities at Chambers Works

- ✓ DuPont converted uranium oxides to uranium tetrafluoride and uranium metal
- ✓ End products shipped offsite for uranium enrichment at other locations

The Federal Government called on Chambers Works to support the MED efforts due to its unique manufacturing capabilities and expertise.



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MED Activities at Chambers Works

- ✓ Uranium processing began in late 1942
- ✓ Operations ceased in 1946
- ✓ Decontamination activities conducted
- ✓ Areas released back to DuPont in 1949

FUSRAP

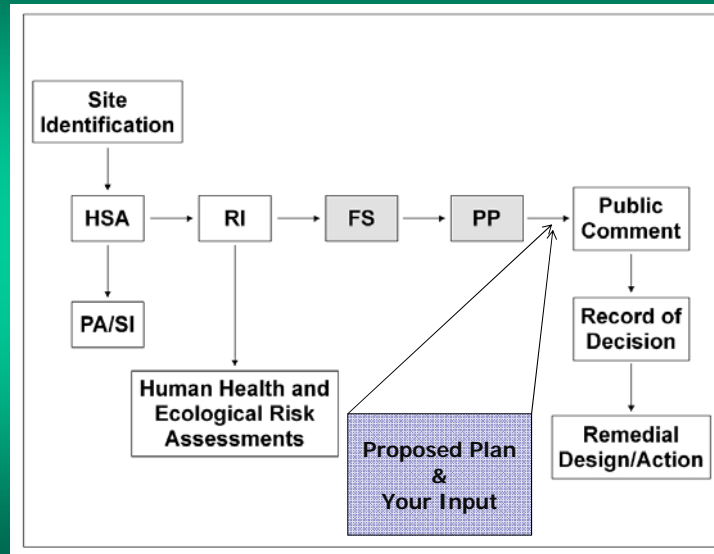
Formerly Utilized Sites Remedial Action Program

Established in 1974



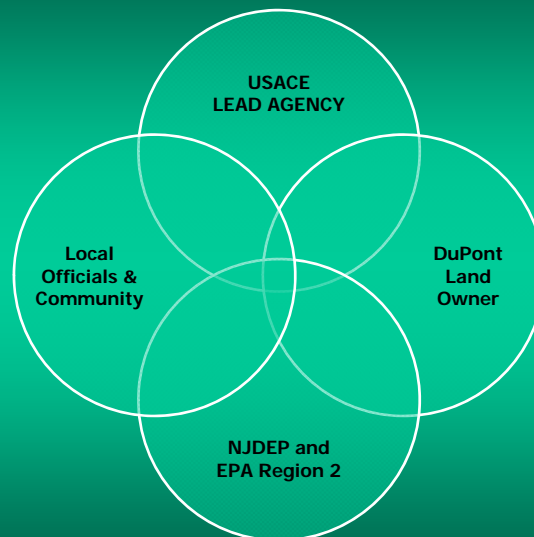
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CERCLA Cleanup Process



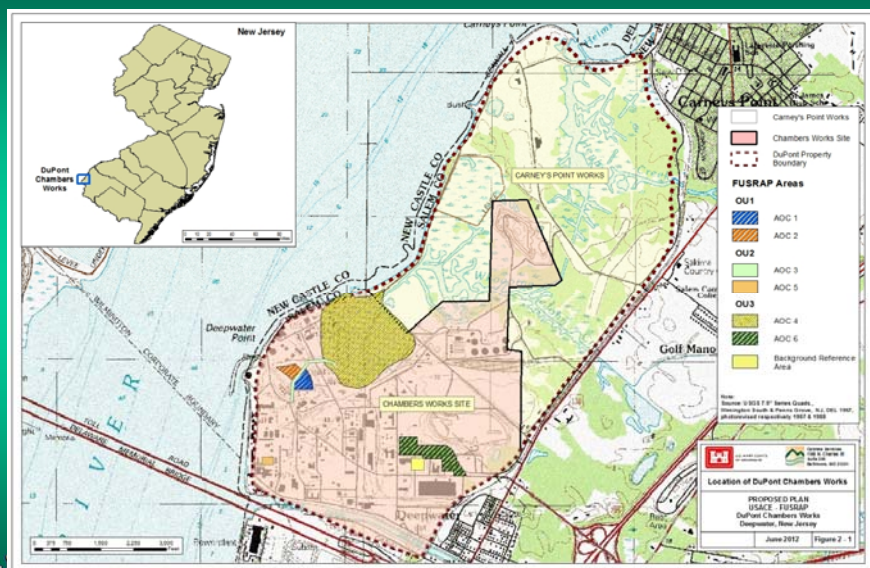
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Environmental Cleanup Stakeholders



