



Lake Whatcom Water and Sewer District

Sudden Valley WTP Assessment Project

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Presentation Outline

- Project Description & Purpose
- Project Approach
- Sudden Valley WTP
- Background Information
- Project Goals
- Summary of Alternatives
- Alternative Comparison
- Next Steps



Project Description & Purpose

- **South Shore Water System Assessment**
 - Assess conditions at Sudden Valley WTP
 - Provide basis for decision making with regards to WTP modifications and/or continued use
 - Phase I (Previous)
 - Assess existing condition of structures and equipment
 - Compile findings and complete Assessment Report
 - **Phase II (Current)**
 - Prepare Technical Memoranda (a la carte)
 - Prepare final alternatives analysis (Capital Improvements Plan for the SVWTP)



Project Approach Schedule

Scope of Work Item	Board Meeting Dates									
	Sep-09	Oct-14	Nov-11	Dec-09	Jan-13	Feb-10	Mar-10	Apr-14	May-12	
	Sep-30	Oct-28	Nov-25	Dec-30	Jan-27	Feb-24	Mar-31	Apr-28	May-26	
1 Project Management	Completed	Completed	Completed	Completed	Completed	Completed	Completed	Active	Target Completion	
2.1 Pump Performance Test	Completed									
2.2 Chemical Systems Analysis	Completed	Completed	Completed							
2.3 Disinfection Systems Analysis			Completed	Completed	Completed	Completed				
2.4 Backwash Systems Analysis			Completed	Completed	Completed	Completed	Completed			
2.5 Filtration System Analysis		Completed	Completed	Completed						
2.6 Tier 2/3 Seismic and Structural Analysis	Completed	Completed	Completed							
2.7 Structural/Arch Workspace Analysis					Completed	Completed	Completed	Target Completion		
2.8 NACE III Coating Inspection	Completed	Completed								
2.9 Risk Assessment and Project Prioritization							Active	Planned	Target Completion	
2.10 Draft Alternatives Analysis Report						Planned	Planned	Planned	Target Completion	
2.11 Draft Alternatives Analysis Meeting							Planned	Planned	Target Completion	
2.12 Final Alternatives Analysis Report							Planned	Planned	Target Completion	
2.13 Alternatives Analysis Board Presentation									Target Completion	
2.14 Financial Analysis Board Meeting										
3 Quality Assurance/Quality Control	Completed	Completed	Completed	Completed	Completed	Completed	Completed	Active	Target Completion	

NOTATION LEGEND

p	Planned (labor not started)
a	Active (labor underway)
c	Completed (no further labor needed)
t	Target Completion

