US Army Corps of Engineers®
Buffalo District

Interim Waste Containment Structure Operable Unit
Niagara Falls Storage Site

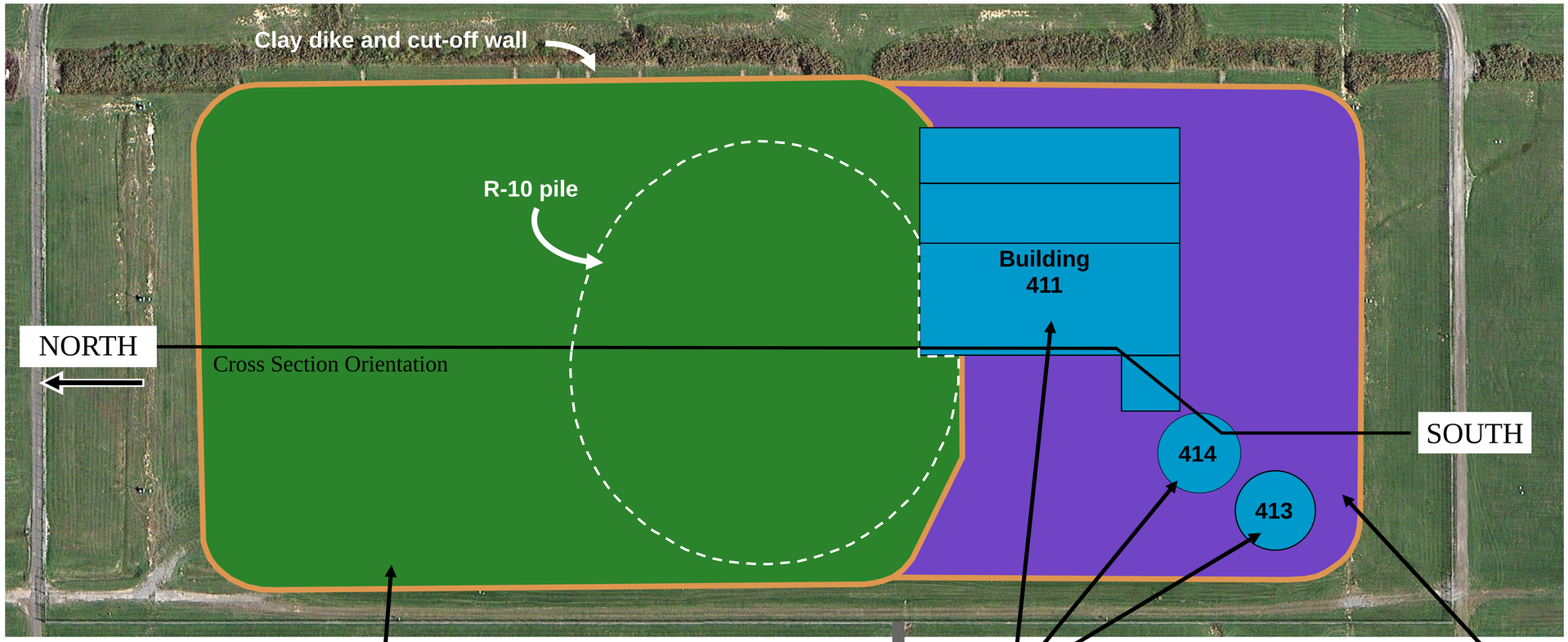
Comparative Analysis of Proposed Plan Remedial Alternatives (Balancing Criteria)

CERCLA BALANCING CRITERIA	ALTERNATIVE 2: Enhanced containment of Subunits A, B, and C	ALTERNATIVE 3A: Excavation, treatment, and off-site disposal of Subunit A; enhanced containment of Subunits B and C	ALTERNATIVE 3B: Excavation, treatment, and off-site disposal of Subunit A; excavation and off-site disposal of Subunit B; enhanced containment of Subunit C	ALTERNATIVE 4: Excavation, treatment, and off-site disposal of Subunit A; excavation and off-site disposal of Subunits B and C
Long-term Effectiveness and Permanence	Moderate	High	High	High
Reduction of Toxicity, Mobility, or Volume through Treatment	Low	Moderate	Moderate	Moderate
Short-term Effectiveness	High	Moderate	Moderate	Low
Implementability	High	Moderate	Moderate	Moderate
Total Cost (Present Worth)	$67.4M	$303.6M	$362.4M	$490.6M