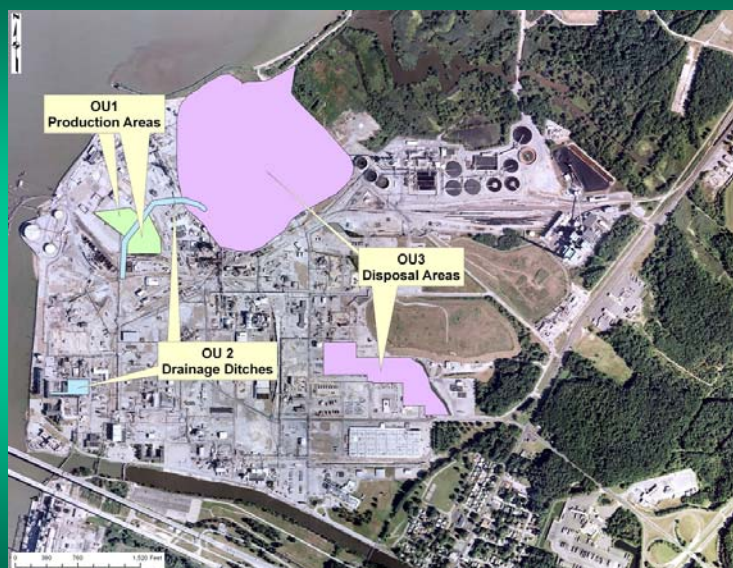
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DuPont Chambers Works, Salem County



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The Site - Operable Units



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Sitewide Remedial Investigation FUSRAP Eligible Contaminants

- Radionuclides Only:

- U_{nat}
- Th-230
- Ra-226



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Environmental Sampling of All Media

	SOIL	SEDIMENT	SURFACE WATER	GROUND- WATER
AOC 1	✓	n/a	n/a	✓
AOC 2	✓	n/a	n/a	✓
AOC 3	✓	✓	✓	✓
AOC 4	✓	n/a	n/a	✓
AOC 5	✓	n/a	n/a	✓
AOC 6	✓	✓	✓	✓
BKG REF	✓	✓	✓	✓



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Investigative Methods

- Geophysical Surveys
- Gamma Walkover Surveys
- Cone Penetrometer Soundings
- Soil Borings
- Surface Water and Sediment Samples
- Monitor Wells
- Test Pits
- Air Monitoring

More than 93,000
data points



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Remedial Investigation Results

- **Soil:** ~ 2.5 acres in OU 1, <0.1 acre in OU 3.
Shallow contamination mostly <8 feet deep.
- **Groundwater:** Little or no migration. Vertical impact <20 ft.
- **Sediment:** Limited impact in drainage ditches near source zones.
- **Surface water:** No impact.

Groundwater is impacted where elevated levels of uranium are found in soil.

No impact to drinking water wells.



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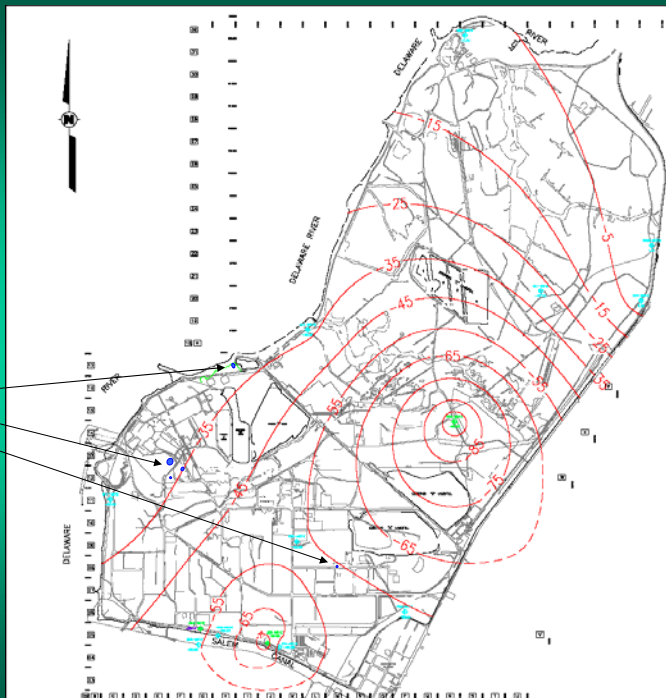
Chambers Works Recovery System (E Aquifer)