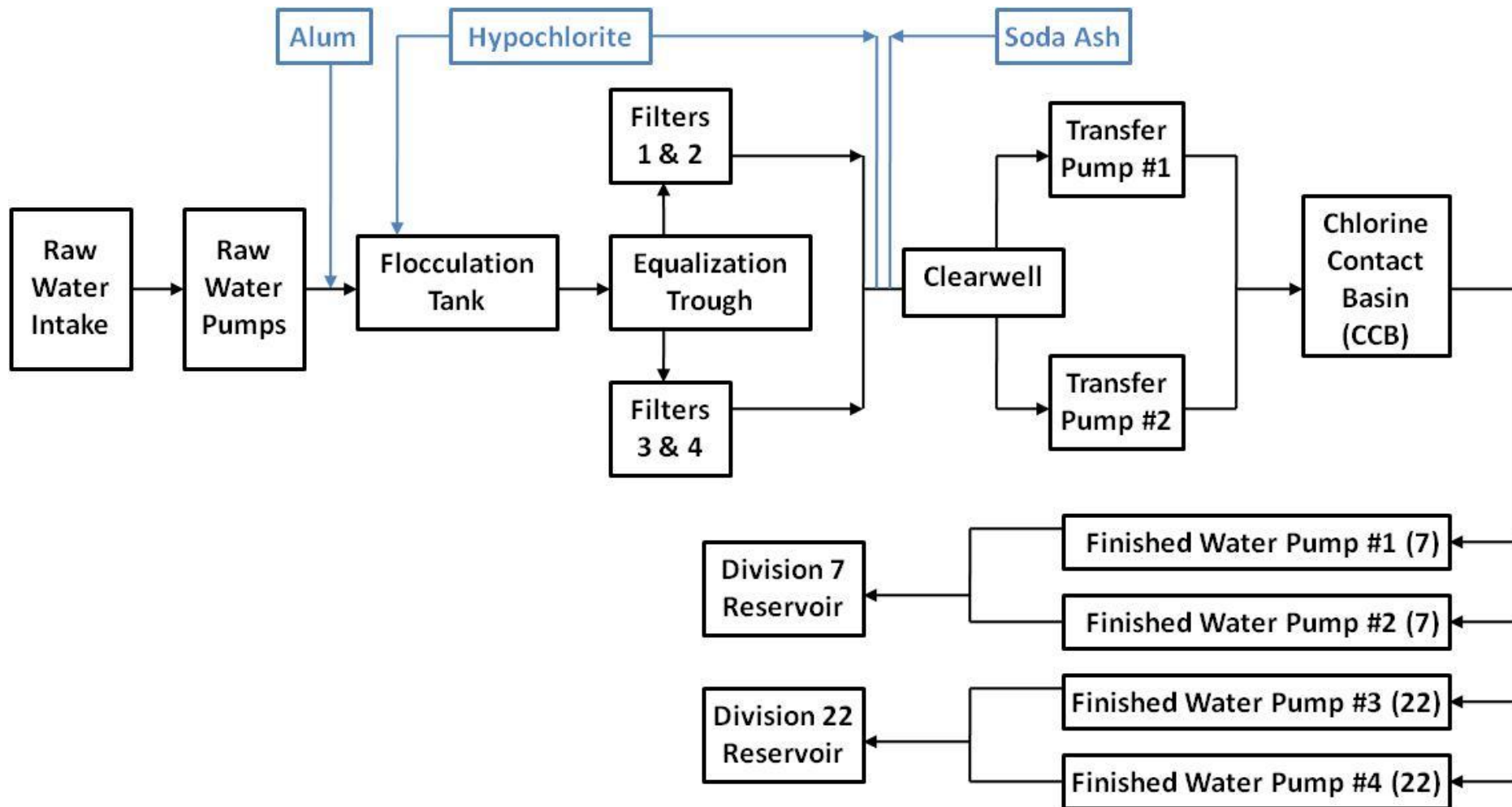
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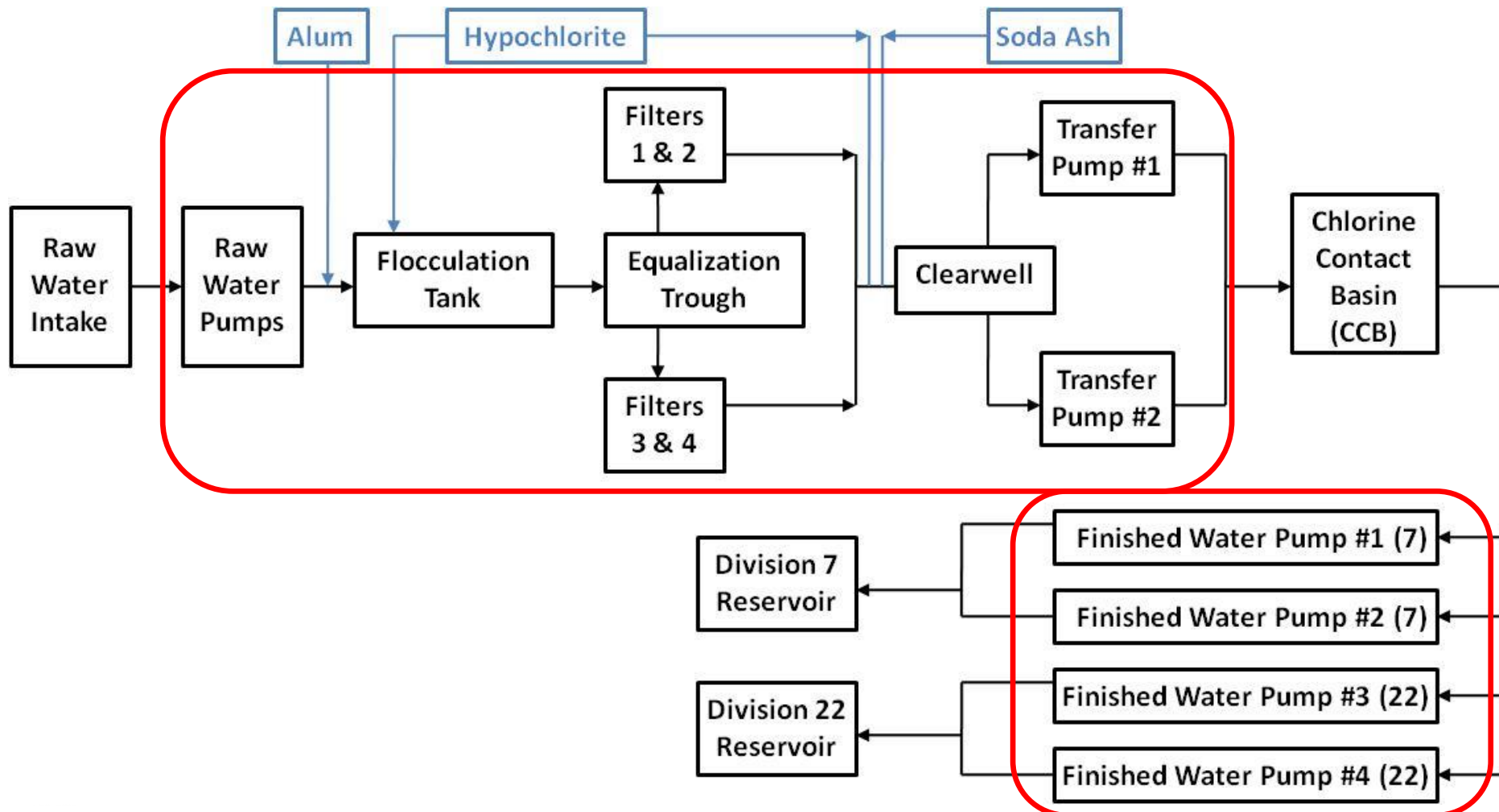
