



July 10, 2014

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Agenda for the July Subcommittee Meeting

5:30pm

Call to order, introductions

Review of agenda

- Ken Wheeler, WDA Chair

DOE Comments:

- Jennifer Woodard, Paducah Site Lead

EPA Comments

- Randall Chaffins, Superfund Division Deputy Director

State of Kentucky Comments

- Sec. Len Peters, Energy and Environment Cabinet

Presentations

- Mark Duff, LATA KY Project Manager

Next Steps/Discussion



Paducah Waste Disposal Alternatives Project Part 3

CITIZENS
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July 10, 2014

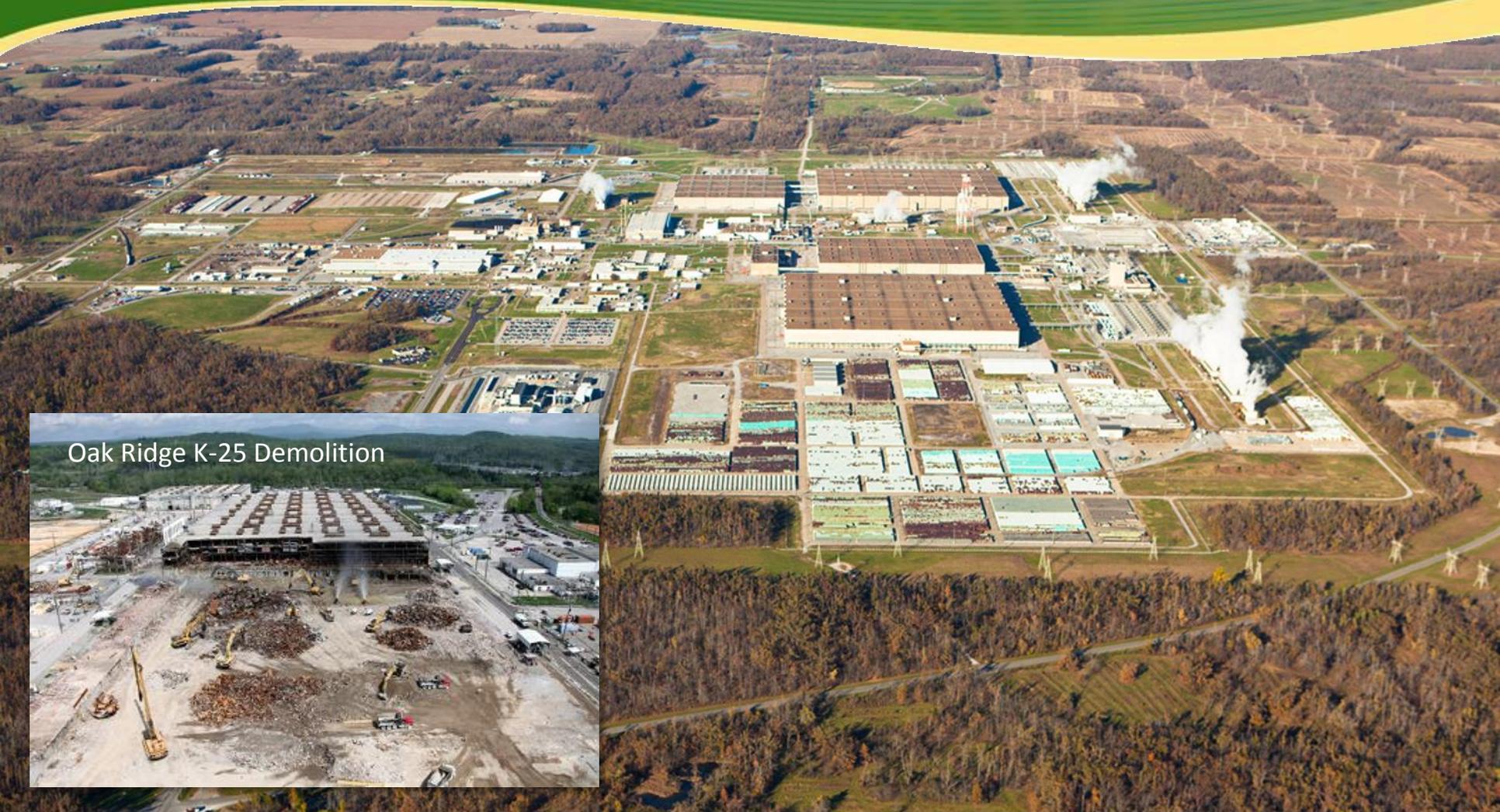
Meeting Objectives

- Present overview of the Waste Disposal Alternatives CERCLA Feasibility Study Evaluation
- Discuss candidate site locations for a potential on-site waste disposal facility



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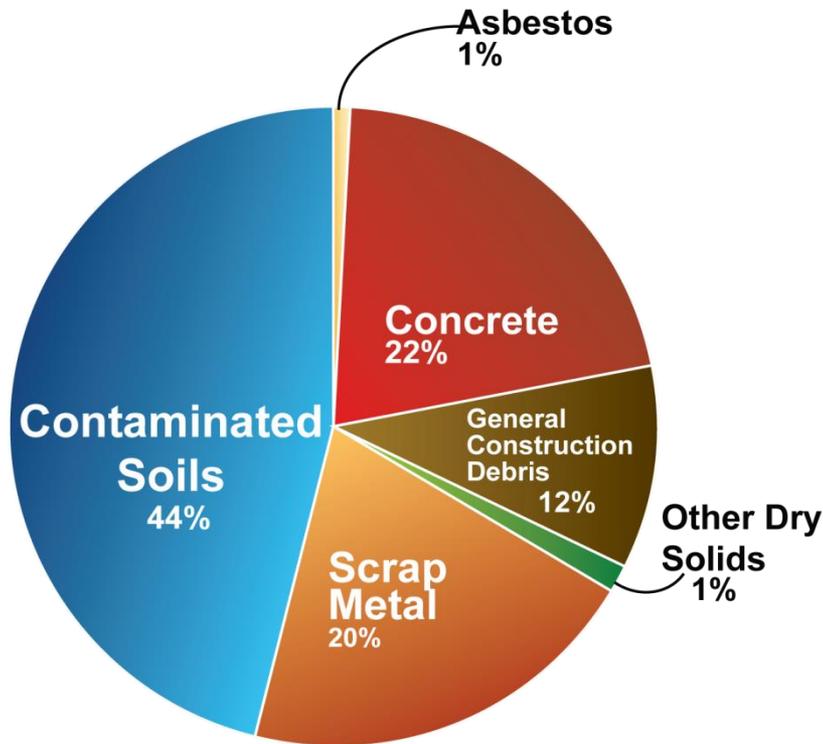
WDA Project Purpose



Continued cleanup of the Paducah Site could generate 3.6M cubic yards (yd³) of waste, about equal to the volume of one of the plant's process buildings.