BUILDING STRONG®

Niagara Falls Storage Site—Interim Waste Containment Structure Operable Unit

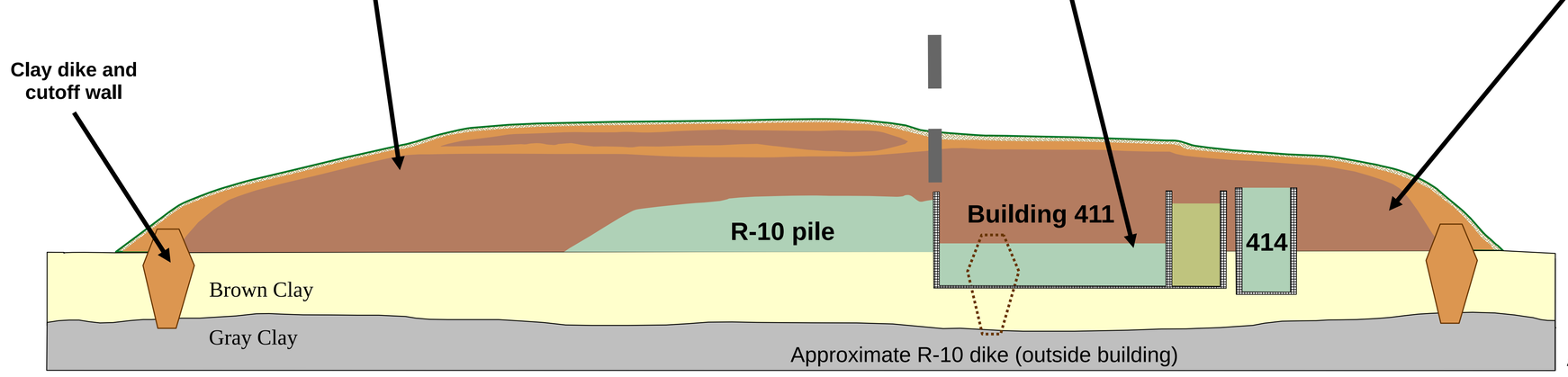
SUBUNITS A, B, AND C



Subunit C:
Residues and wastes in the north end of the IWCS

Subunit A:
Residues and commingled wastes within Buildings 411, 413, and 414

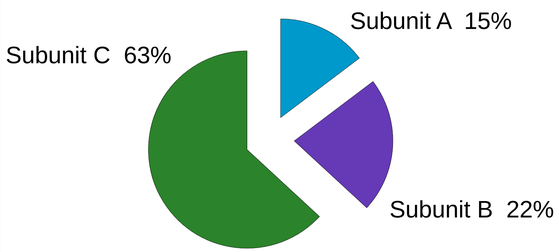
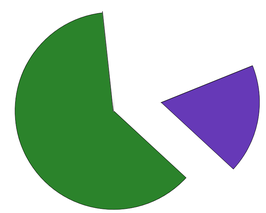
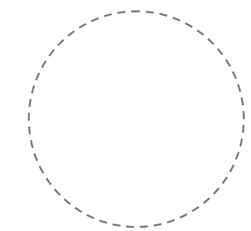
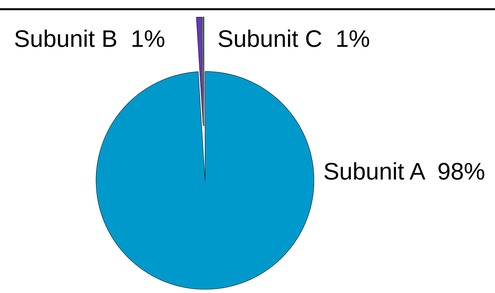
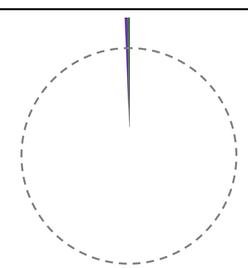
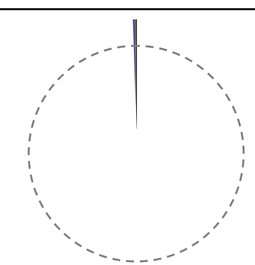
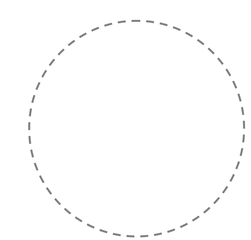
Subunit B:
Debris and wastes in the south end of the IWCS



- Subsurface soil, topsoil, and grass
- Clay cap, dikes, and cut-off wall
- Contaminated soil and debris
- Building walls and floors
- K-65 Residue
- Other residues

Approximate cross section vertical exaggeration 2.5:1

Comparison of Waste Volume Remaining and Radium Remaining Across Remedial Alternatives

