**Karl Brooks/R7/USEPA/US**
01/23/2012 10:31 AM

To Julia Cacho
cc
bcc
Subject Fw: West Lake Landfill: Final version of SFS powerpoint briefing for HQ

print for my DC folder

Karl Brooks
Regional Administrator
EPA Region 7
913.551.7006

----- Forwarded by Karl Brooks/R7/USEPA/US on 01/23/2012 10:31 AM -----

From: Dan Gravatt/R7/USEPA/US
To: Karl Brooks/R7/USEPA/US@EPA, Cecilia Tapia/R7/USEPA/US@EPA, DeAndre Singletary/SUPR/R7/USEPA/US@EPA, Rich Hood/R7/USEPA/US@EPA, Debbie Kring/R7/USEPA/US@EPA, Audrey Asher/R7/USEPA/US@EPA, Matthew Jefferson/R7/USEPA/US@EPA
Date: 01/23/2012 09:25 AM
Subject: West Lake Landfill: Final version of SFS powerpoint briefing for HQ

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Here is the final version of the West Lake Landfill SFS briefing for EPA HQ, in PDF format. This reflects the last adjustments made in this morning's meeting with Karl.

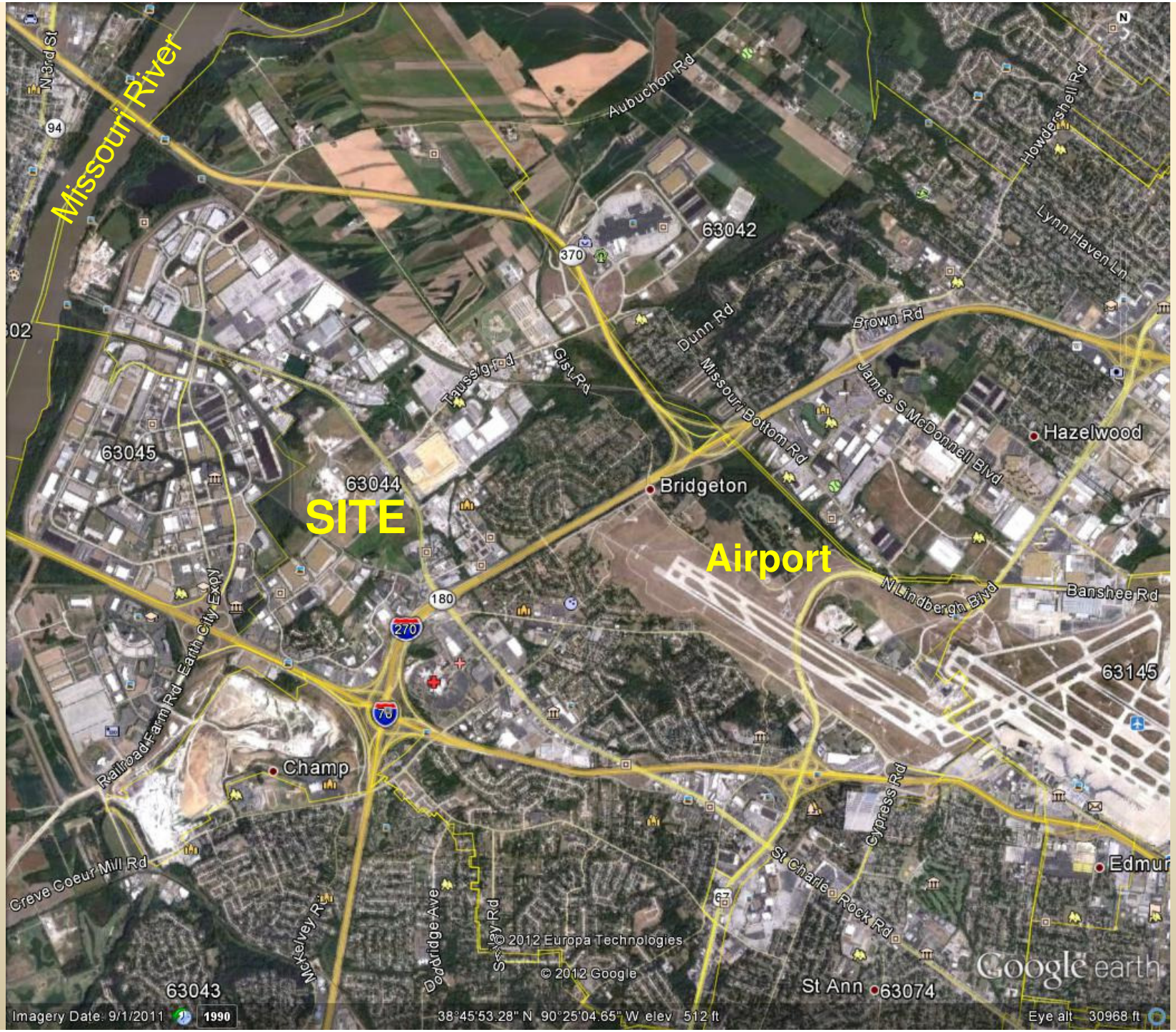
Sincerely,
Daniel R. Gravatt, PG
US EPA Region 7 SUPR / MOKS
901 North 5th Street, Kansas City, KS 66101
Phone (913) 551-7324 Fax (913) 551-7063

Principles and integrity are expensive, but they are among the very few things worth having.