What Type of Waste will be Generated?*

Estimated Waste Volumes



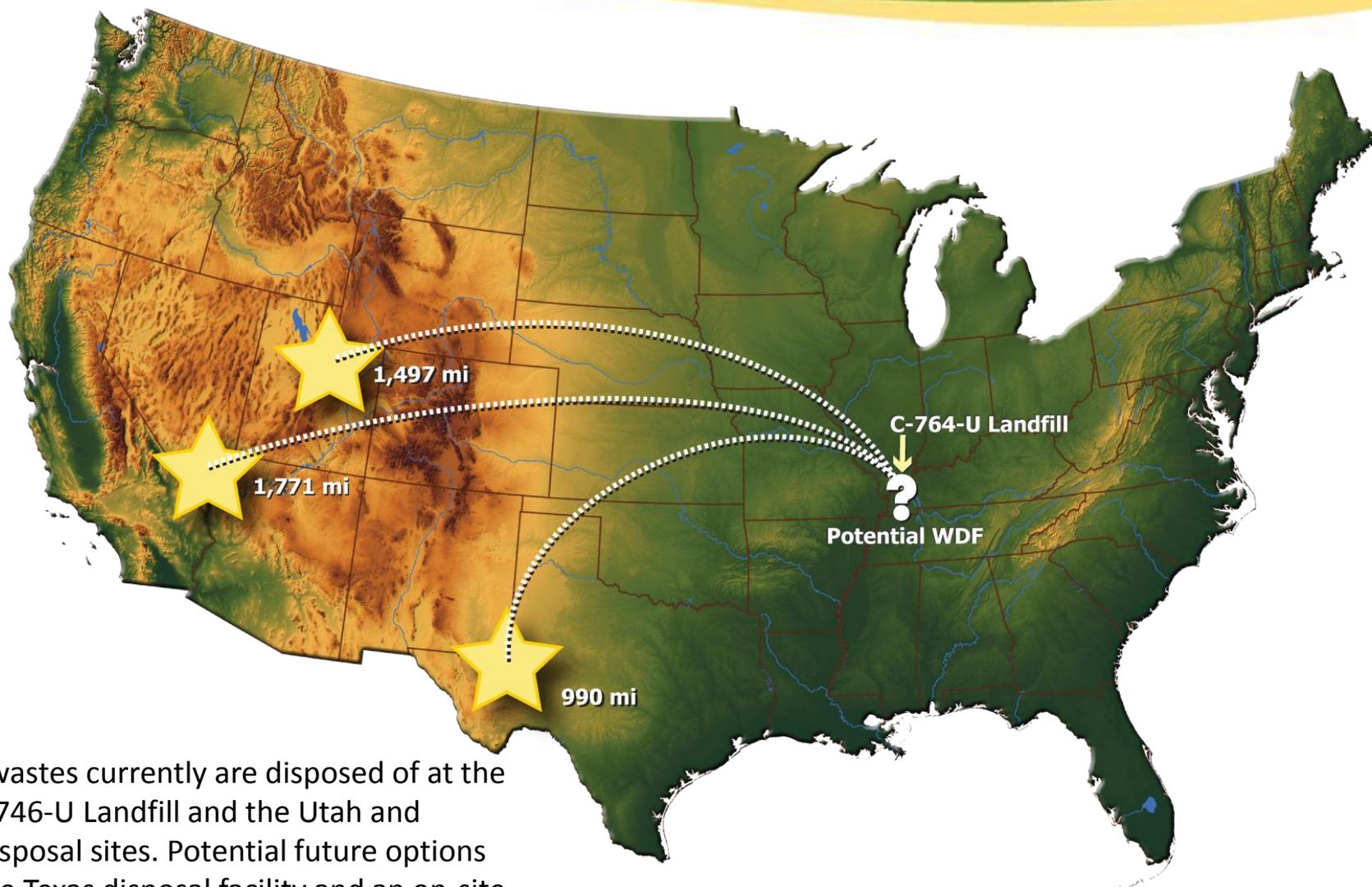
*Waste volumes as shown in the Draft Remedial Investigation Report

Volume Planning

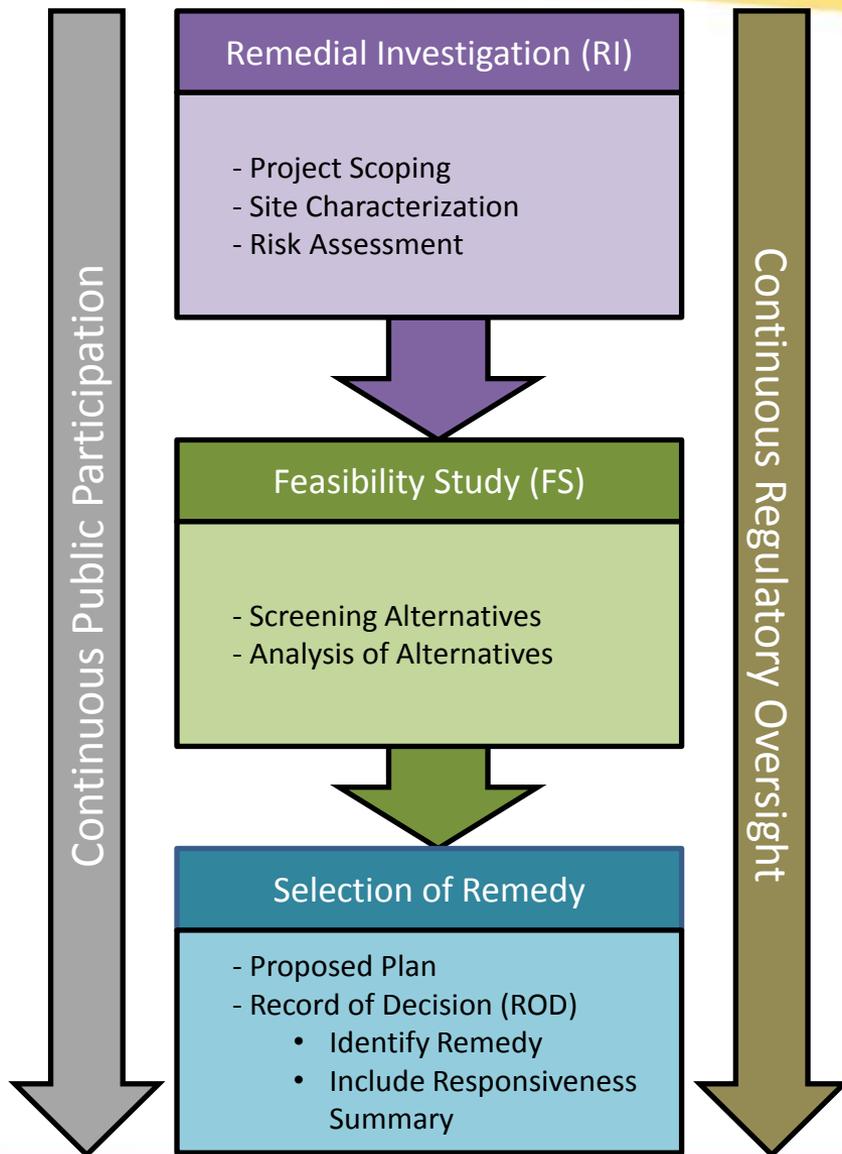
- Approximately 90% of the total waste will be from decontamination and decommissioning (D&D)
- Nearly half of the waste generated will be soil
- The majority of the soils, around 80%, will be from D&D, the remainder will be from the Environmental Remediation projects
- Due to uncertainty in final waste volumes, a range of waste volumes from 1.5-4.0 million cubic yards (mcy) was assessed in the Draft Remedial Investigation Report for each alternative



Waste volume range in millions of cubic yards.



Paducah wastes currently are disposed of at the on-site C-746-U Landfill and the Utah and Nevada disposal sites. Potential future options include the Texas disposal facility and an on-site waste disposal facility (OSWDF).



Alternative 1—No Action

- Project-by-Project decisions
- On-site disposal of waste that meets the existing C-746-U waste acceptance criteria
- Off-site disposal of waste that does not meet the C-746-U waste acceptance criteria

Alternative 2—Off-site

- Single Programmatic decision
- On-site disposal of waste that meets the existing C-746-U waste acceptance criteria
- Off-site disposal of waste that does not meet the C-746-U waste acceptance criteria

Alternative 3—On-site

- Single Programmatic decision
- On-site disposal of waste that meets the existing C-746-U waste acceptance criteria
- Construct a new on-site waste disposal facility (OSWDF) with expanded waste acceptance criteria
- Off-site disposal of waste that does not meet the C-746-U or OSWDF waste acceptance criteria