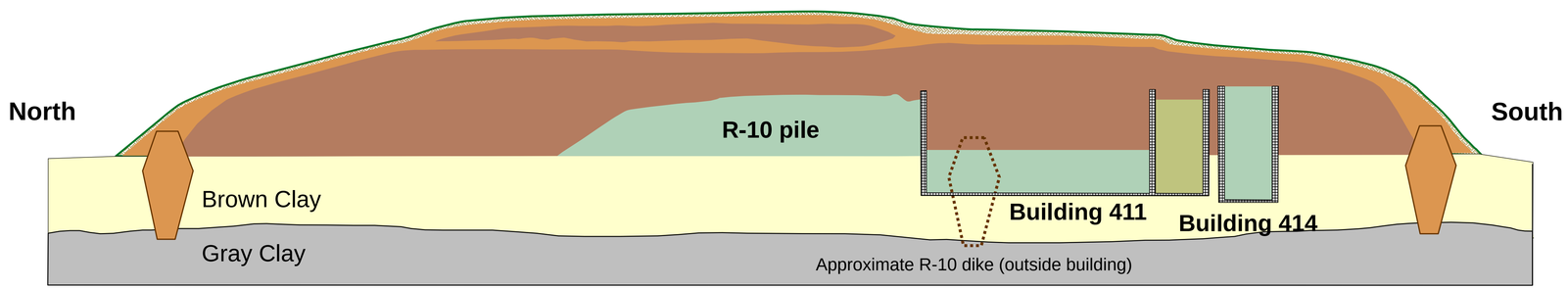
	Alternative 2 Enhanced containment of Subunits A, B, and C with land-use controls and monitoring	Alternative 3A Excavation, treatment, and off-site disposal of Subunit A; enhanced containment of Subunits B and C with land-use controls and monitoring	Alternative 3B Excavation, treatment, and off-site disposal of Subunit A; excavation and off-site disposal of Subunit B; enhanced containment of Subunit C with land-use controls and monitoring	Alternative 4 Excavation, treatment, and off-site disposal of Subunit A; excavation and off-site disposal of Subunits B and C
Percent of waste volume remaining in IWCS	 **100% of waste volume remains**	 **76% of waste volume remains**	 **65% of waste volume remains**	 **0% of waste volume remains**
Percent of Radium-226 remaining in IWCS	 **100% of Ra-226 remains**	 **1% of Ra-226 remains**	 **0.2% of Ra-226 remains**	 **0% of Ra-226 remains**

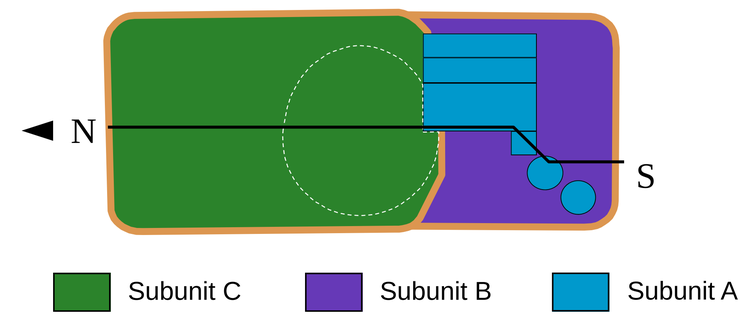
Values for Alternative 3A include the removal of Subunits B and C materials to access Subunit A

Note: Volume and radiological inventory based on historical record.

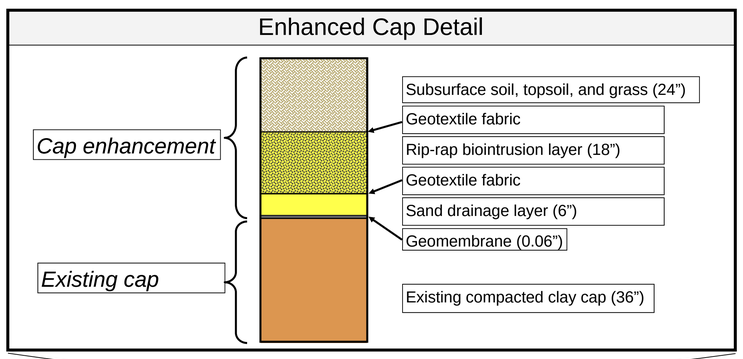
Niagara Falls Storage Site—Interim Waste Containment Structure Operable Unit

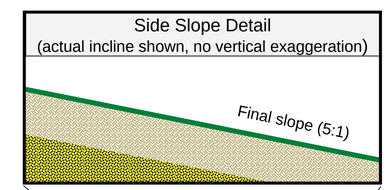
Remedial alternative 2: Enhanced Containment of Subunits A, B, and C