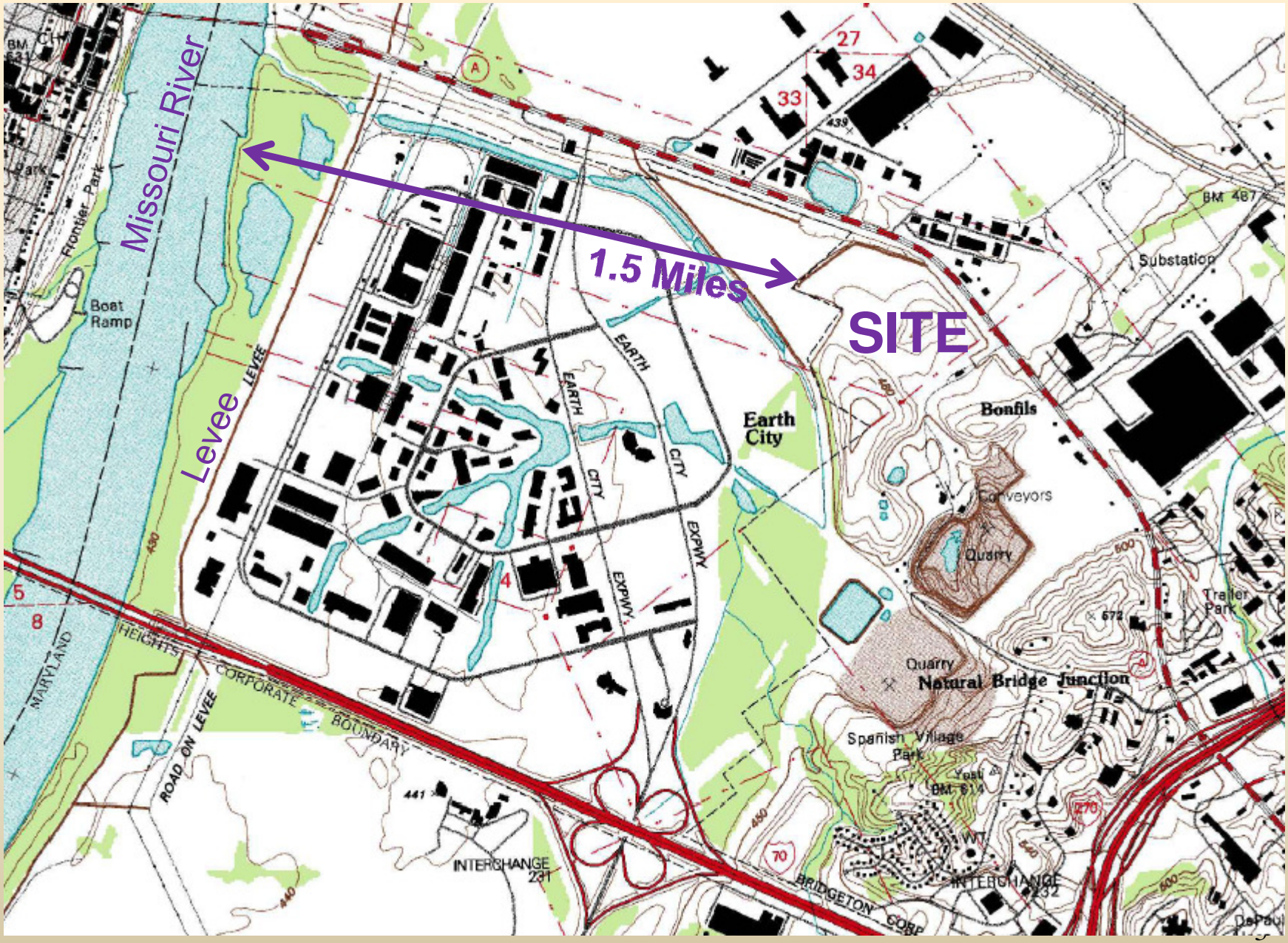
West Lake final SFS briefing for HQ Final.pdf