Comparing the Alternatives

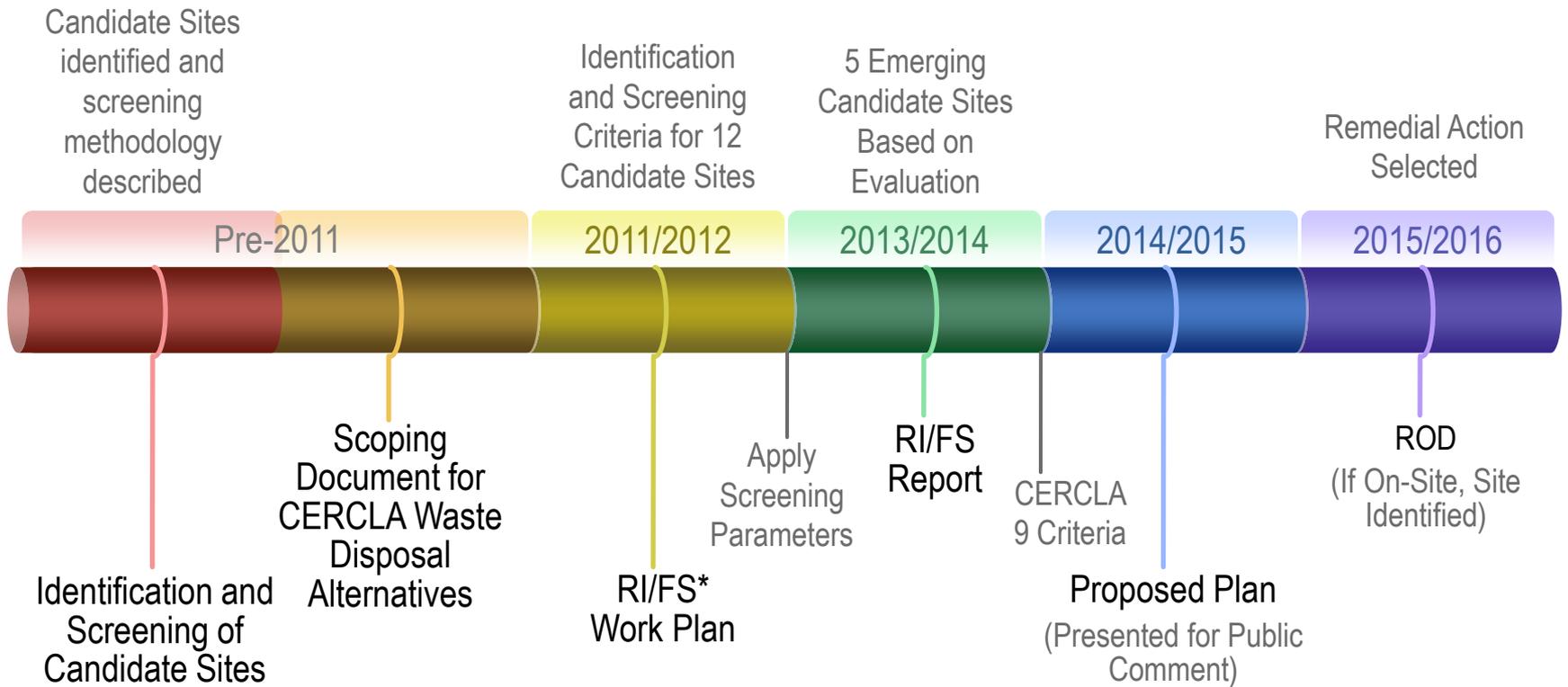
CERCLA Evaluation Criteria	No Action Alternative	Off-site Alternative	On-site Alternative
1. Overall protection of human health and the environment	✓	✓	✓
2. Comply with federal or state regulations or obtain waiver(s)	✓	✓	✓*
3. Long-term effectiveness and permanence	✓	✓	✓
4. Reduction of contaminant toxicity, mobility, or volume through treatment	Not applicable to this project		
5. Short-term effectiveness	✓	✓	✓
6. Implementability	✓	✓	✓
7. NPV Cost**	\$1.3B (\$800M-\$2.1B)	\$1.3B (\$800M-\$2.1B)	\$800M (\$640M-\$850M)
8. State acceptance	Addressed as part of the Proposed Plan public comment period and ROD Responsiveness Summary		
9. Community acceptance			

*The On-site alternative would require a waiver that pertains to TSCA waste (PCB and electrical).

**The net present value (NPV) cost represents future cost in today's dollars for the base case waste volume scenario.

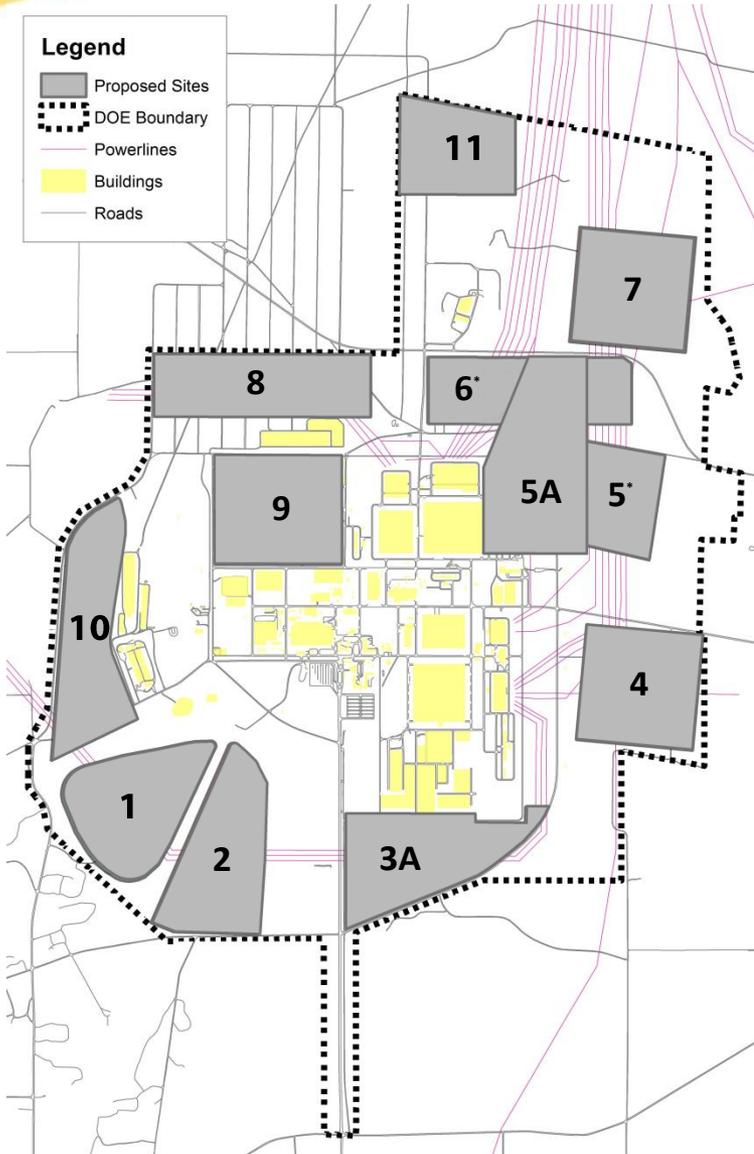
If the On-site Alternative is selected, where would a facility be located?

Candidate Site Identification and Evaluation Process



*Remedial Investigation/Feasibility Study

Candidate Site Identification & Initial Screening



Site	Available Area	Floodplains	Seismic	Comments
1	✓	✓	✓	Passes
2	X	X	✓	Fails - 30% floodplains
3A	✓	✓	✓	Passes
4	X	X	✓	Fails - 24% floodplains
5	*	✓	✓	36% TVA power lines
5A	✓	✓	✓	Passes
6	*	✓	✓	35% TVA power lines
7	X	X	✓	Fails - 25% floodplains/22% TVA power lines
8	X	✓	✓	Fails - 25% wetlands
9	✓	✓	✓	Passes
10	X	X	✓	Fails - 29% floodplains
11	✓	✓	✓	Passes



*Sites 5 and 6 initially were screened out due to power lines, but circumstances are changing indicating potential reconfiguration of switchyards.

Candidate Site Secondary Evaluation

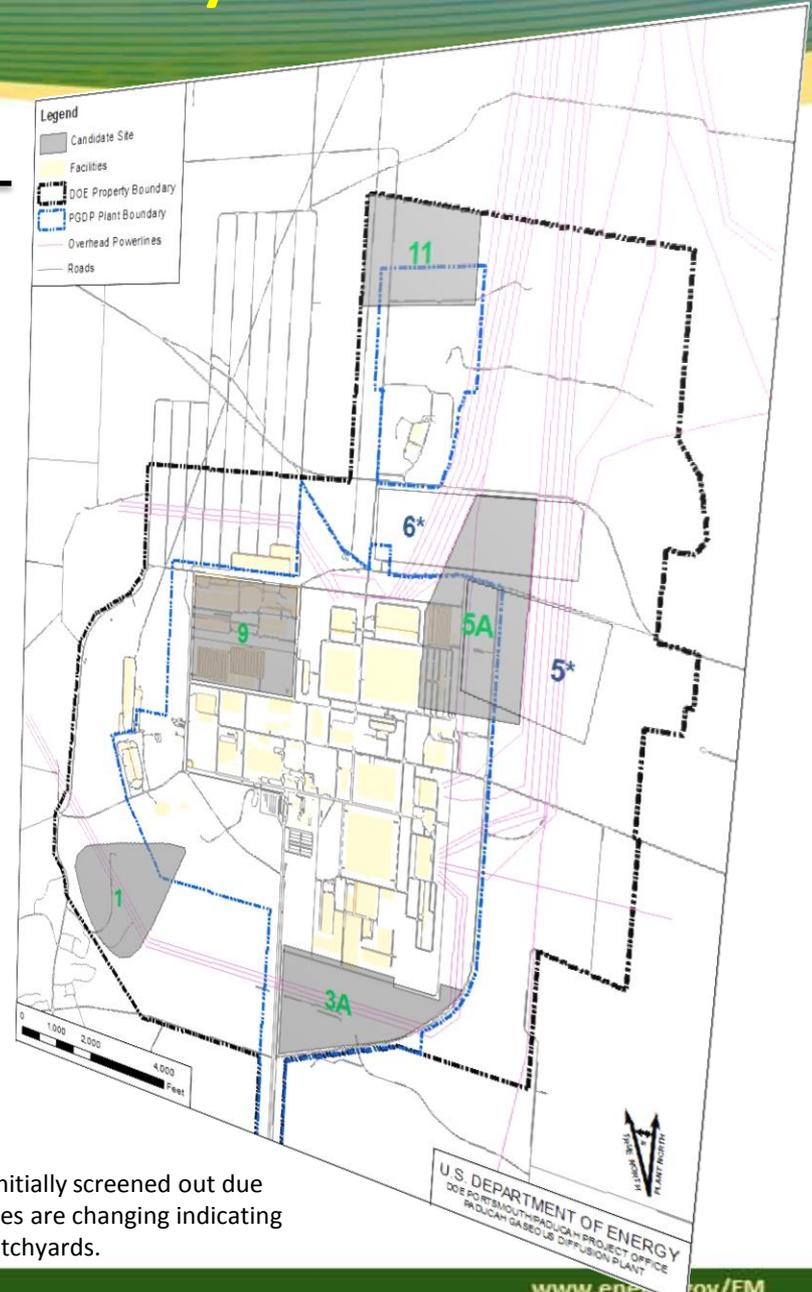
5 Candidate Sites

Secondary Candidate Site Evaluation (Not Pass/Fail)