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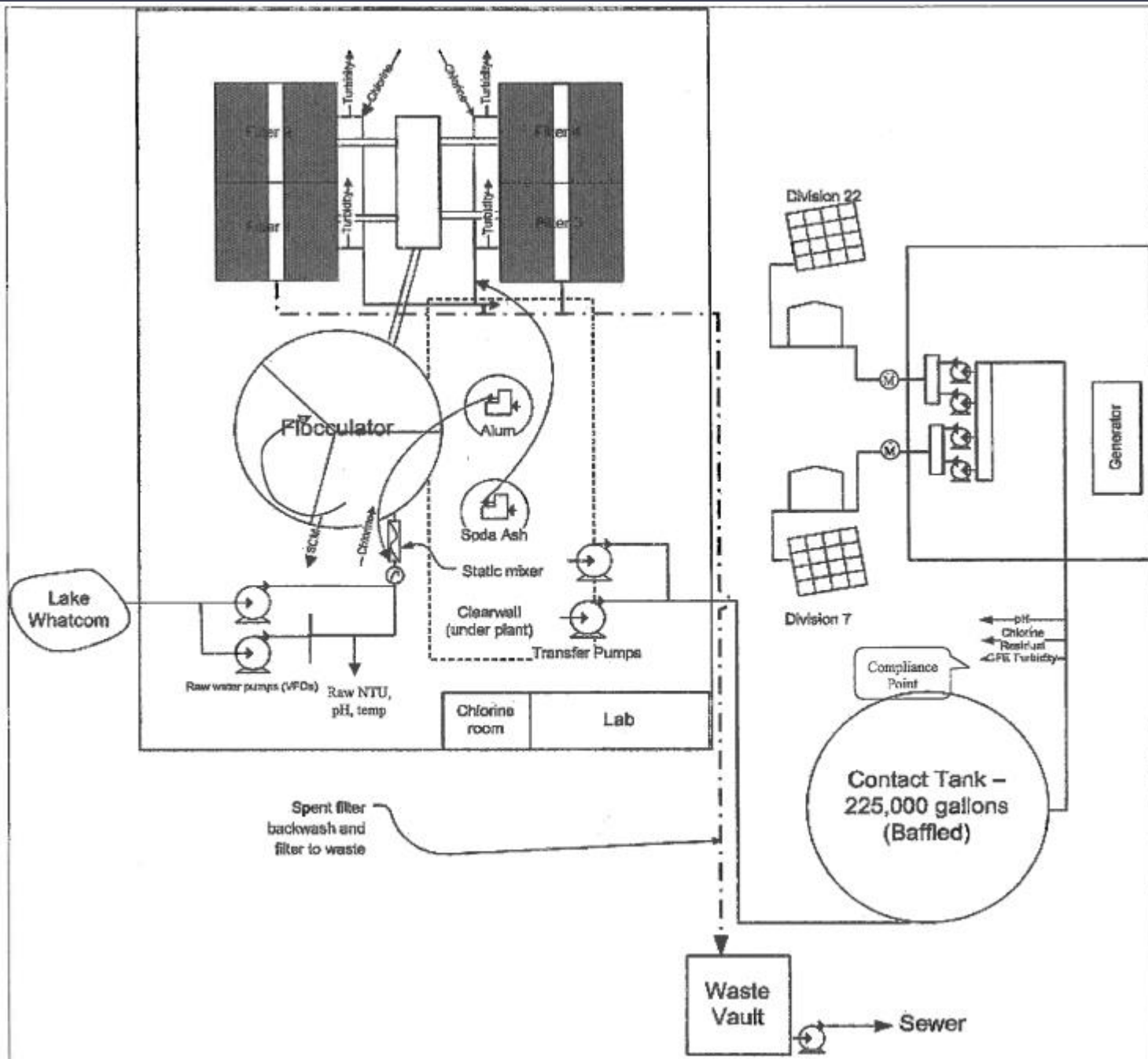