# The West Lake Landfill OU-1 Supplemental Feasibility Study

**Dan Gravatt**
**U.S. Environmental Protection Agency**
**Region 7**

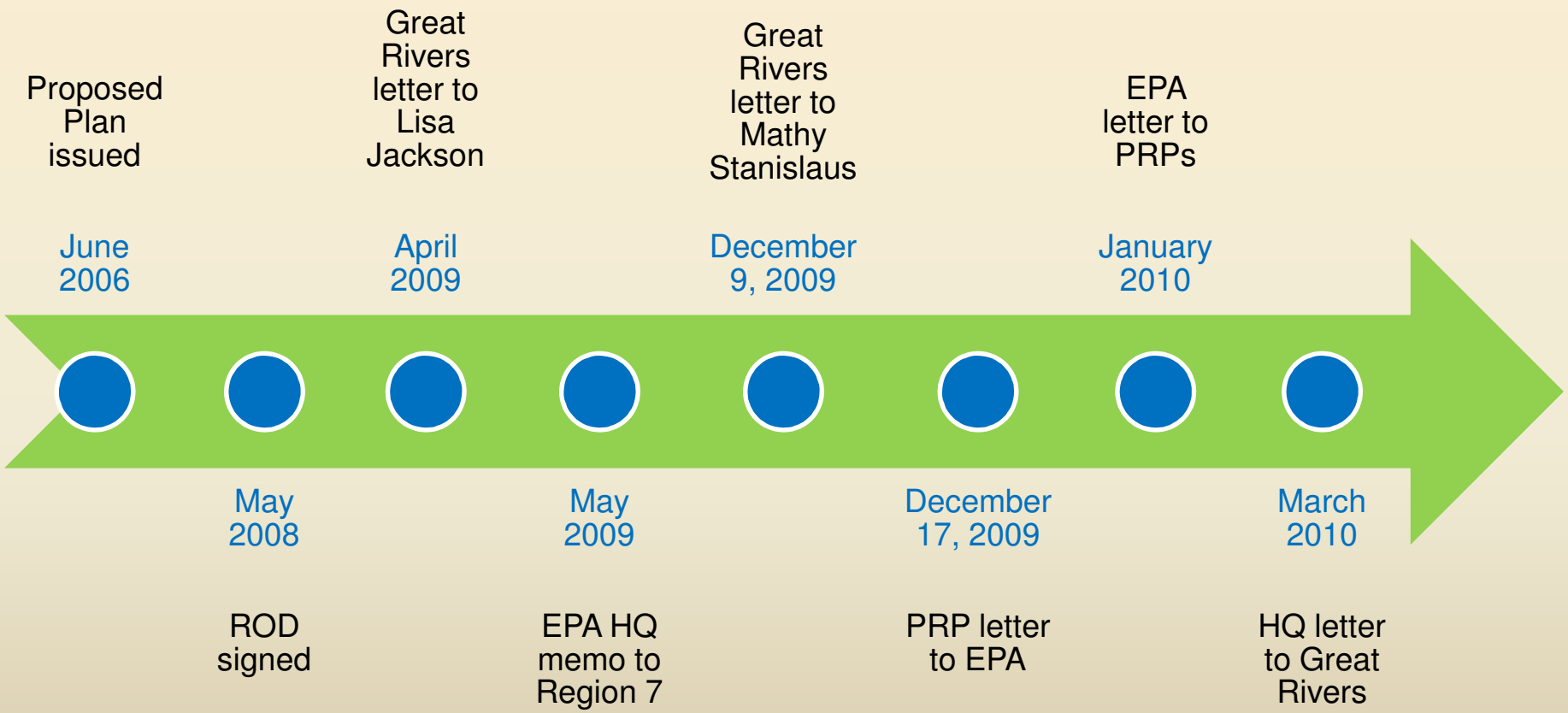

Missouri River
SITE
Airport
63042
63044
63045
63043
63074
63145
Bridgeton
Hazelwood
Champ
St Ann
Edmur
Aubuchon Rd
Howdershell Rd
Lynn Haven Ln
Brown Rd
Dunn Rd
Missouri Bottom Rd
James S McDonnell Blvd
Gist Rd
Taussig Rd
N Lindbergh Blvd
Banshee Rd
Earth City Expy
Railroad Farm Rd
Creve Coeur Mill Rd
McKelvey Rd
Doddridge Ave
Cypress Rd
St Charles Rock Rd
N 3rd St
© 2012 Europa Technologies
© 2012 Google
Google earth
Imagery Date: 9/1/2011
1990
38°45'53.28" N 90°25'04.65" W elev 512 ft
Eye alt 30968 ft

# Earth City has no permanent residents



# Site Boundaries

# Why are we here today?
# The road to the SFS for OU-1



# How West Lake Landfill became radiologically contaminated

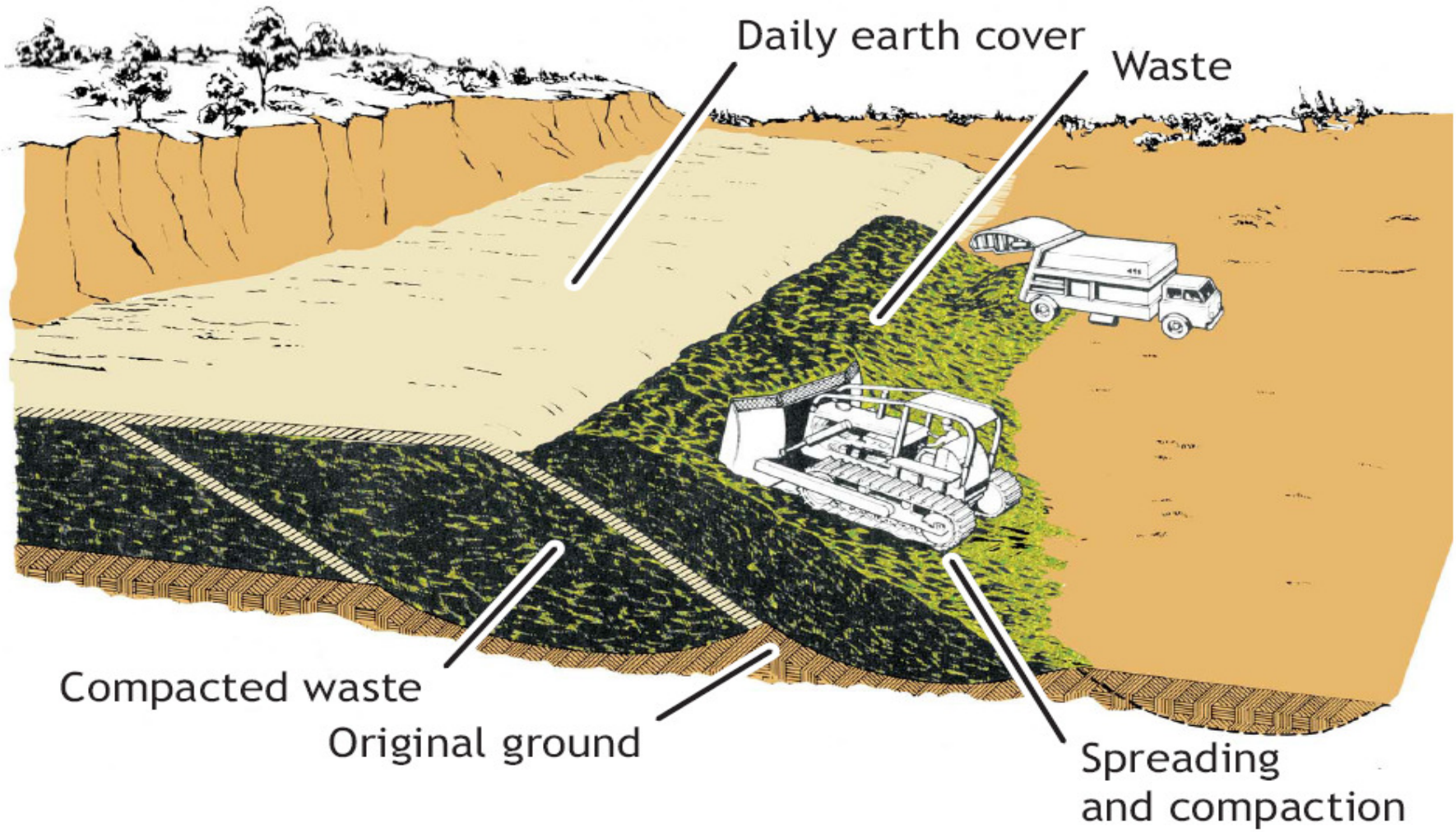
- Manhattan Project work in St. Louis (Mallinckrodt)
- 8,700 tons leached barium sulfate cake (uranium 0.03% - 0.1%) left over after other, more valuable ore residues sent to Colorado for reprocessing
- Uranium concentrations and leach potential too low for commercial reprocessing
- Mixed with 39,000 tons of soil
- Given to the municipal solid waste (MSW) landfill and used as daily and intermediate cover at OU-1 Areas 1 and 2
- Contaminated soil was placed between July and October 1973