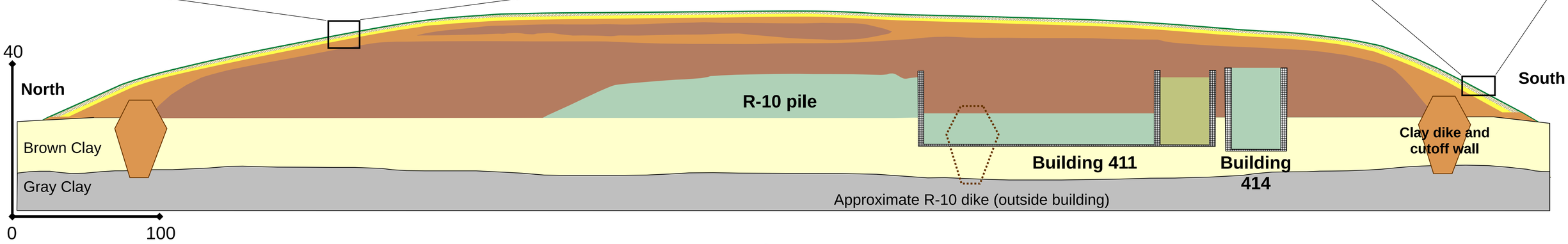




Current Conditions







Approximate scale in feet

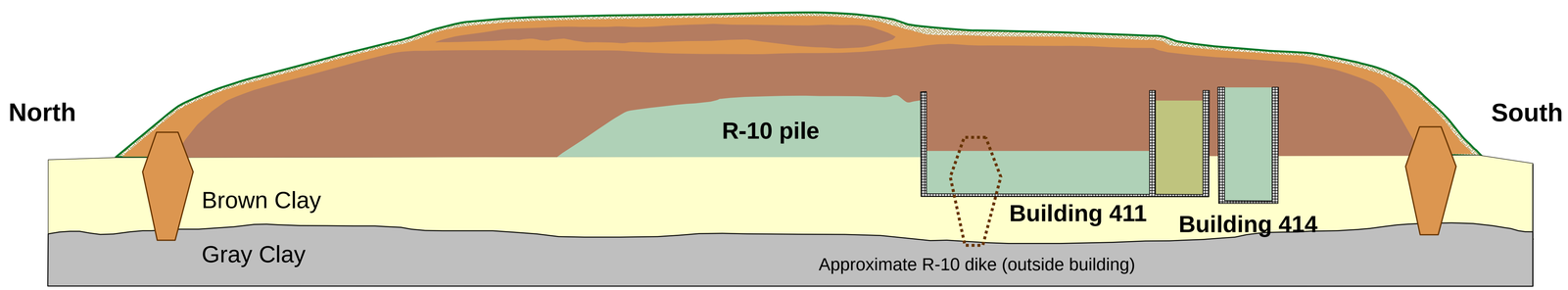
Conceptual Design of Remedial Alternative 2

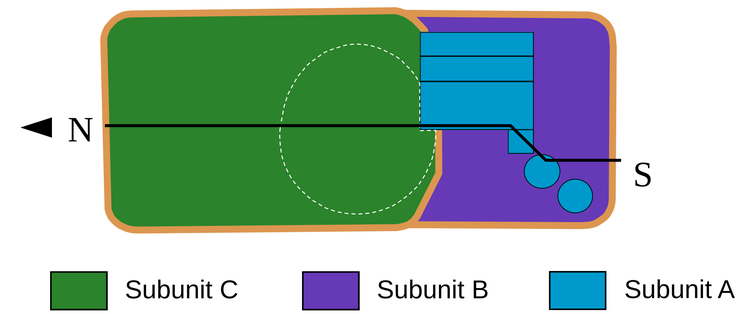
Approximate cross section vertical exaggeration 2.5:1

- Subsurface soil, topsoil, and grass
- Clay cap, dikes, and cut-off wall
- Drainage and biointrusion layers
- Contaminated soil and debris
- K-65 residue
- Other residues
- Building walls and floors

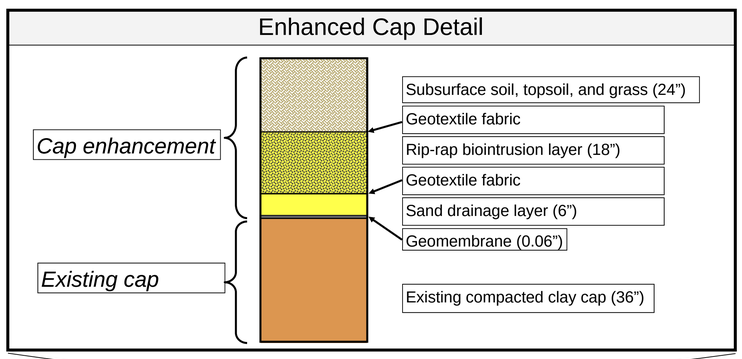
Niagara Falls Storage Site—Interim Waste Containment Structure Operable Unit

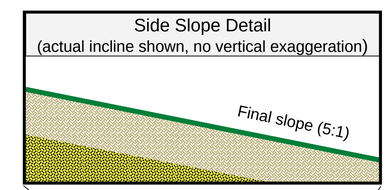
Remedial alternative 3A: Removal, Treatment, and Off-Site Disposal of Subunit A with Enhanced Containment of Subunit B and C