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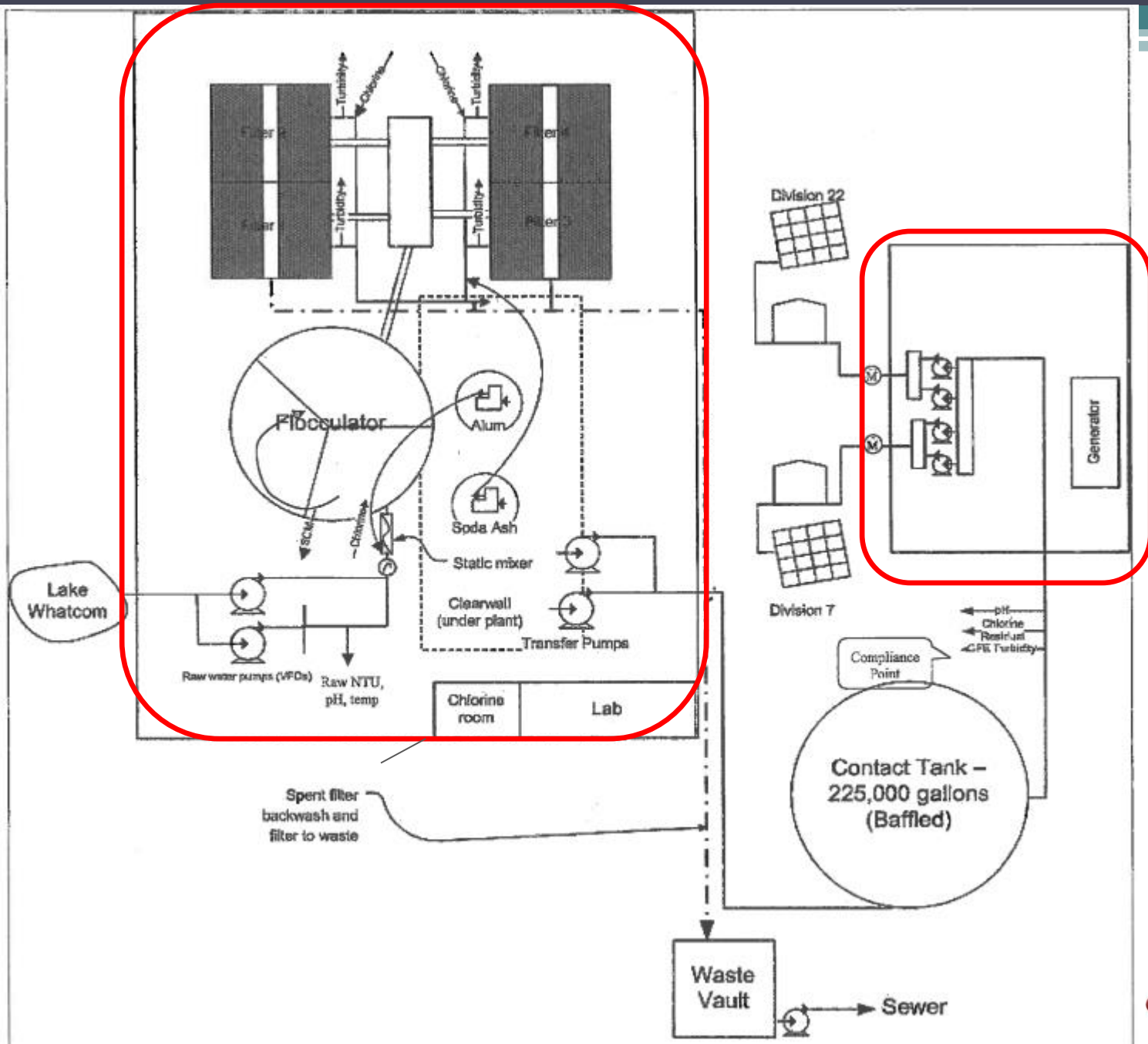
Sudden Valley WTP - Process Flow