Secondary Evaluation Parameters

Hydrologic Considerations	NEPA Considerations
Terrain Stability	Information Availability
Site Contamination	Transportation Access
Land Use	Utilities
Buffers	

- 5 Viable Candidate Sites
- Site 1
 - Site 3A
 - Site 5A*
 - Site 9
 - Site 11



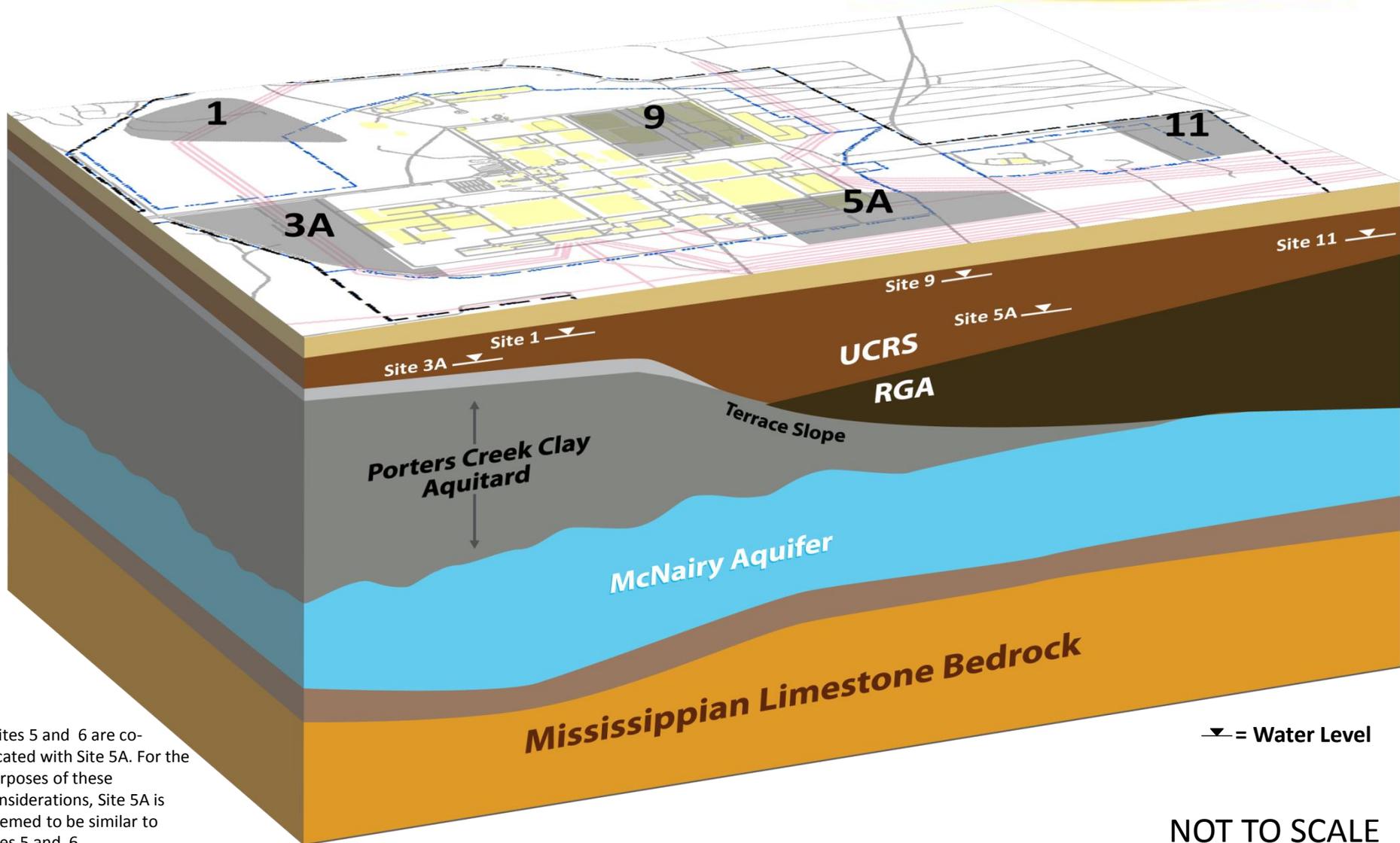
*Portions of Sites 5 and 6 were initially screened out due to power lines, but circumstances are changing indicating potential reconfiguration of switchyards.

Additional information we've gained since initial screening was done:

- Modeling results for the preliminary waste acceptance criteria (PWAC)
- Better hydrogeological information (depth to groundwater)

How have conditions at the site changed?

- Gaseous Diffusion Plant transition from USEC is imminent
- Power lines



*Sites 5 and 6 are co-located with Site 5A. For the purposes of these considerations, Site 5A is deemed to be similar to Sites 5 and 6.

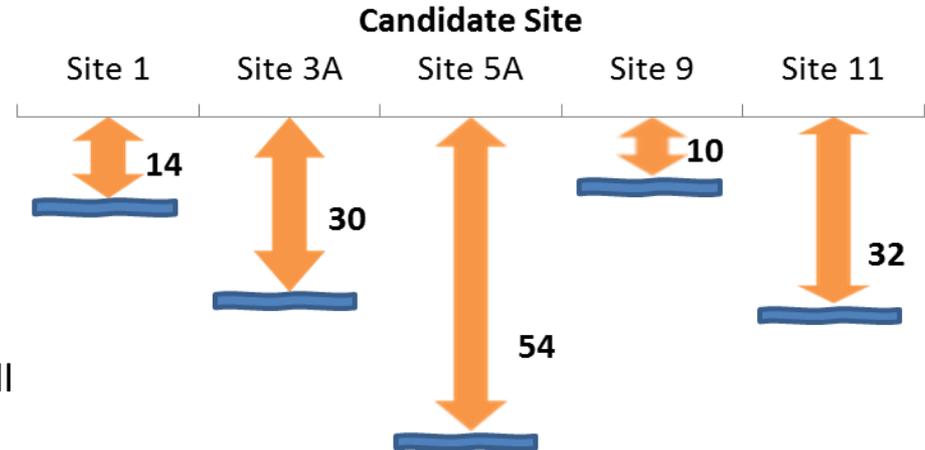
▼ = Water Level

NOT TO SCALE

Average Depth to Groundwater (feet)

Deeper Groundwater Depth =

- Additional margin of safety
- Greater flexibility in design
- Maximize waste volume efficiency
- Better below-ground stability
- Easier subgrade construction
- Less likelihood of groundwater reaching landfill and causing impacts to the landfill liners
- Greater opportunity to monitor for landfill leaks because the groundwater level would be below the leak detection system