# Site Areas – Operable Unit 1

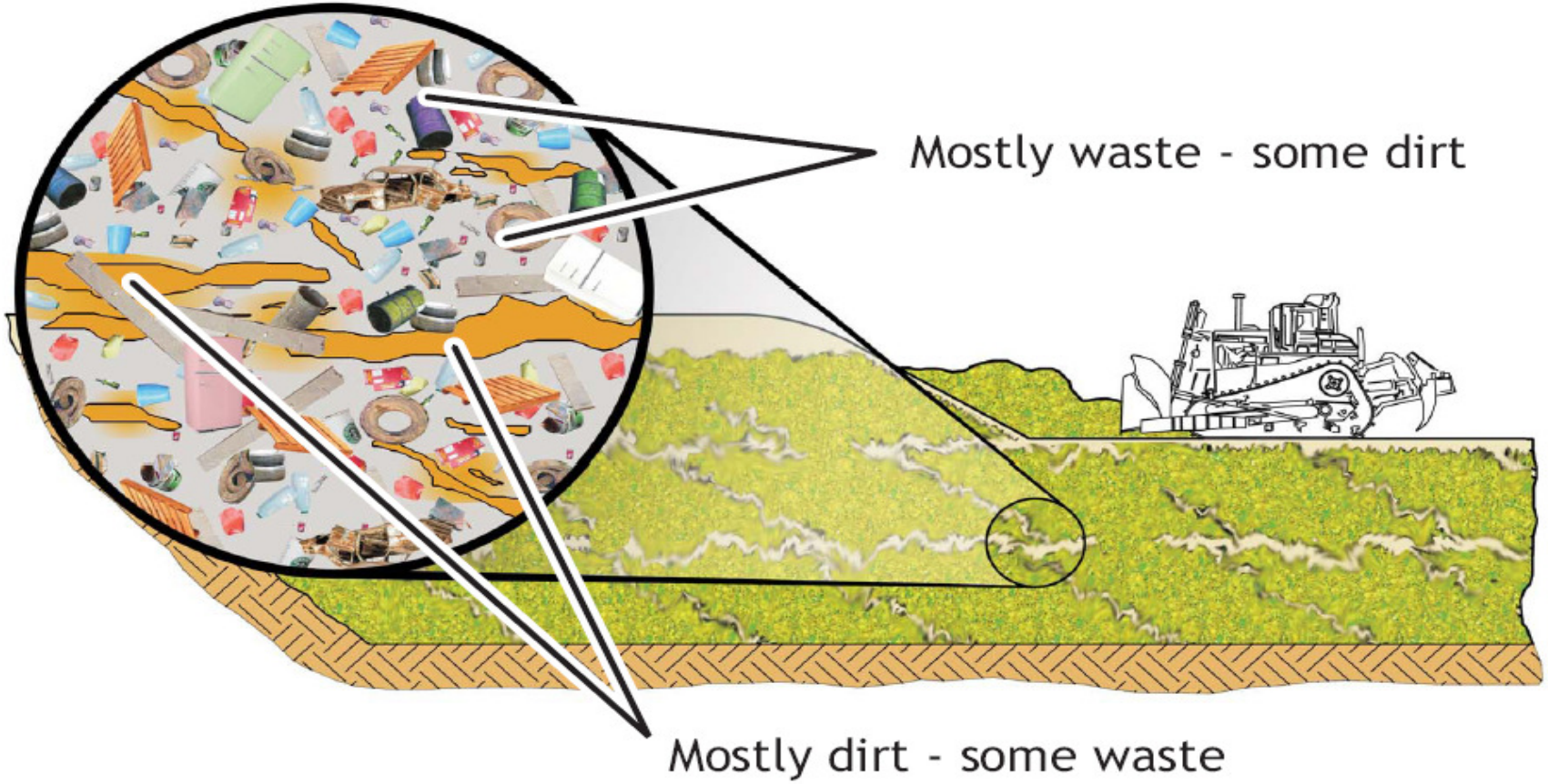
- Radiological Areas 1 and 2 received municipal solid waste, construction and demolition debris, and industrial wastes
- Operated from approximately 1950 to 1974
- Buffer Zone/Crossroad Property (Ford Property) became radiologically contaminated by erosion from Area 2