Dissolved Uranium

Figure from:
DuPont Corporate Remediation Group
(April 2005)



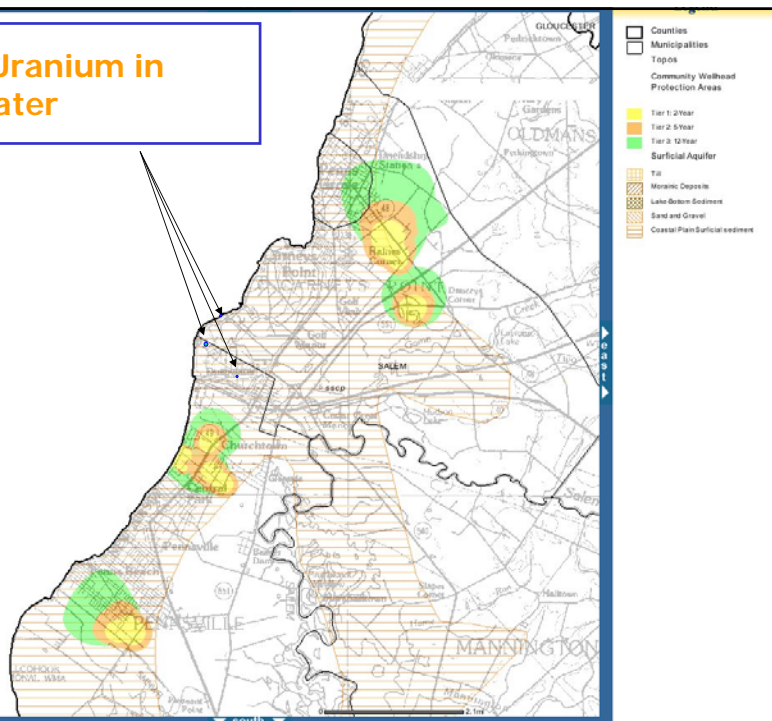
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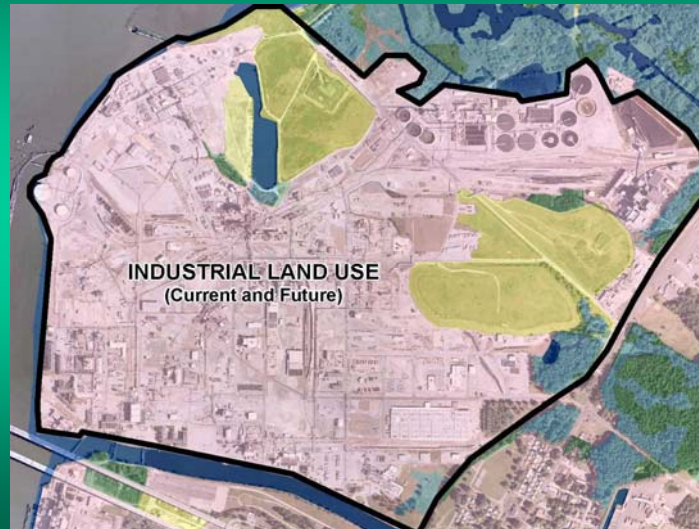
Areas of Uranium in Groundwater



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Exposure, Risk and Cleanup Goals Depend on Land Use



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Risk Assessment in Environmental Cleanups

What is Risk?

- Is there a hazard?
- How bad is it?
- Who will be exposed?