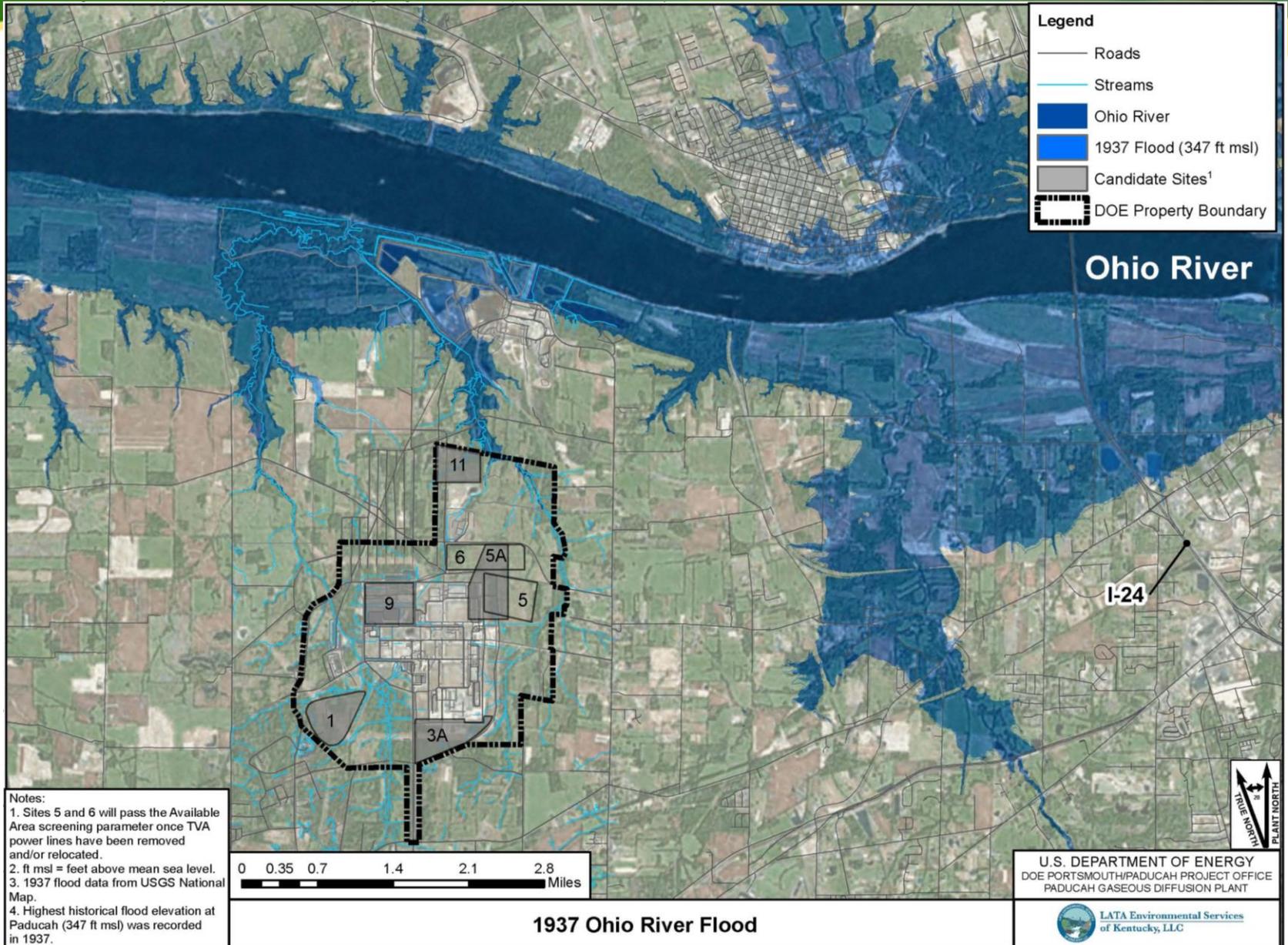
Greater Distance from Floodplains =

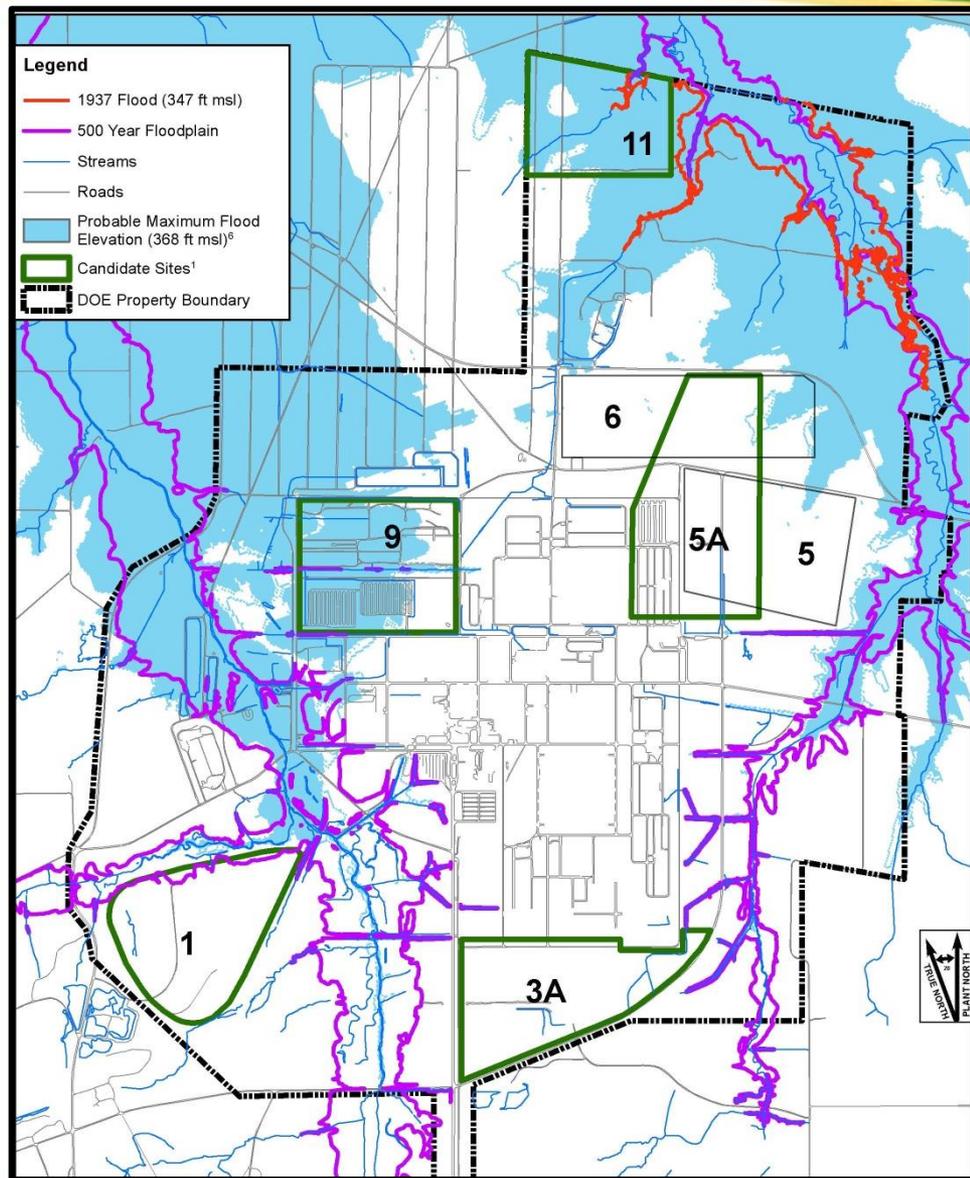
- Greater expansion potential
- Greater protection of aquatic habitat
- Potential for better below-ground stability; easier subgrade construction
- Increased stability; likelihood of improved landfill liner and cap performance

Distance to Floodplains (feet)



1937 Ohio River Flood





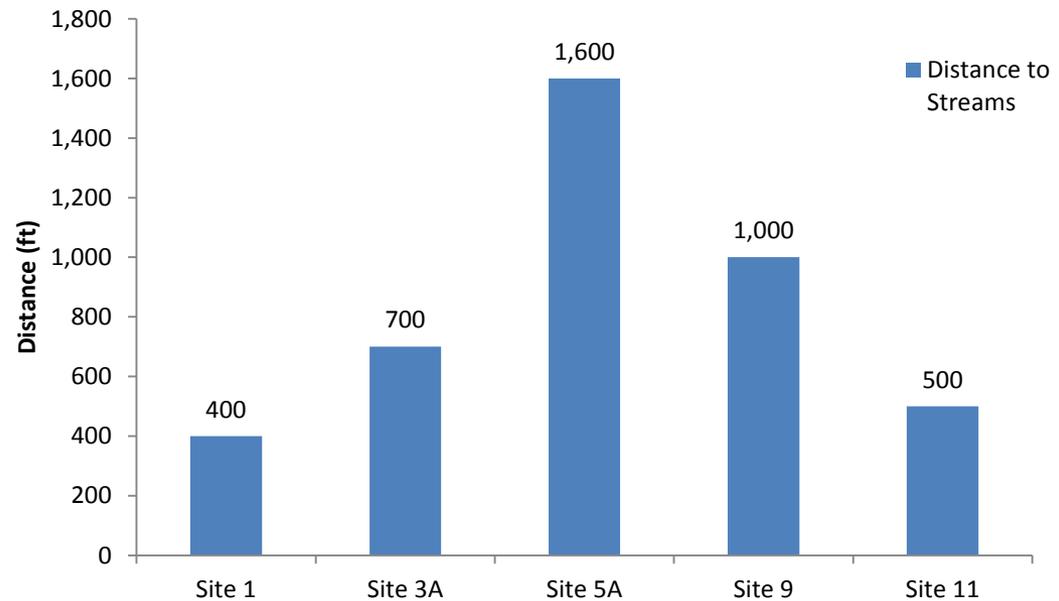
Possible Maximum Flood (PMF) is the largest flood that reasonably may be expected to occur at a given location based on the most severe combination of weather and location-specific conditions that are reasonably possible for that particular drainage basin. (U.S. Bureau of Reclamation)

ft msl = feet above mean sea level

Greater Distance from
Streams =

- Greater expansion potential
- Greater protection of aquatic habitat
- Potential for better below-ground stability; easier subgrade construction
- Increased stability; likelihood of improved landfill liner and cap performance