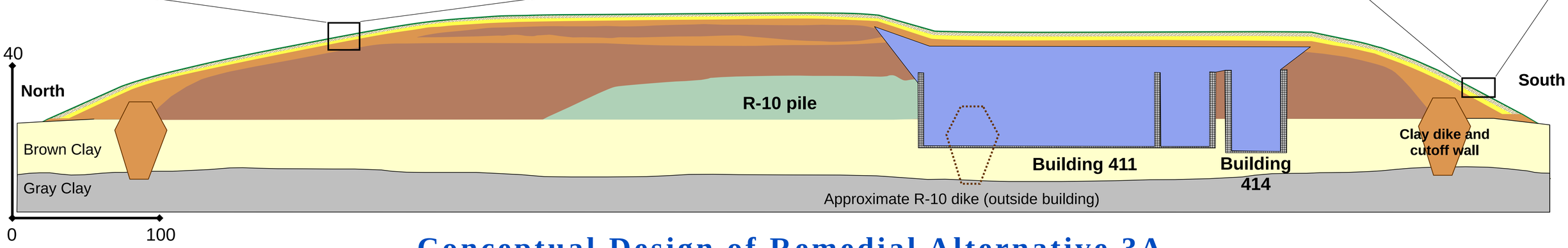




Current Conditions







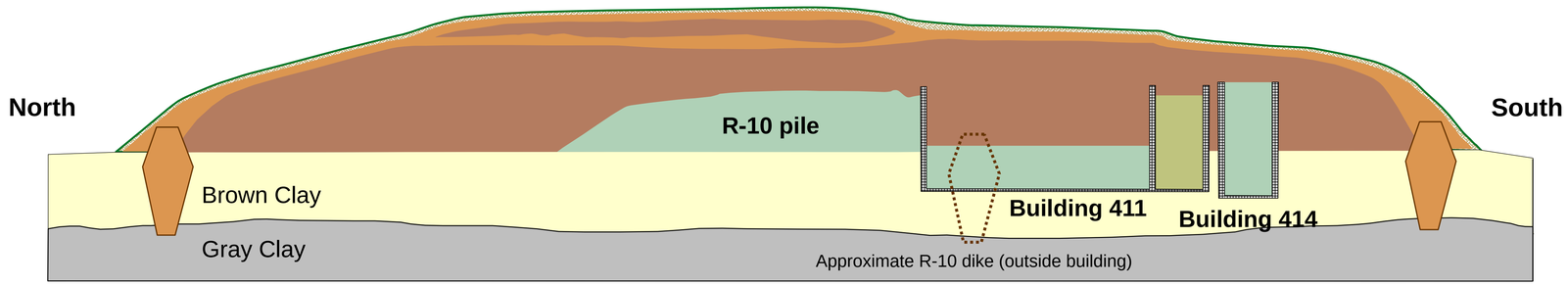
Conceptual Design of Remedial Alternative 3A

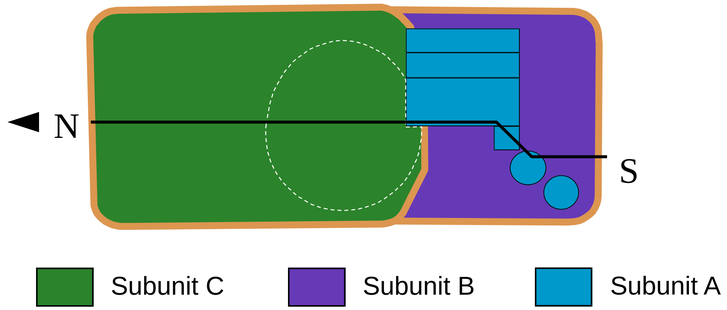
Approximate cross section vertical exaggeration 2.5:1

- Subsurface soil, topsoil, and grass
- Clay cap, dikes, and cut-off wall
- Drainage and biointrusion layers
- Contaminated soil and debris
- K-65 residue
- Other residues
- Building walls and floors
- Clean fill

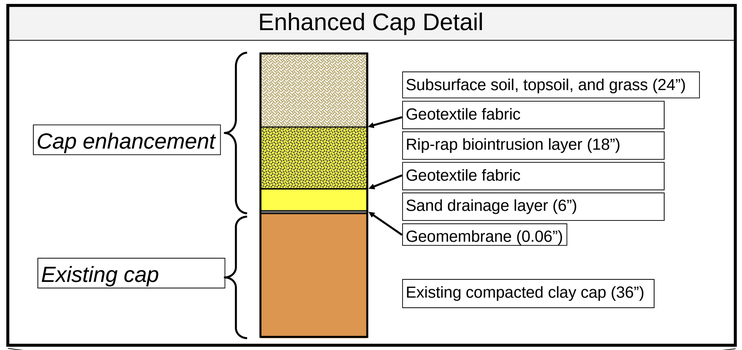
Niagara Falls Storage Site—Interim Waste Containment Structure Operable Unit