Sudden Valley WTP - Process Flow







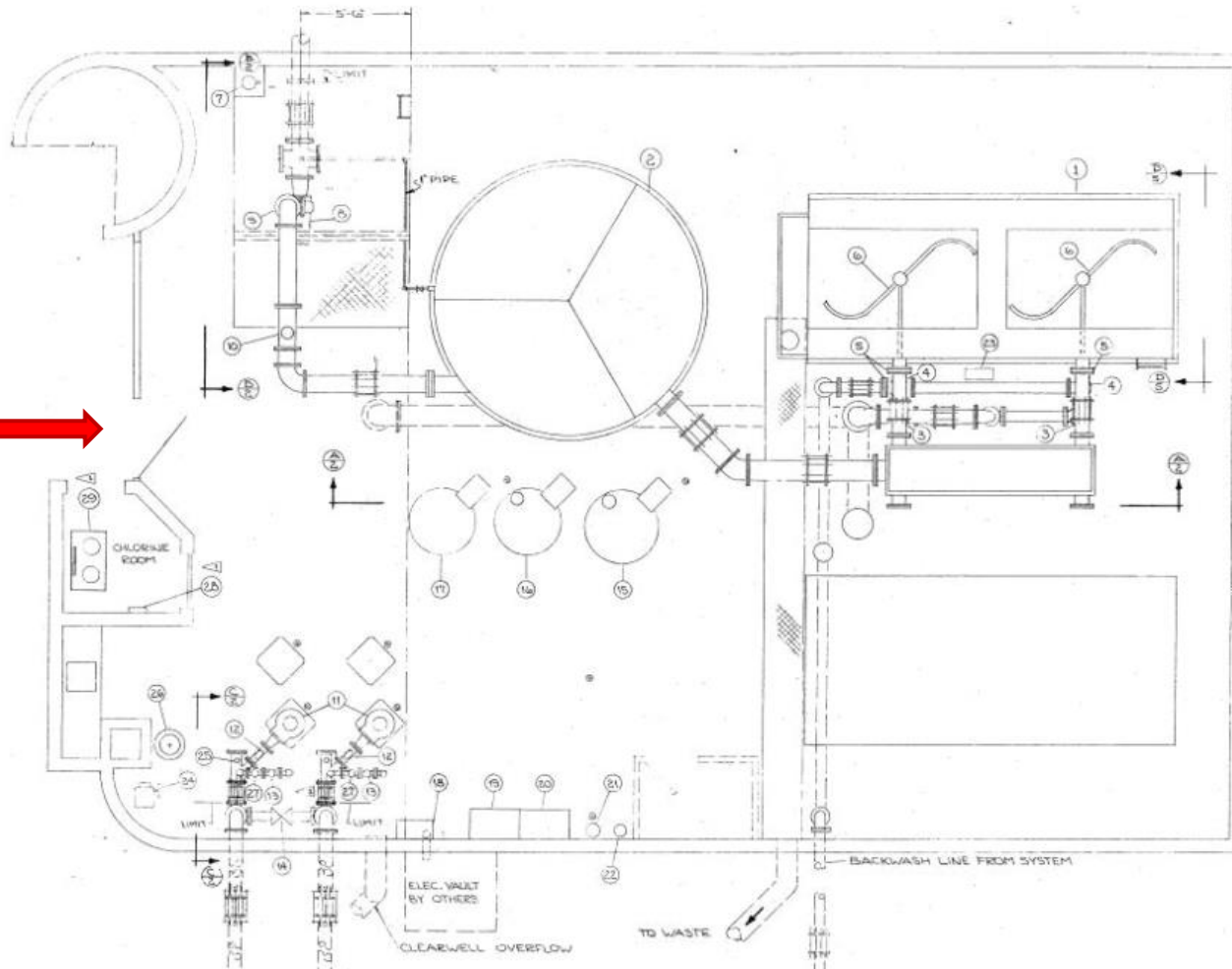
Background Information

- WTP Main Building
 - Concrete wall construction
 - In general – building is in fair condition
 - Condition Assessment
 - No major structural deficiencies
 - Steel supports corroded
 - Cramped, lacks storage, lacks access, humid/moist
 - Safety shower non-compliant, no fire suppression
 - Lack of adequate site security