Distance to Streams (feet)

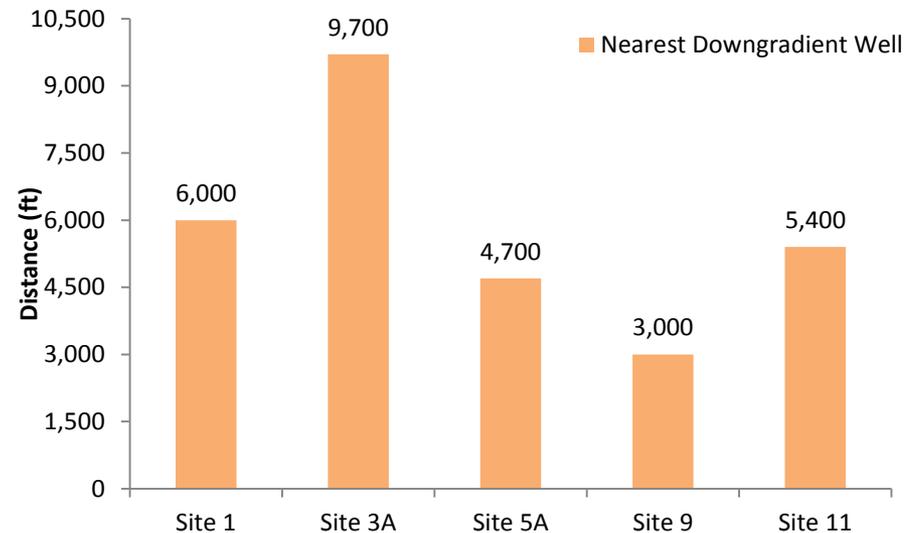


*Distance to streams represents the shortest distance measured from the candidate site boundary to Bayou Creek or Little Bayou Creek.

Nearest Residential Downgradient Well (feet)

Greater Distance to Downgradient Well =

- Additional margin of safety
- Decreased potential for downgradient groundwater contamination



Distance to Property Line (feet)

Greater Distance to Property Line =

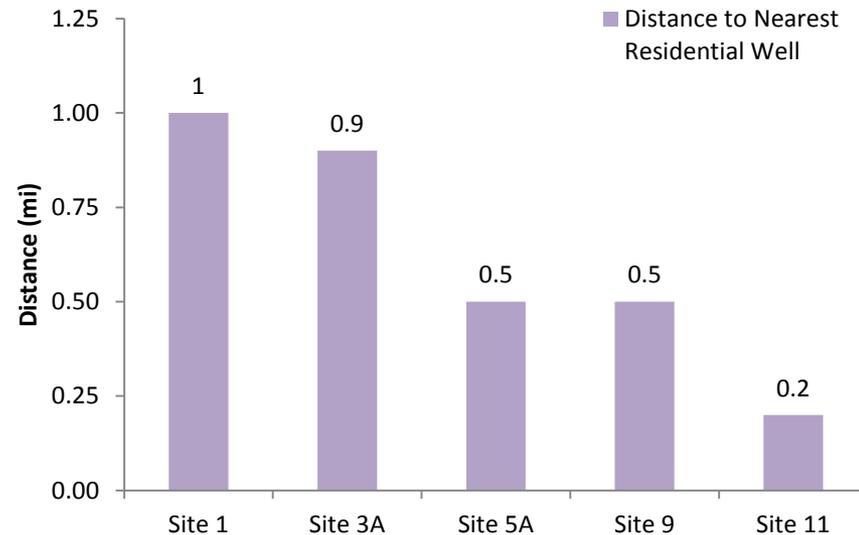
- Additional margin of safety
- Greater expansion potential
- Decreased potential for contaminant migration off-site
- Potential reduction in visual impacts



Distance to Nearest Residential Well (miles)

Greater Distance to Nearest Residential Well =

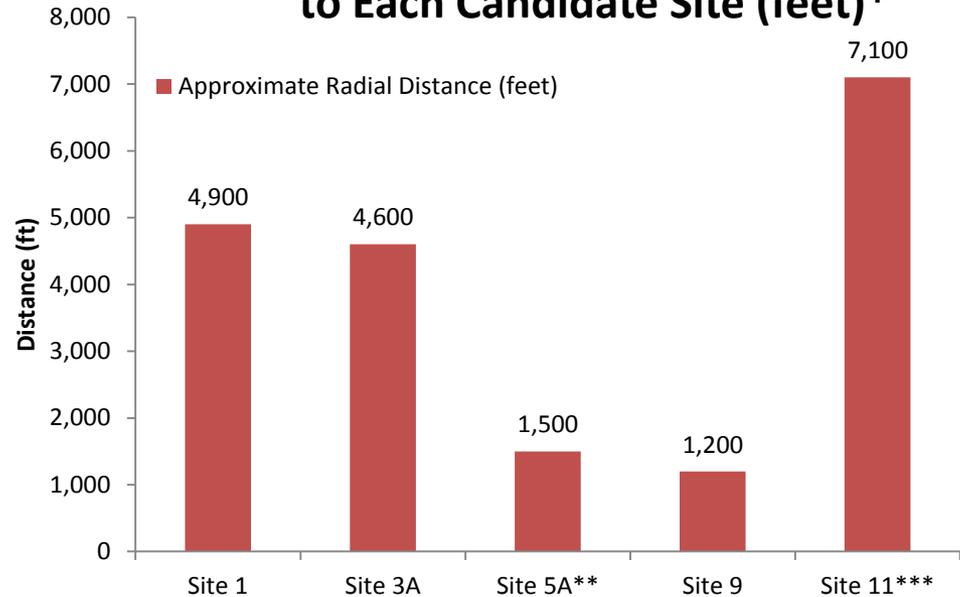
- Additional margin of safety
- Greater expansion potential
- Decreased potential for contaminant migration off-site
- Potential reduction in visual impacts



Smaller Distance to D&D Areas =

- Reduced transportation incident potential
- Increased likelihood of utilizing existing infrastructure (e.g., existing roads)
- Lower fuel requirements and emissions

Average Distance from Center of Plant to Each Candidate Site (feet)*



*Distance measured from center of property to nearest candidate site boundary.

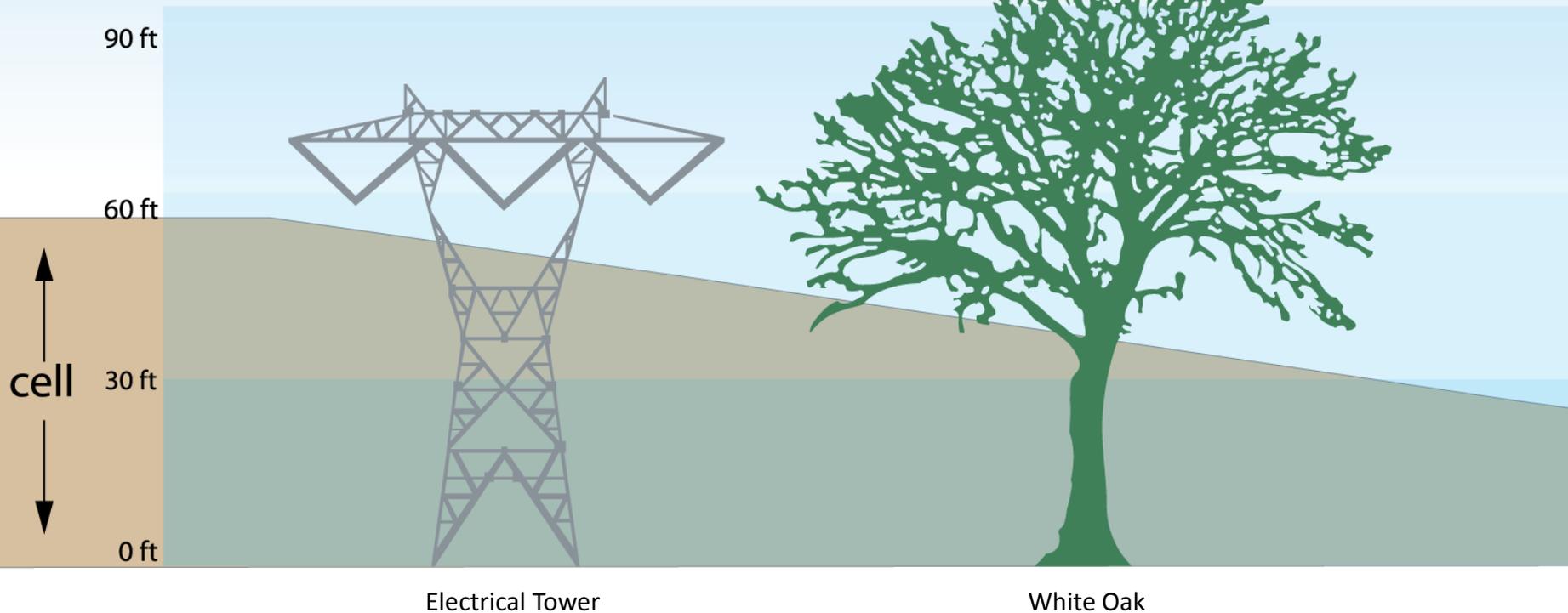
**Sites 5 and 6 are co-located with Site 5A. For the purposes of this criterion, Site 5A is deemed to be similar to Sites 5 and 6.