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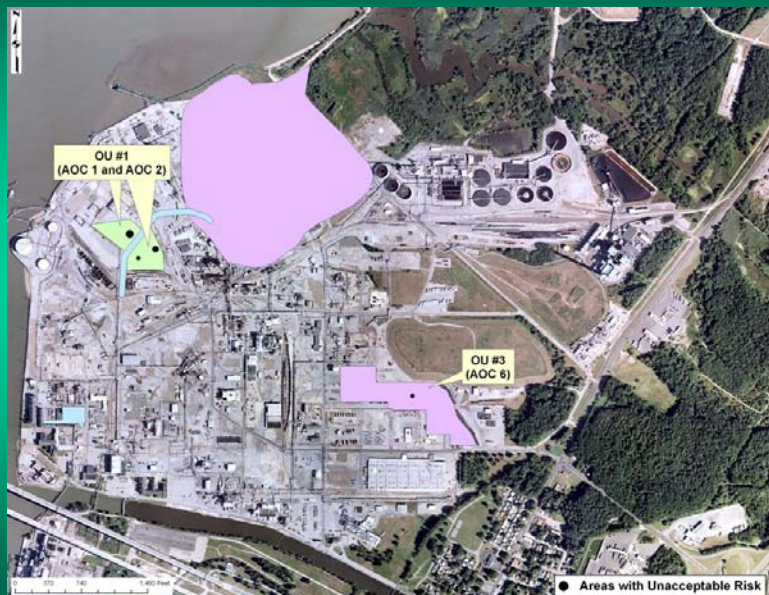
Potential Human Receptors

- **Current Receptor Scenarios**
 - Industrial Worker
 - Construction/Remediation Worker
 - Utility Worker
 - Maintenance Worker
- **Future Receptor Scenario**
 - Construction Worker
 - Residential Receptor (for comparison)



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Unacceptable Risk - OU 1 and OU 3 [AOC 6]



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Feasibility Study Which Cleanup Action is the Best?

- Cleanup goal based on industrial land use
- Construction worker exposure scenario
- No groundwater use



Cleanup Level
65 pCi/g Uranium



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Radiation: Natural & Man-Made Sources

Normal Exposure from Natural Radiation



About 300 mrem/yr

- Radon gas ~ 200 mrem
- Human body 40 mrem
- Rocks, soil 28 mrem
- Cosmic rays 27 mrem



Normal Exposure from Man-Made Radiation



About 320 mrem/yr

- Medical Procedures ~ 300 mrem
- Consumer Products 13 mrem
- Coast to Coast Airplane Round Trips 5 mrem
- Watching TV 1 mrem

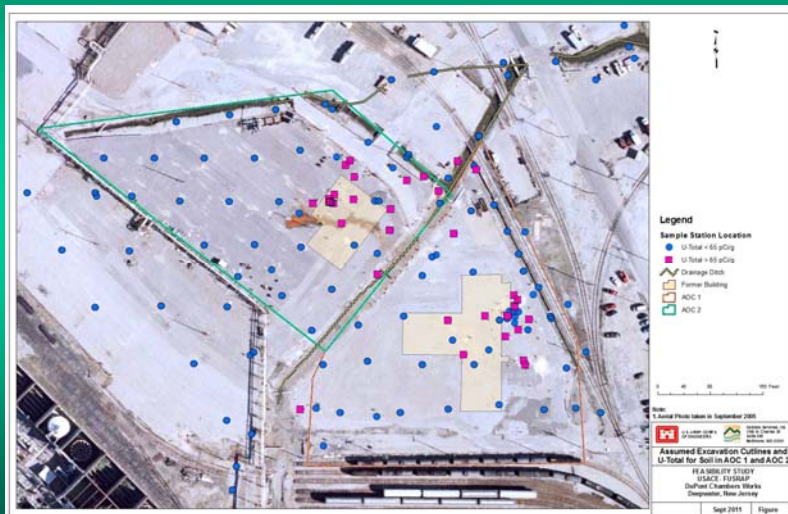


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Our Typical Exposure = 620 mrem/yr