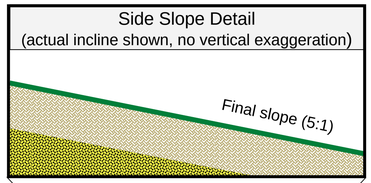
Remedial Alternative 3B: Removal, Treatment, and Off-Site Disposal of Subunits A and B with Enhanced Containment of Subunit C

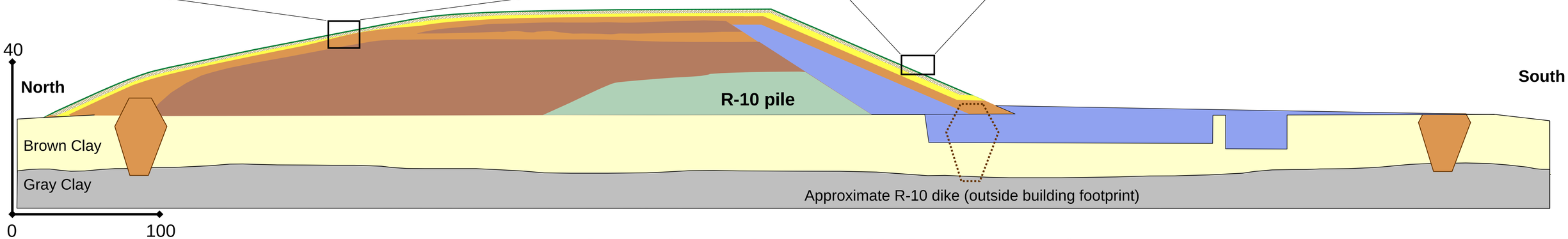




Current Conditions







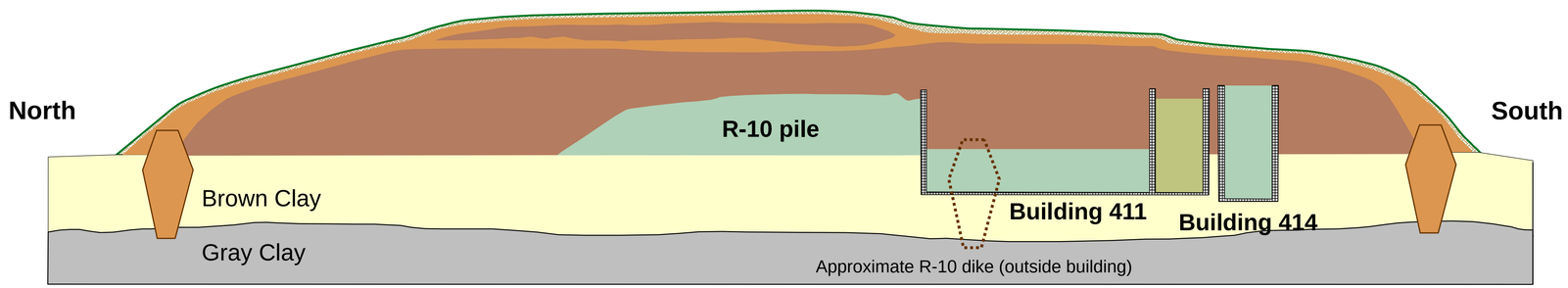
Conceptual Design of Remedial Alternative 3B

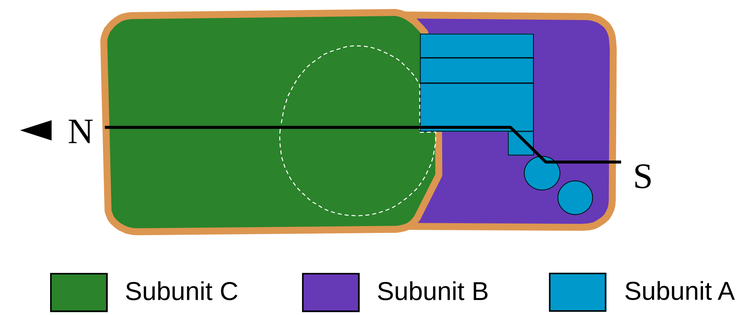
Approximate cross section vertical exaggeration 2.5:1

- Subsurface soil, topsoil, and grass
- Clay cap, dikes, and cut-off wall
- Drainage and biointrusion layers
- Contaminated soil and debris
- K-65 residue
- Other residues
- Building walls and floors
- Clean fill