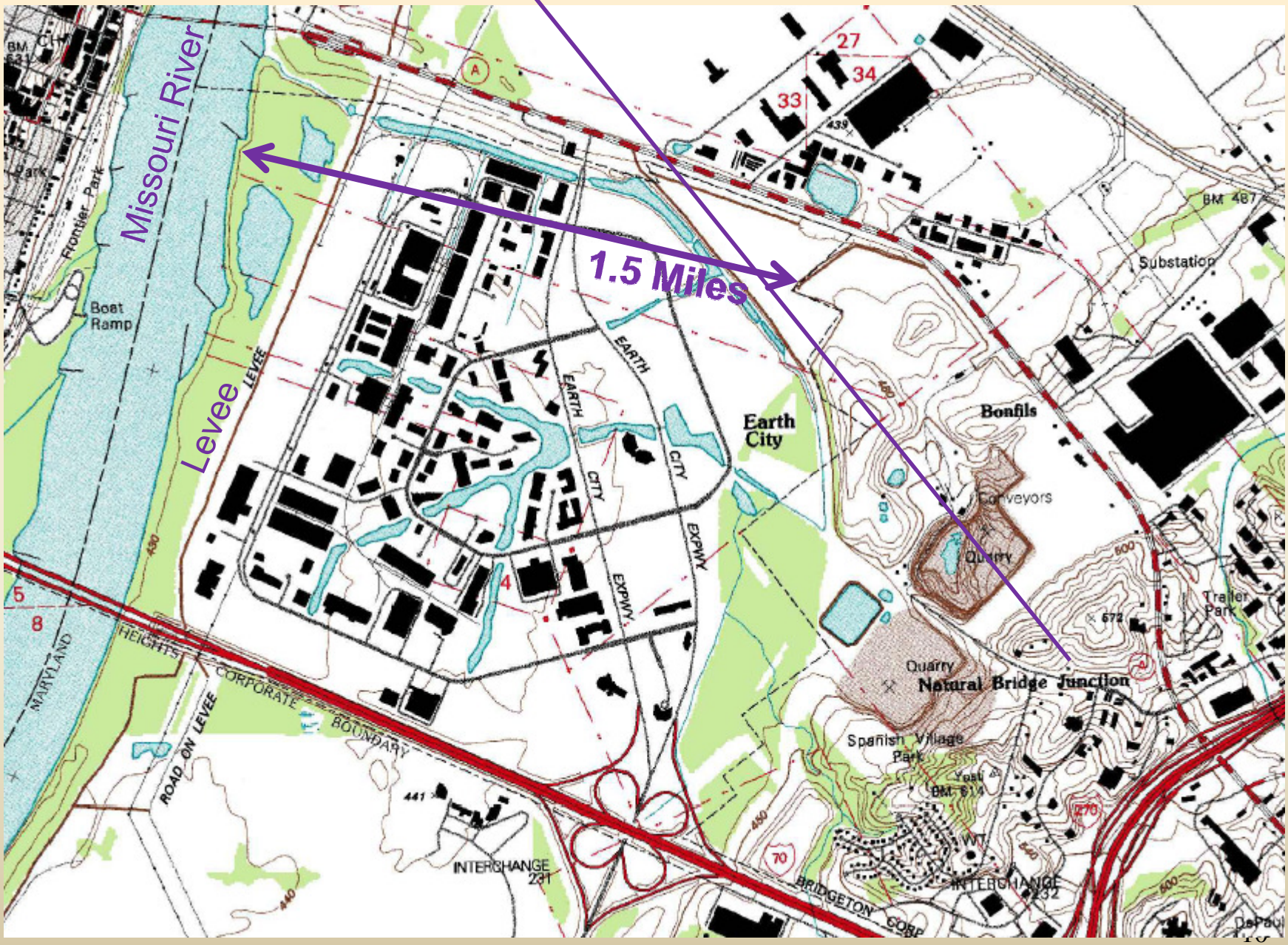
- Areas 1 (10 acres) and 2 (30 acres) are part of the overall 200-acre MSW landfill