Background Information

ACCESS DOOR 

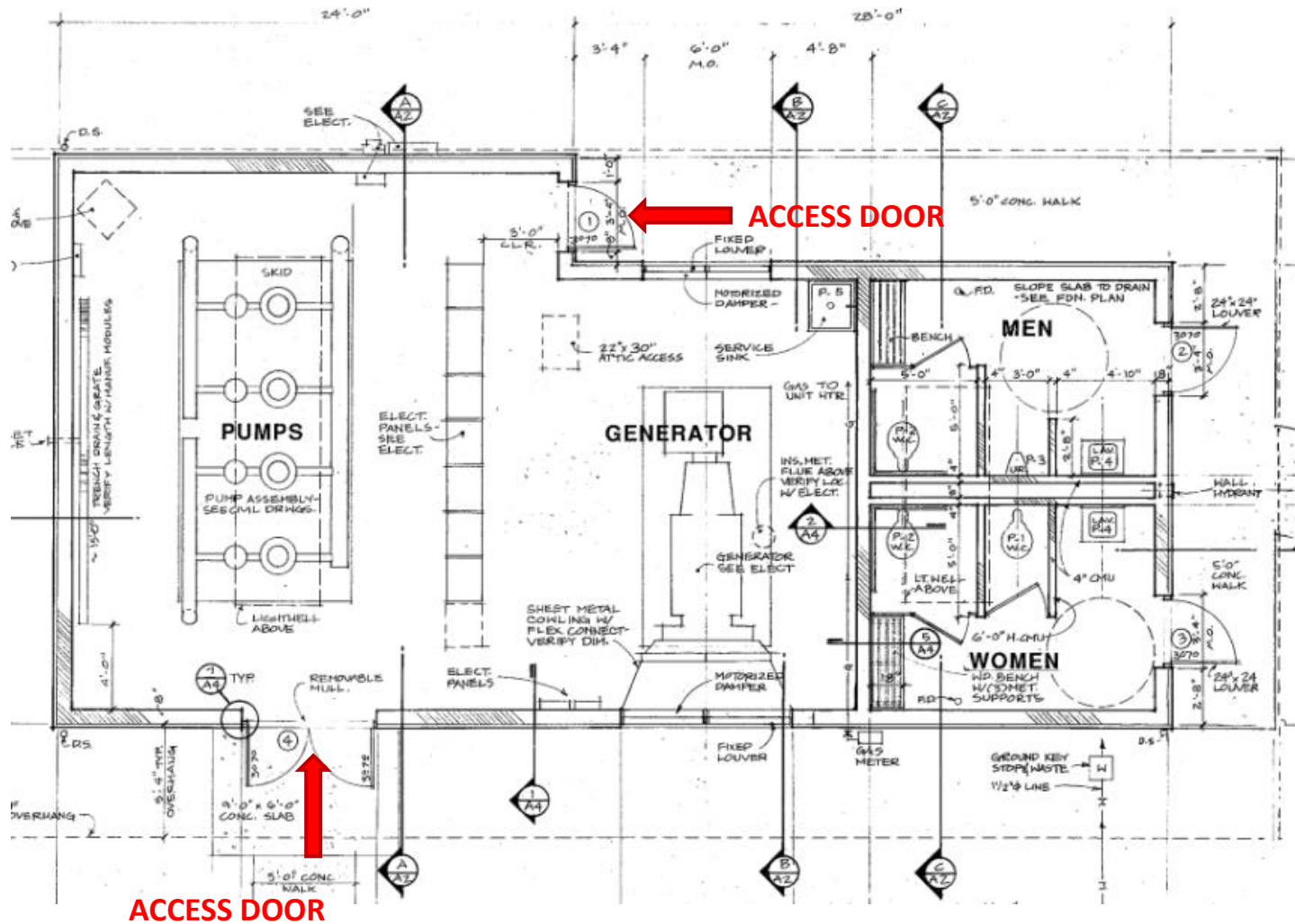


Background Information

- Finished Water Pump Building
 - CMU & wood truss construction
 - In general – building is in good condition
 - Condition Assessment
 - Wall shear and diaphragm anchorage deficiencies
 - Lack of seismic supports for equipment, pipes, etc.
 - Lack of working clearances around some equipment



Background Information



Project Goals

- Phase II - Alternatives Analysis
 - G1 - Maintain exceptional WQ performance record
 - G2 - Accommodate immediate need for additional space and separation of chemicals/electrical equipment
 - G3 - Provide adequate equipment and process redundancy
 - G4 - Improve access and flexibility for equipment repair/rehabilitation and/or future expansion
 - G5 - Provide capacity for full buildout flow (1,400 gpm)
 - G6 - Provide treatment equipment for 30 or 50-year time period



Summary of Alternatives

- WTP Main Building
 - Expand existing WTP Main Building “up”
 - Expand existing WTP Main Building “out”
 - Construct a new WTP Building
- Finished Water Pump Building
 - No alternatives analyzed
 - Minor improvements needed (~\$100,000-\$120,000)