***Site 11 would require a bridge to avoid a public highway.

Greater acreage = Lower height

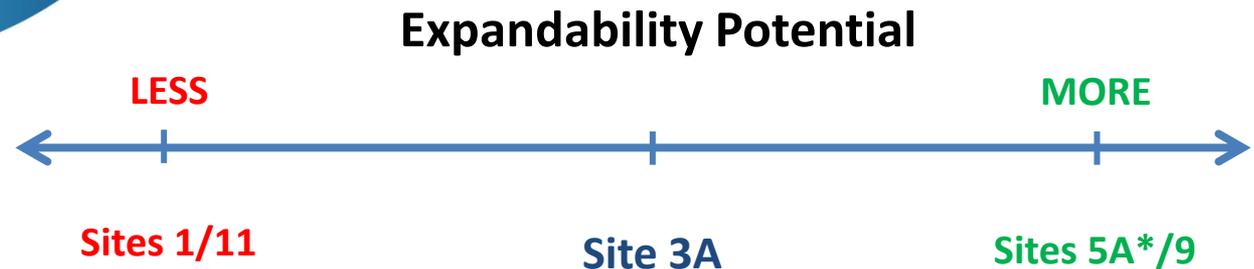
Site	Waste Height Range (feet) (Based on 2.6–8.0 mcy capacity)
1	90–110
3A	80–100
5A*	40–110
9	90–110
11	90–110

* The lower end of the estimated height at Candidate Site 5A assumes the power lines adjacent to Candidate Site 5A can be removed or relocated and the footprint of the landfill can be expanded into Candidate Site 6 and/or Candidate Site 5.



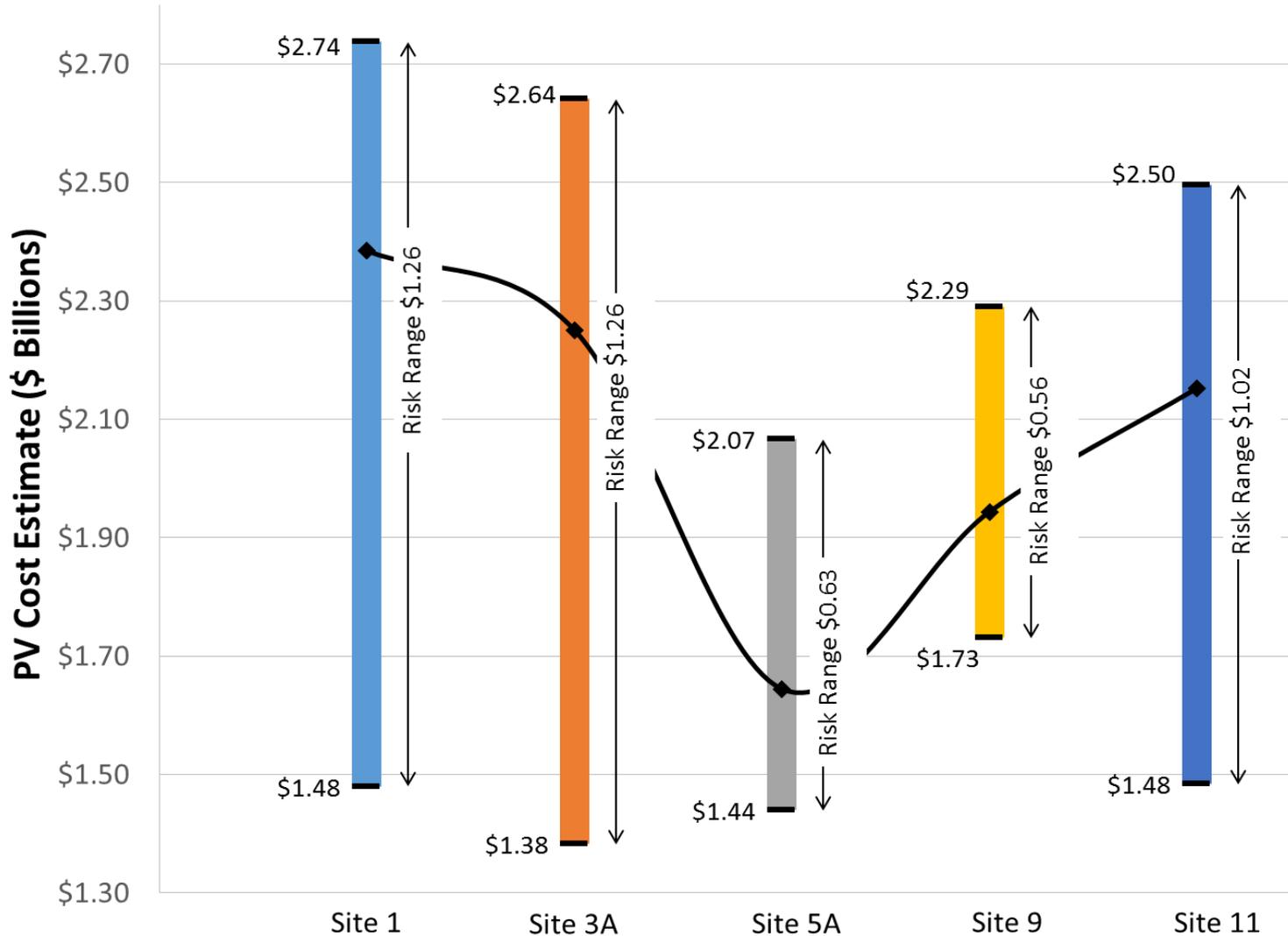


Additional soil or fill material will be required for waste placement, waste stability, and void fill.



*Sites 5 and 6 are co-located with Site 5A. For the purposes of this criterion, Site 5A is deemed to be similar to Sites 5 and 6.

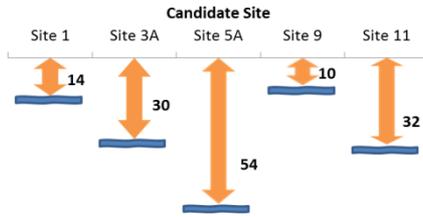
Candidate Site Risk Range



◆ Represents the total net present value risk cost using an estimated probability or likelihood of individual risk costs coming to fruition for each candidate site

- Using existing data from the RI/FS Report and new data gained since the initial site screening, strengths and weaknesses for each candidate site location have been highlighted.
- Based on analysis, one site provides the maximum environmental protection.
- Conclusions support a potential recommendation in the upcoming Proposed Plan document.
- The public will be provided a formal comment period on the Proposed Plan.

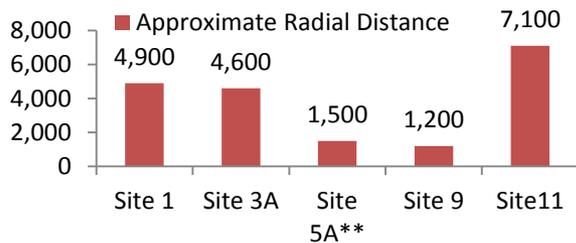
Average Depth to Groundwater (feet)



Aesthetics

Site	Waste Height Range (feet) (Based on 2.6–8.0 mcy capacity)
1	90–110
3A	80–100
5A*	40–110
9	90–110
11	90–110

Transportation Access (feet)