# GENERALIZED LANDFILL OPERATION

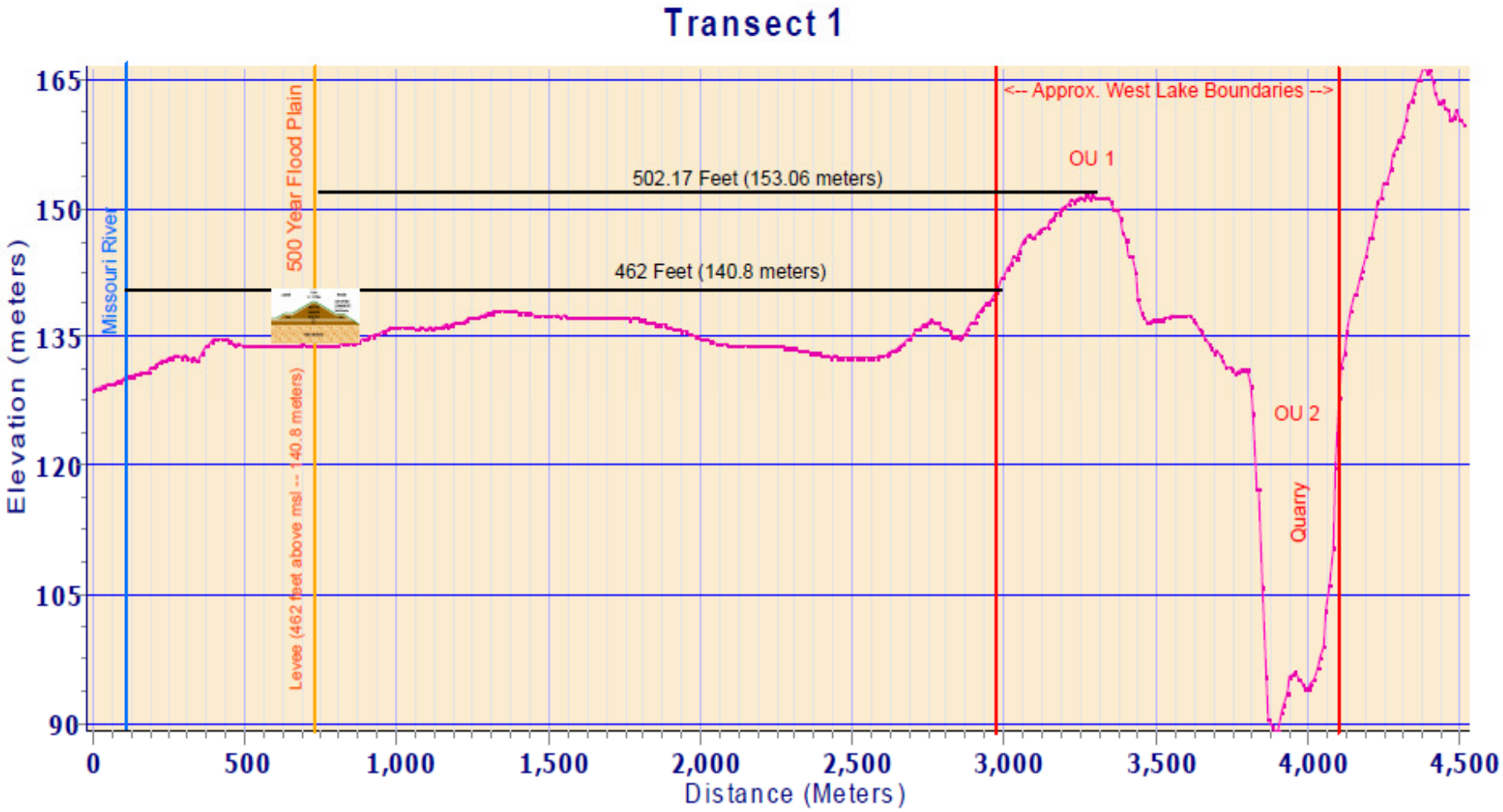


# TYPICAL MIXING OF WASTE AND DIRT IN LANDFILL



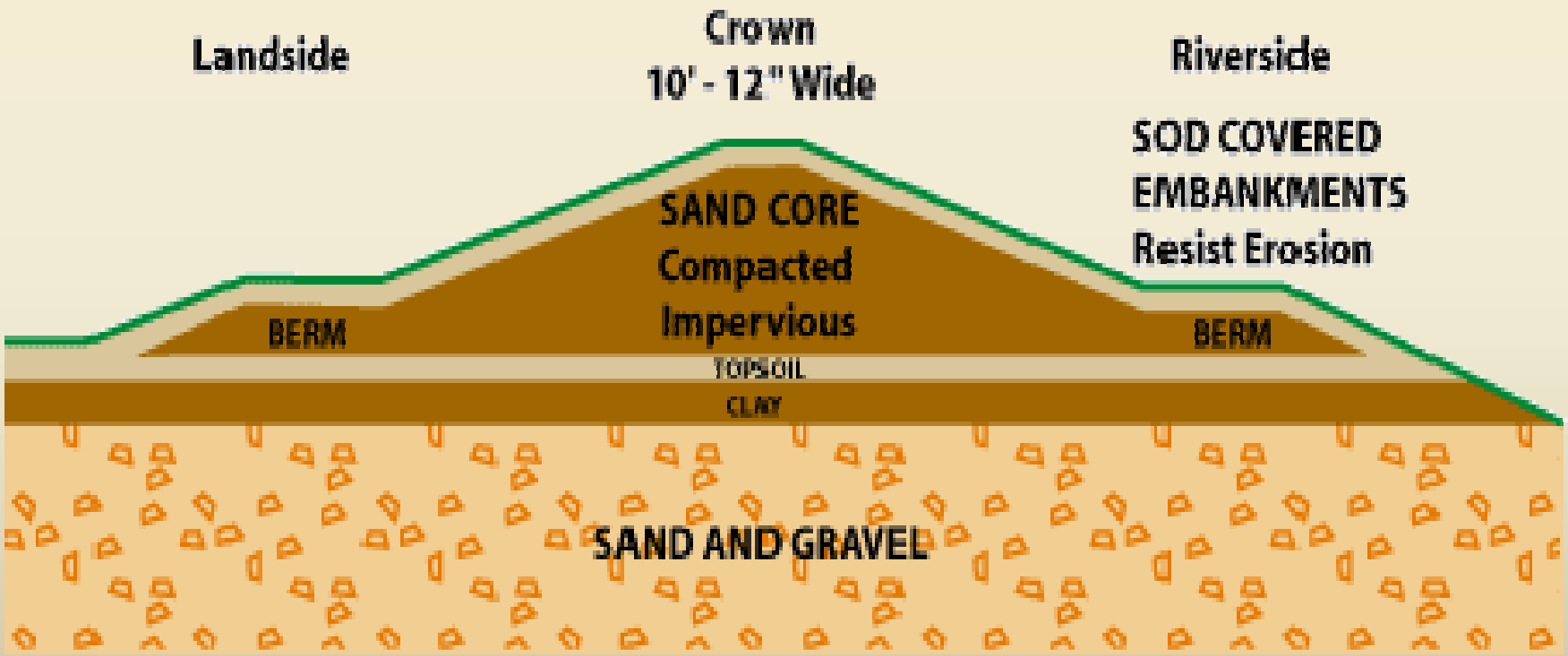



Earth City Levee protects over $1B in property; has never been overtopped or breached