Feasibility Study

OU 1, AOCs 1 and 2



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Feasibility Study

AOC 6



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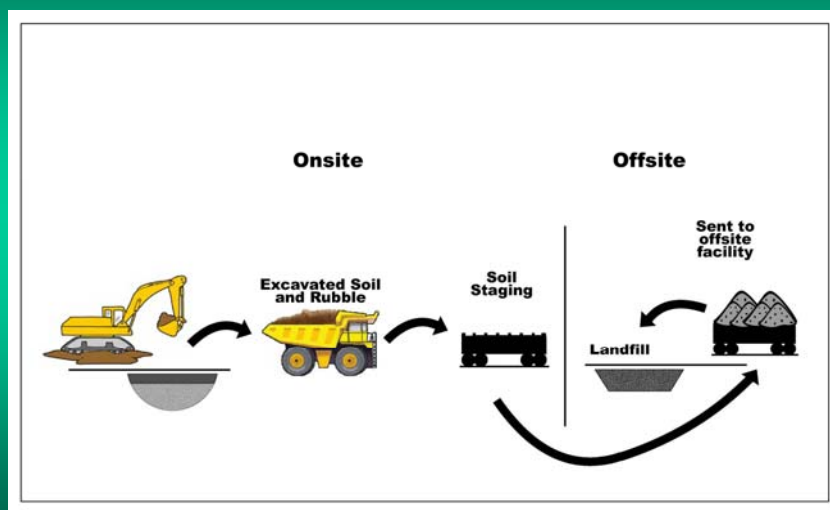
Feasibility Study Soil Alternatives

Alternative	Description of Alternatives
S1	No Action
S2	Excavation Followed by Off-site Disposal
S3	Excavation Followed by Sorting and Off-site Disposal



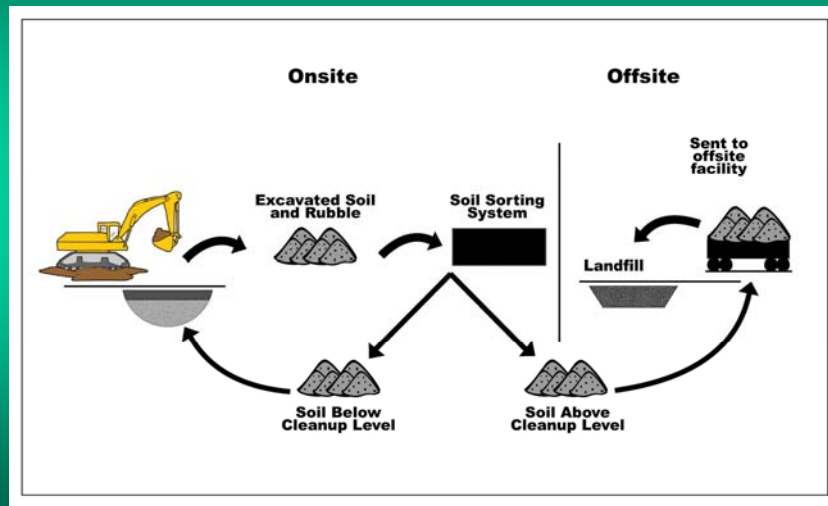
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Soil Alternative S2 Excavation and Offsite Disposal



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Soil Alternative S3 Excavation, Soil Sorting, Offsite Disposal



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Offsite Transportation and Disposal

- Rail and Truck Transport of Radioactive Materials Occurs Every Day
- Rails inspected prior to transport
- Only licensed waste haulers to disposal facility



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Feasibility Study – OU 1 Groundwater



Feasibility Study – AOC 6 Groundwater



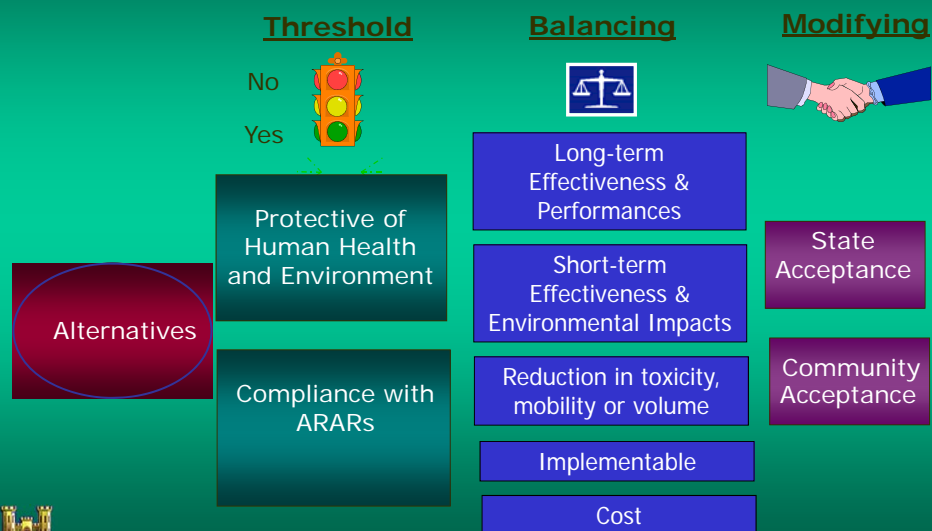
Feasibility Study Groundwater Alternatives