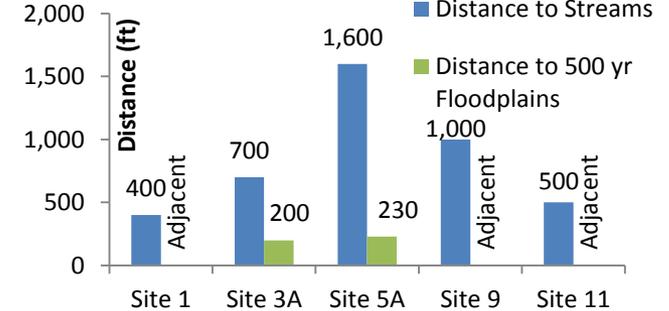
NEPA Considerations



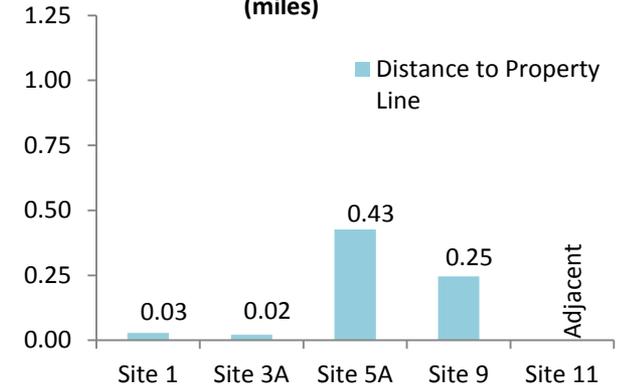
Site 5A

- Greatest hydrologic buffer (depth to groundwater)
- Most favorable aesthetics
- Best expandability potential
- Greatest distance to streams & floodplains
- Good transportation access
- Furthest distance from DOE property boundary
- Minimal wetlands across site
- Favorable elevation change across site

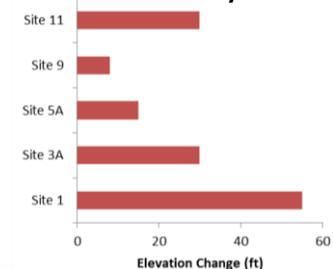
Distance to Floodplains & Streams (feet)



Distance to Property Line & Nearest Residential Well (miles)



Terrain Stability



Path Forward

- ✓ The D2 Remedial Investigation Report is under review by EPA and Kentucky, and regulator conditions have been received.
- ✓ Following approval of the Remedial Investigation Report, the Proposed Plan will be the next CERCLA document and will identify the preferred alternative.
 - If the On-site Alternative is proposed, the Proposed Plan also will identify the preferred site location
- ✓ A public comment period will follow the approval of the Proposed Plan.



PADUCAH GASEOUS DIFFUSION PLANT CITIZENS ADVISORY BOARD

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Paducah Gaseous Diffusion Plant Citizens Advisory Board Waste Disposal Alternatives Subcommittee Meeting Summary July 10, 2014

The Citizens Advisory Board (CAB) met at the Environmental Information Center (EIC) in Paducah, Kentucky on Thursday, July 10th at 5:30 p.m.

Board members present: Ben Peterson, Mike Kemp, Tom Grassham, Robert Coleman, Ralph Young, Judy Clayton, Ken Wheeler, Renie Barger, Dick Rushing, David Franklin, Kevin Murphy, and Dianne O’Brien.

DOE, Regulators and DOE subcontractors present: Bill Murphie, Rachel Blumenfeld, Robert Edwards, Buz Smith, Jennifer Woodard, (DOE); Gaye Brewer, Todd Mullins, (KYDEP); Len Peters, (Energy and Environment Cabinet); Joe Walker, Steve Christmas, Mitch Stewart, Elizabeth Wyatt, Mark Duff, Lauren Shaw, Kelly Ausbrooks, Craig Jones, (LATA); Ginny Manning, Yvette Cantrell, (RSI); Randall Chaffins, Jennifer Tufts, Arthur Collins, Richard Campbell, Jon Richards, (EPA); Stephanie Brock, Matt McKinley, (Radiation Health Branch); Tom Ramsey, (Geosyntech); Eric Roberts, and Jim Ethridge (EHI).

Public present: Tim Thomas, Chris Bright, Brent Wyatt, Charlie Martin

Wheeler opened the meeting and asked for introductions. He then asked for comments from **Woodard, Peters,** and **Chaffins.** At that point, the meeting was turned over to **Duff** for a presentation.

Young: What’s the length of time that the cost would be spread across?	Duff: That is spread across the life of the project. You will see an increase at the start as we construct the cell and then later as we add cells, but it is spread across the whole project.
Clayton: Does site 3a not have any power lines?	Wyatt: It does but they are EEI power lines and can be relocated, whereas the lines running through 5a are TVA lines and could not be relocated while the plant was in operation.
Kemp: Which site is where burial grounds 5&6 are?	Wyatt: That is site 9.
Young: The raw water line that is coming from the river, is that going to be remediated at some point so that it doesn’t leak?	Duff: I would assume that it is part of the GDP cleanup. Wyatt: That work is part of the GDP baseline.
Peterson: If you are repairing a raw water intake that is probably contributing to a higher water table under the burial grounds, how is that not taking care of multiple problems at once?	Murphie: Another option would be to replace the leaking line with a new one and route it differently to take care of that problem.
Peterson: Then if you did that, looks like site 9	Duff: That is another discussion certainly, Judy.

would become a more positive alternative. Clayton: I have to agree with Ben. If the water table at site 9 is the issue, we certainly don't need to leave what is buried there there.	
Young: Is it true at the end of the day, we want to have everyone off the water program?	Murphie: Ideally, the answer has to be yes. It is just a matter of timing.
Wheeler: The diagram shows the height of the cell to be 60 feet. Does that include the overburden?	Woodard: 60 is not the max cell height. That would be 110 feet.
Young: So the waste acceptance criteria can be different for each site?	Duff: Yes, it can potentially be different for each one.
Kemp: How does this compare to off-site disposal if you did the same sort of analysis? What kind of range would you end up with?	Woodard: You would start with the 1.3 B at the bottom and you would add 50% to that, and then we would have to evaluate the risk on top of it. We don't have it but that is how you would build it.
Kemp: When you look at the numbers, it doesn't look like there is a huge difference in cost between on-site and off-site disposal.	Woodard: For off-site I would start with the 1.48, and I would be at 2B to start with before I added any risk. Duff: For off-site, it would start with 2B and go up from there.
Clayton: Why are we doubling the 800M and then doubling it again?	Woodard: Because the estimates that go into feasibility studies are required to be a range. Blumenfeld: This was an additional analysis to show you how we see some of the risks. This is not used in the FS.
Wheeler: Do I not remember that we had a ballpark cost for the entire cleanup campaign, I believe, in the order of \$13 B? I'm not trying to pin you down, but my point is that as a percentage of the total cost, these numbers are really quite low. Peterson: So for roughly 5% the waste gets shipped off and we don't have to worry with a cell. And, for an extra \$200 M, and choose site 9, we get to eliminate some of the burial grounds because we force them to be excavated, and we force a water line upgrade at some point. Just throwing that out there.	Woodard: I do want to correct one thing. Site 9 you said that for an extra \$200M I get to get rid of the burial grounds. For site 5a, we had the cost to excavate the burial grounds on this chart. That includes burial grounds 5, 6, 7, and 30. Burial grounds 2, 3, and 4 for budgetary reasons are projected to be excavated and are in the base number.
Clayton: The H and J (cylinder) yards back in the corner, what are you going to do with them?	Woodard: I think the top 4 feet will be excavated, but I will check to be sure.
Clayton: Will that (contamination plume under site 9) pretty well be remediated with 400?	Duff: You won't be remediating what is under site 9 through the C-400 program.
Clayton: You would check for TCE and Tech99 by monitoring well. What would you be checking for coming out of a cell?	Duff: You would be searching for the whole gamut of potential radionuclides as well as hazardous constituents.
Clayton: Well there shouldn't be any TCE in it.	Duff: If you are putting potential TCE waste into the cell, you would want to monitor for it.

<p>Clayton: You shouldn't be getting anything out of the cell, so if you would have to assume that it would be coming from the groundwater.</p>	<p>Murphie: Since we are putting radioactive process equipment in the cell with the potential of leaching out tech99, we will have to prove the negative; that there is nothing coming out of the cell and we aren't exceeding any regulatory limits.</p>
<p>O'Brien: Do you have any indication of how deep it is to the bedrock for each of those sites?</p>	<p>Duff: We have not done site investigations specifically for design of the cell yet. We have a lot of data, but we haven't done core information for each of the sites. Mullins: Having said that, given what data there is, it is probably somewhere around 400 feet.</p>
<p>Young: Would it be most beneficial for the CAB to make a recommendation before the proposed plan goes out or as part of the public comment process?</p>	<p>Woodard: Would the CAB be making a recommendation during the public comment period?</p>
<p>Young: Looks like we would have more of an impact if we made a recommendation before the proposed plan.</p>	<p>Murphie: We still have a lot of work to do with the regulators, so please recognize that things can change at this point.</p>
<p>Young: I have to believe that our recommendation would have some effect on those four people over there (EPA and KY regulators).</p>	<p>Chaffins: I wouldn't say that there is a prohibition of any kind for you to supply those comments. In the CERCLA process, it requires that we respond to the comments that we receive after the proposed plan goes out.</p>

The meeting adjourned at 7:16 pm.