Transect 1
Elevation (meters)
165
150
135
120
105
90
0
500
1,000
1,500
2,000
2,500
3,000
3,500
4,000
4,500
Distance (Meters)
Missouri River
500 Year Flood Plain
Levee (462 feet above msl -- 140.8 meters)
502.17 Feet (153.06 meters)
462 Feet (140.8 meters)
<-- Approx. West Lake Boundaries -->
OU 1
OU 2
Quarry

# Three Lines of Defense for OU1:

- The levee has never been breached or overtopped; the levee district's mission is protecting the $1B industrial park
- Rock armoring of toe of Area 1 cap in case levee fails in the future
- Landfills flooded during Hurricane Katrina suffered little damage



# Groundwater at the Site

- 44 monitoring wells installed in and around the site during the RI
- No plumes of radioisotopes or other contaminants identified during the RI (60 borings installed)
- Isolated detections of radium, arsenic, lead (unfiltered), benzene and chlorobenzene above their respective MCLs

# Historical Community Involvement during ROD Process

- June through December, 2006: Public comment period on Proposed Plan
- March through April, 2008: Re-opened public comment period on Proposed Plan
- Three public meetings held during the public comment periods

# Remedies evaluated in the SFS

- The SFS re-evaluates the ROD remedy and the complete excavation and off-site disposal remedies *in greater detail* than was done in the original FS
- The SFS also includes an evaluation of complete excavation and on-site disposal of radiologically-contaminated material, at the request of EPA HQ
- No new investigation or sampling

# Treatments evaluated in the SFS

- Potential treatment technologies evaluated "under the assumption that PTW is present"
- Used "Technology Reference Guide for Radioactively Contaminated Media" (EPA 402-R-07-004, October 2007)
- No technologies were found to be practicable treatments
- Primary difficulty with treatments is the extreme heterogeneity of the municipal solid waste and soil mixture

# Evaluation criteria for Remedies

- The NCP at 40 CFR 300.430 (e) (9) specifies nine criteria to use for the evaluation:

Two “Threshold” Criteria

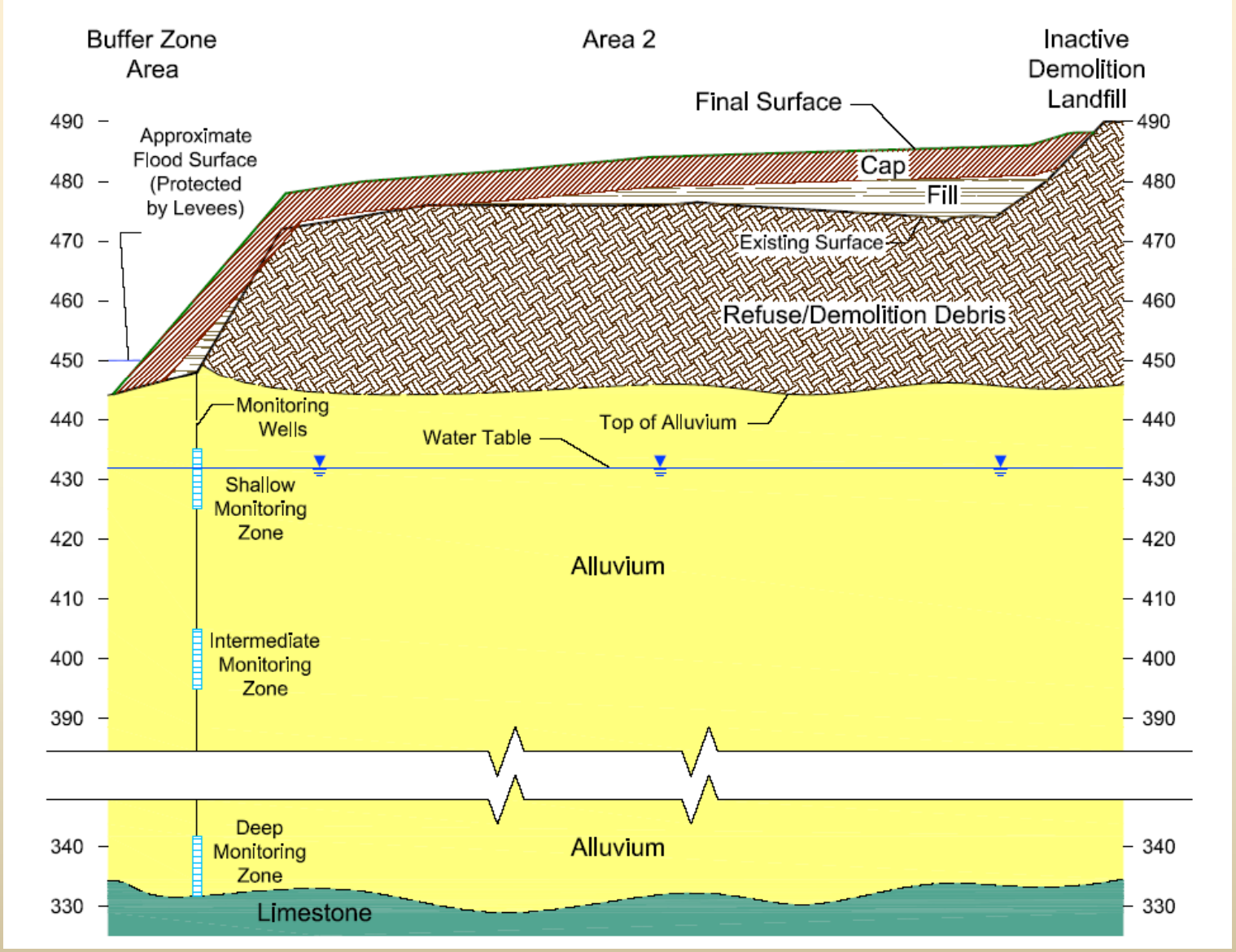
Five “Primary Balancing” Criteria

Two “Modifying” Criteria

# Cap-in-Place (ROD Remedy)

- Meets Threshold and most Primary Balancing criteria
- Does not meet preference for treatment
- Is implementable and effective in short term and long term
- Costs $41.4M
- 3 years to complete with unconstrained funding