Summary of Alternatives

- WTP Main Building
 - Expand existing WTP Main Building “up”
 - Expand existing WTP Main Building “out”
 - Construct a new WTP Building
 - For each Alternative, consider.....
 - Condition and Code Adherence
 - Constructability
 - Property, Land Acquisition, and Land use
 - Access
 - Capacity for Expansion



Summary of Alternatives

Alternative 1: Expand WTP Main Building “Up”

- Expand structure vertically
 - More difficult to conform with current codes
 - Current “ceiling” slab is non-load bearing
 - Entire facility must then be brought up to current code
 - Constructable, but difficult due to access
 - Geotechnical analysis required
 - Most feasible from a land use/acquisition perspective
 - Difficult to access given the hillside, stairs, elevators
 - Must consider ADA issues as well
 - Does not improve expansion capability



Summary of Alternatives

Alternative 2: Expand WTP Main Building “Out”

- Expand structure horizontally
 - More difficult to conform with current codes
 - Connecting onto existing structures is difficult
 - Entire facility must then be brought up to current code
 - Constructable
 - Geotechnical analysis required
 - Land use/acquisition/easements may be difficult
 - Easy to access
 - Must consider large truck and ADA issues
 - Does improve expansion capability
 - Some existing equipment must be relocated



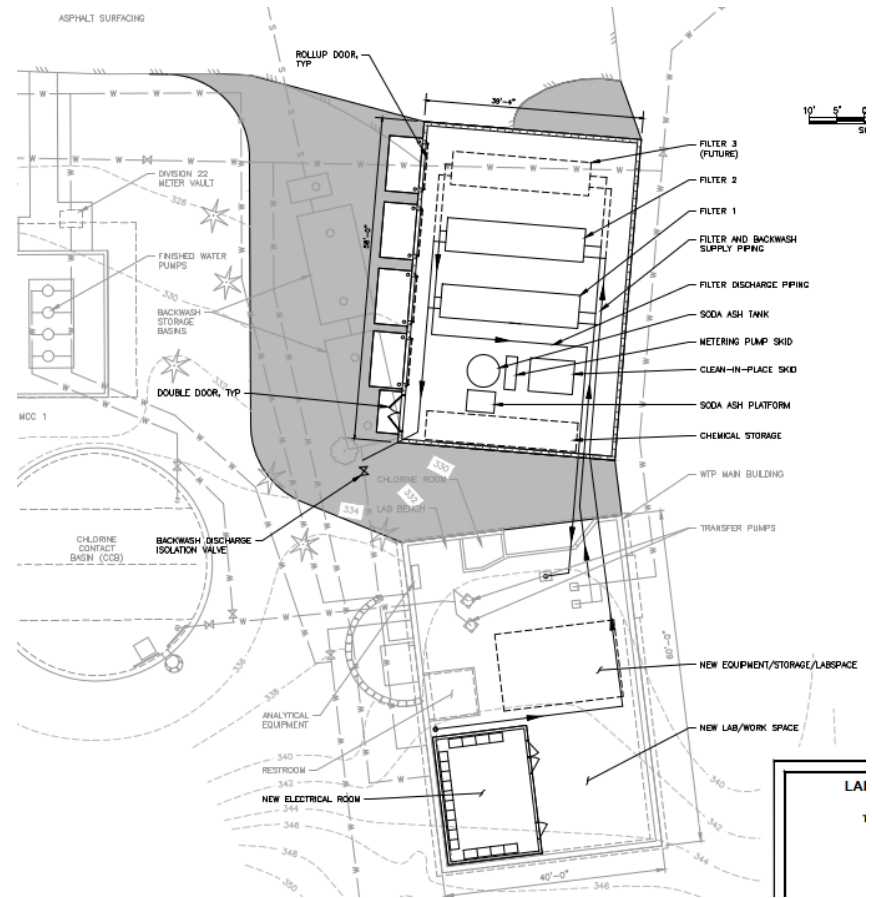
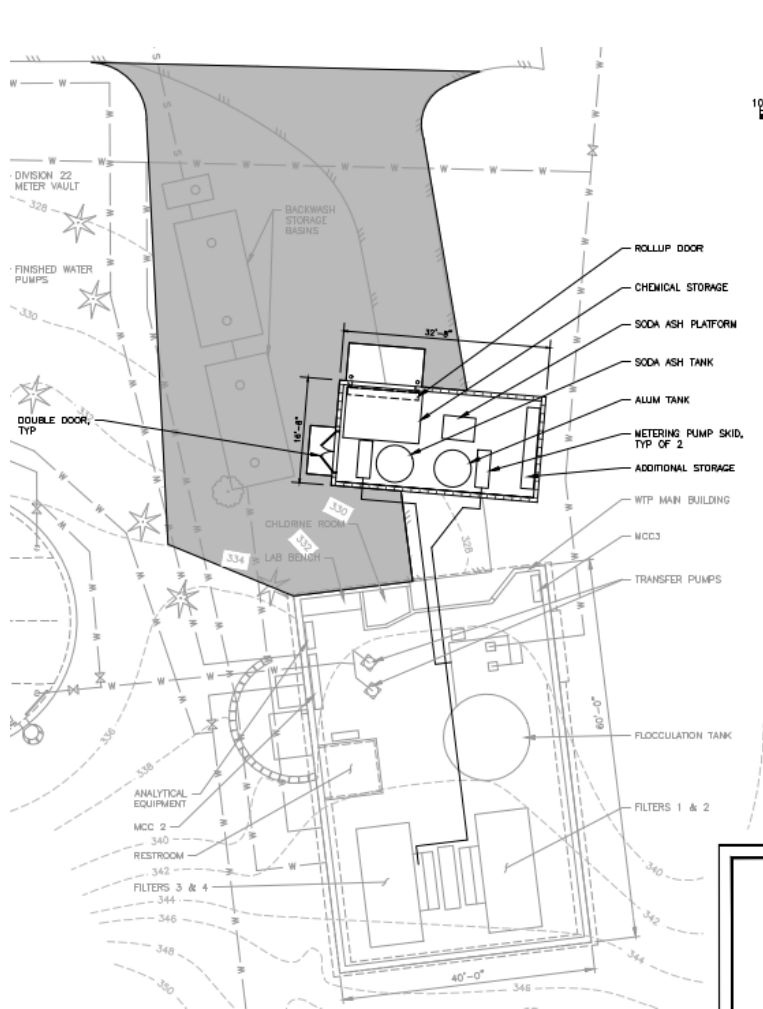
Summary of Alternatives