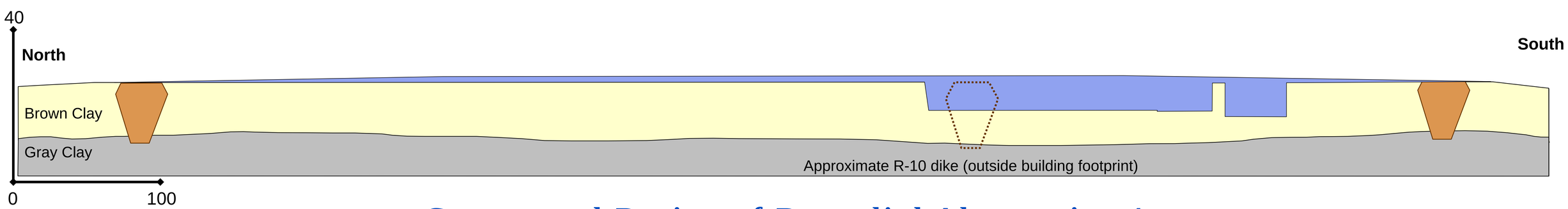
Niagara Falls Storage Site—Interim Waste Containment Structure Operable Unit

Remedial Alternative 4: Removal, Treatment, and Off-Site Disposal of Subunits A, B, and C





Current Conditions



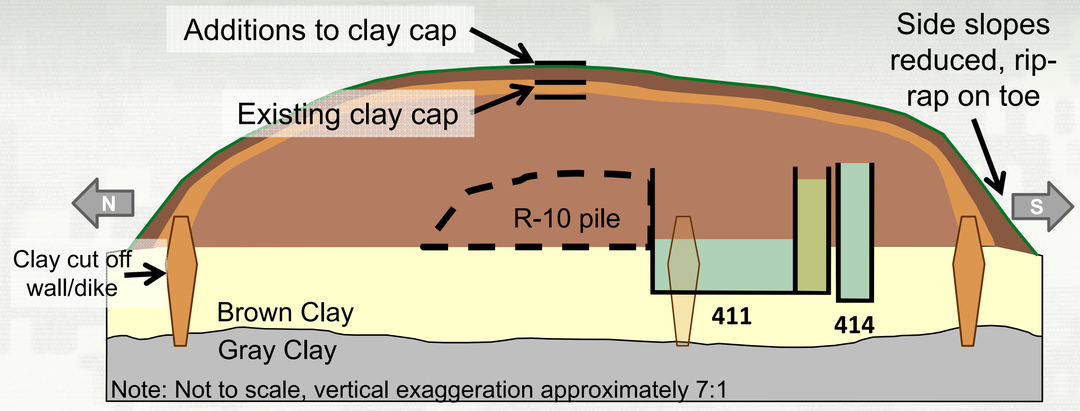
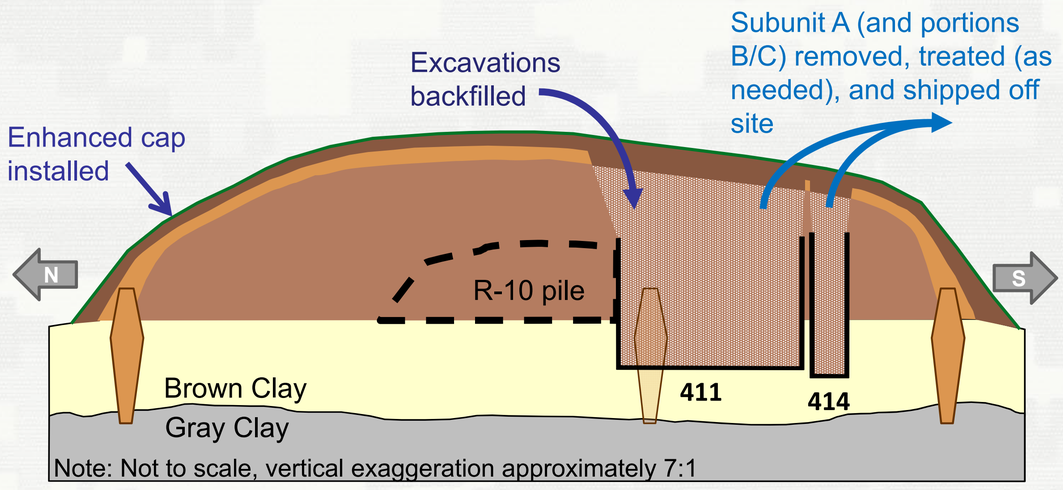
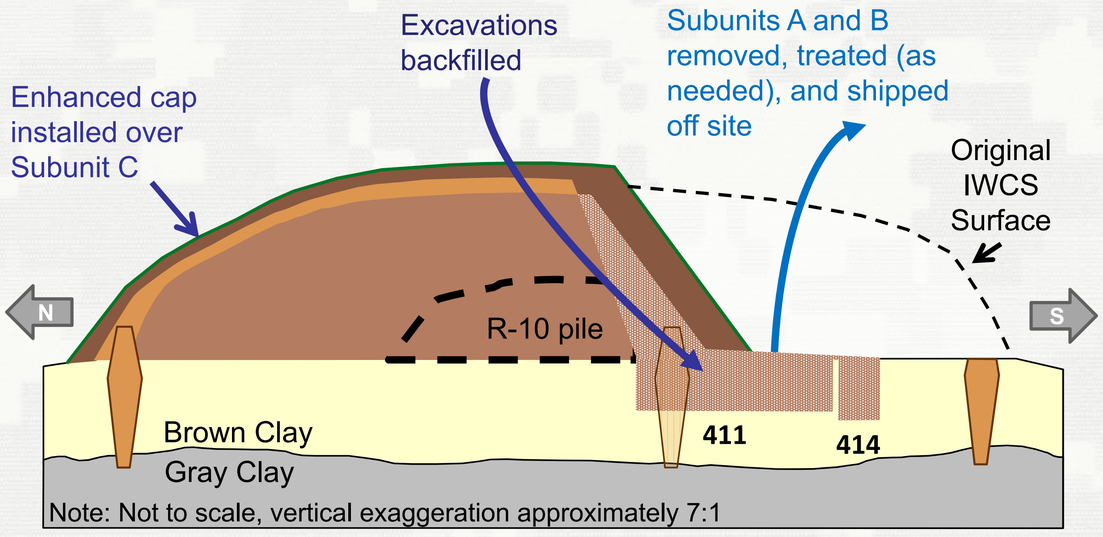
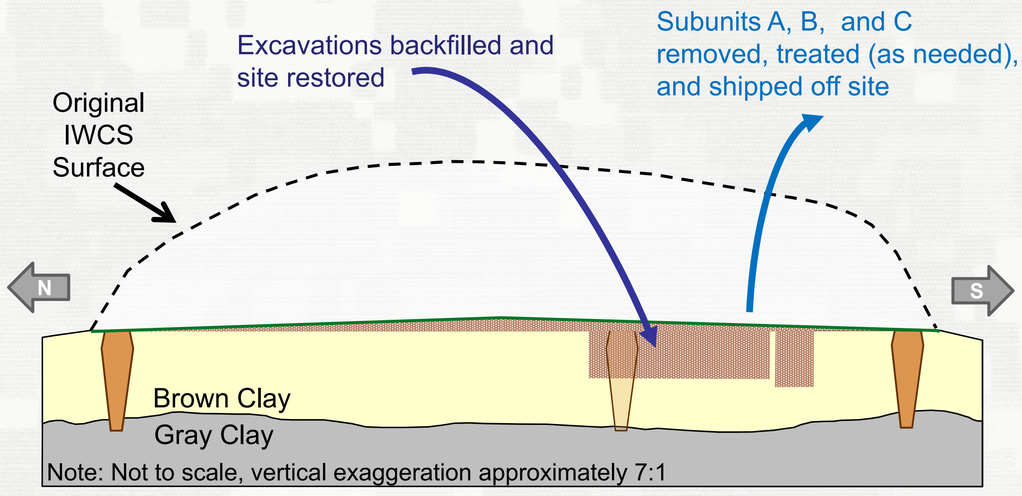
Conceptual Design of Remedial Alternative 4