# Cross section of Landfill and Cap



# Excavation and Off-Site Disposal Alternative

- Meets Threshold and most Primary Balancing criteria
- Does not meet preference for treatment
- Is effective in the long term
- Issues with short-term effectiveness
- Issues with implementability
- Legal issues (STLAA covenant, MOU with FAA)
- Costs $259M to $415M
- 4 years to complete with unconstrained funding
- 22-38 years to complete if Fund-lead ($10M/yr), assuming PRPs cash out for $41M cost of ROD remedy. If any part Fund-lead, State match required

# Implementability: Transporting Waste from Landfill to Railcar

- Amount of hazardous fill to move = 500,000 cubic yards (enough to fill the Edward Jones Dome in St. Louis 25' deep)
- Number of truckloads from West Lake Landfill to railhead = 17,000 (a line of trucks 220 miles long)
- Number of Truck miles = 345,000
- Estimated number of accidents = 1.3

*Assuming 3.8 accidents/1,000,000 truck miles

# Implementability: Additional Risk with Transporting Waste on Rail to Utah

- Number of railcars to transport waste from St. Louis to Clive Disposal Facility =

  5,000 railcars (a train 50+ miles long)
- Assume 100 railcars/trainload = 50 trains
- Train miles = 115,000
- Risk of injury or death = 0.3
- Rail lines go through several large cities with EJ communities

# Excavation and On-site Disposal Alternative

- Does not meet all Threshold criteria
- Meets most Primary Balancing criteria
- Does not meet preference for treatment
- Is effective in the long term
- Issues with short-term effectiveness
- Issues with implementability
- Legal issues (STLAA covenant, MOU with FAA)
- Costs $137M
- 6 years to complete with unconstrained funding
- 10 years to complete if Fund-lead ($10M/yr), assuming PRPs cash out for $41M cost of ROD remedy. If any part Fund-lead, State match required.

Source: Google Earth

0 1600
SCALE IN FEET

N

Figure 6

Setback From Airport Runway

West Lake Landfill OU-1 Supplemental Feasibility Study

EMSI Engineering Management Support, Inc.

# Differences between West Lake and St. Louis FUSRAP sites

- Great Rivers frequently points out that radioactively contaminated soil is being excavated at the St. Louis FUSRAP sites, so why not at West Lake?
- Different contaminated media (soil vs. MSW)
- Different distribution of rads in media
- Different exposure pathways
- Different regulatory and legal framework

# Implementation Issues

- Noise, dust and vapor exposure for nearby residents and businesses
- Bird strike mitigation for aircraft
- Contaminant migration concerns
- Waste hauling/transportation issues
- Schedule and cost considerations
- Airport easement and FAA MOU
- Potential litigation

# Reuse Issues

- Regardless of remedy selected, site will be a landfill for the foreseeable future; thus there is no intended reuse of the site
- Negative easement and zoning (both for site and Airport) prevent additional residences around the site
- Risks for future on- and off-site receptors after construction completion are within or below target risk range for all three alternatives

# Summary of Remedies

| | **Cap-in-Place** | **Excavation and Off-site Disposal** | **Excavation and On-site Disposal** |
|---|---|---|---|
| Threshold Criteria | ✓ | ✓ | Does not meet all ARARs |
| Balancing Criteria | ✓ | Short-term effectiveness and implementability issues | Short-term effectiveness and implementability issues |
| Time to Complete (Unconstrained) | Three years | Four years | Six years |
| Time to Complete (Fund-Lead) | Five years | 22-38 years | Ten years |
| Cost | $41.4M | $259M to $415M | $137M |



Note: None of the three remedies satisfy the preference for treatment.

# Community Acceptance

- Great Rivers opposes the ROD remedy, wants excavation with off-site disposal
- Some members of public are on the record supporting the ROD remedy
- St. Louis Airport Authority opposes both excavation remedies
- St. Louis Aldermen passed a resolution calling for excavation with off-site disposal (however, site is in Bridgeton, MO)
- Water utility does not oppose ROD remedy

# State Involvement

- State concurred on the ROD in 2008
- State letter to EPA dated May 4, 2009 suggesting use of ARRA funds to remove radiological contamination from the site and thereby create jobs
- State (Missouri DNR) has been fully involved in preparation of SFS work plan and SFS report from the beginning

# State concerns with SFS

- Language allowing regrading under the ROD remedy vs. preliminary cap design in SFS
- Requests for additional sampling
- ARARs

# SFS Path Forward

- Briefings for Congressionals
- Draft Decision Document (ESD or ROD amendment)
- Public Comment Period on the Decision Document and public meeting
- Final Remedy Selection

# Future Community Involvement

- Public comment period and public meeting(s) in Bridgeton, MO
- Targeted outreach to two small residential areas near Site with potential EJ issues
- EPA will tailor our involvement to the type of community – 28,000 people work in Earth City, but no one lives there
- Airport controls the use of property east of the Site – no residences in this area

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