Alternative	Description of Alternatives
GW1	No Action
GW2	Groundwater Pumping & Treatment
GW3	Monitored Natural Attenuation



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Criteria for Evaluation of Alternatives



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Total Cost Estimate for Each Alternative

	Alternatives	Cost (\$ in Millions)
Soil	S1: No Action	0.0
	S2: Excavate & Dispose Offsite	33.0
	S3: Excavate, Sort & Dispose Offsite	30.0
Groundwater	GW1: No Action	0.0
	GW2: Treatment	8.1
	GW3: MNA	6.5



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Purpose of Proposed Plan

- ✓ Summarize alternatives evaluated in FS
- ✓ Describe USACE's preferred alternative
- ✓ Solicit Public Review and Comments on the Proposed Plan

Public comment period – 30 days

January 17, 2013 through February 16, 2013



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Preferred Alternative



Soil: \$33 M

Excavation and Offsite
Disposal (<1 year)

Groundwater: \$6.5 M

Monitored Natural
Attenuation (5 to 30 years)

Continue site access and groundwater restrictions



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What's Next

- Stakeholders (you) submit comments
- USACE reviews and responds
- USACE prepares Responsiveness Summary
- USACE includes Selected Alternative in Record of Decision
- USACE issues Public Notice (ROD)
- Start cleanup: 2014



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Questions?
Comments?



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Latest Announcements

Proposed Plan Announced

The public is invited to review and comment on the Proposed Plan and related documents for cleanup of radiological contamination at the DuPont Chambers Works FUSRAP Site. Documents may be reviewed at the Pennsville Public Library or electronic copies are available here.

Meeting announcements are made via email, postcard mailings, and newspaper notices. Be sure to get on our mailing list and look for notices in the South Jersey Times, Sunday and Wednesday editions and on this website. Meeting information and summaries are provided in the FUSRAP Meeting Information Section. Should you have any questions please don't hesitate to contact Mike Hart, USACE Project Manager at 215-856-6512 or the Philadelphia District Public Affairs Office at 215-856-8515.

Public Meeting

To hear more about the cleanup plans, join us:

Date: Thursday, January 17, 2013
Time: Presentation at 7:00 pm; doors open at 6:30 pm
Where: Hampton Inn, 420 North Broadway, Pennsville, NJ 08070

Preferred Cleanup Alternative

The recommended cleanup alternative is to excavate impacted soil and transport offsite to a permitted disposal facility, specifically designed for the safe disposal of radiological materials. In addition, the Corps recommends monitoring the natural physical and chemical processes in groundwater, after the soil has been removed, as they are expected to reduce remaining contaminant concentrations. You may provide your comments at the public meeting or in writing to the U.S. Army Corps of Engineers Philadelphia District Public Affairs Office (address information at right).

DuPont Chambers Works FUSRAP Site

Areas within the DuPont Chambers Works in Despoyster, New Jersey are being investigated and cleaned up under the Formerly Utilized Sites Remedial Action Program (FUSRAP). The Department of Energy (DOE) created FUSRAP to address radiological contamination at sites used by DOE's predecessor agencies, the Manhattan Engineer District (MED) and the Atomic Energy Commission (AEC) from the 1940s through the 1960s.

DuPont Chambers Works

Proposed Plan

Documents

- Proposed Plan
- Feasibility Study
- Sitewide Remedial Investigation Report
- Baseline Risk Assessment
- Public Notice

Public Comment Opportunities

- Public Notice

Links

- Home
- FUSRAP Background
- DuPont Chambers Works Site
- Site Map
- Community Board Information
- Community Board Directions
- DuPont Chambers Site Photos
- Administrative Record
- Newsletters & Public Notices

Contact

<http://www.nap.usace.army.mil/missions/fusrap>

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