Approximate cross section vertical exaggeration 2.5:1

- Subsurface soil, topsoil, and grass
- Clay cap, dikes, and cut-off wall
- Drainage and biointrusion layers
- Contaminated soil and debris
- K-65 residue
- Other residues
- Building walls and floors
- Clean fill

US Army Corps of Engineers®
Buffalo District

Niagara Falls Storage Site
Interim Waste Containment Structure Operable Unit
Proposed Plan Remedial Alternative Summary

Alternative	Present Value Cost	Remaining Total Radioactivity*
 **Alternative 2: Enhanced Containment of Subunits A, B and C**	**$67.4 Million****	**2,144 Curies**
 **Alternative 3A: Excavation, Treatment, and Off-Site Disposal of Subunit A with Enhanced Containment of Subunits B and C**	**$303.6 Million****	**22 Curies**
 **Alternative 3B: Excavation, Treatment, and Off-Site Disposal of Subunit A; Excavation and Off-Site Disposal of Subunit B with Enhanced Containment of Subunit C**	**$362.4 Million****	**4 Curies**
 **Preferred Alternative - Alternative 4: Excavation, Treatment, and Off-Site Disposal of Subunits A, B, and C**	**$490.6 Million**	**0 Curies**

* Curies reported are due to radioactivity from radium-226.

** Present value costs were calculated based on the current worth of today's cost for operating and maintaining the enhanced containment part of the alternatives. The present value cost assumes that today's cost is invested at a rate of 3.5 percent for 1,000 years.

BUILDING STRONG®