Alternative 3: New WTP Building

- Expand structure vertically
 - Easy to conform with current codes
 - WTP Main Building not affected
 - Constructable
 - Geotechnical analysis required
 - Land use/acquisition/easements may be difficult
 - Easy to access
 - Must consider large trucks and ADA issues
 - Does improve expansion capability
 - Some existing equipment must be relocated



Summary of Alternatives



Alternative Comparison

Backwash Cost, Benefits, & Drawbacks

No.	Description	Advantage	Disadvantage
1	Expand Up	<ul style="list-style-type: none">- Land acquisition/easements	<ul style="list-style-type: none">- Current codes- Access- Non-load bearing floor- Geotechnical considerations
2	Expand Out	<ul style="list-style-type: none">- Access- Constructability	<ul style="list-style-type: none">- Land acquisition/easements- Current codes- Equipment relocation
3	New Building	<ul style="list-style-type: none">- Access- Constructability- Expansion capability- Current codes	<ul style="list-style-type: none">- Land acquisition/easements- Equipment relocation



Alternative Comparison

Advantages & Disadvantages

No.	Description	Advantage	Disadvantage
1	Expand Up	<ul style="list-style-type: none"> - Land acquisition 	<ul style="list-style-type: none"> - Current codes - Access - Non-load bearing floor - Geotechnical considerations
2	Expand Out	<ul style="list-style-type: none"> - Access - Constructability 	<ul style="list-style-type: none"> - Land acquisition - Current codes - Equipment relocation
3	New Building	<ul style="list-style-type: none"> - Access - Constructability - Expansion capability - Current codes 	<ul style="list-style-type: none"> - Land acquisition - Equipment relocation

**** Alternative 3 has the most advantages, and the fewest disadvantages**



Alternative Comparison

- Building materials
 - Wood, metal, CMU, \$150 - \$500 per square foot
- Other considerations
 - Office space
 - WTP Operations & Alternative EOC accommodations, \$50 - \$250 per SF
 - Storage
 - \$5,000 - \$10,000
 - Lifting Equipment
 - \$5,000 - \$15,000
 - Site Security
 - Fencing, \$45 - \$70 per LF; Cameras/surveillance, \$20,000 - \$50,000
 - Access
 - Large coiling door, \$15,000 - \$20,000
 - New restrooms
 - \$100 - \$200 per SF



Next Steps

- Risk Assessment
 - (April/May 2021)
- Final Alt. Analysis & Recommendations Report
 - (May/June 2021)



Questions?

