

May 9, 2025

Innovative Solutions for Modernizing the City Creek Water Treatment Plant

Overcoming Project Restraints and Challenges




American Water Works Association
Pacific Northwest Section

ANNUAL CONFERENCE
2025



**Public
Utilities**



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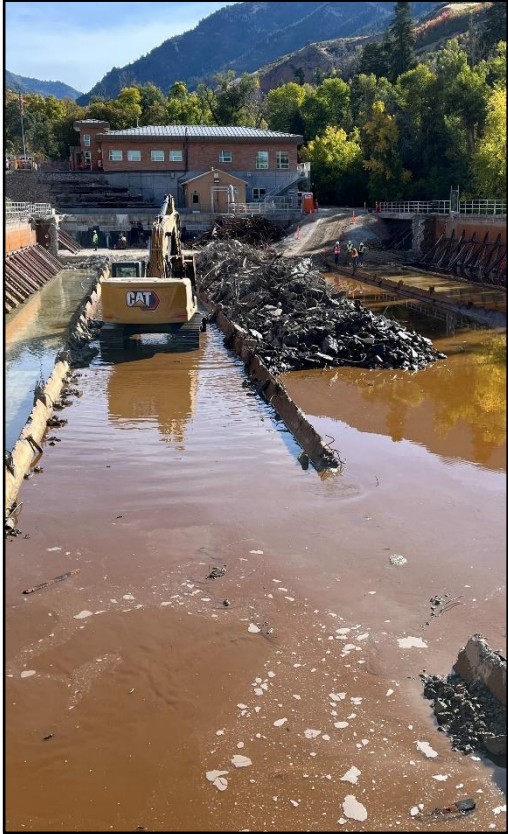
Innovative Solutions for Modernizing the City Creek Water Treatment Plant

Project Restraints and Challenges



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Innovative Solutions for Modernizing the CCWTP



The City Creek Water Treatment Plant Upgrade Project in Salt Lake City, Utah, represents a significant engineering endeavor aimed at modernizing the state's oldest water treatment facility. Built in 1953, the infrastructure's condition no longer made structural improvements to withstand predicted seismic activity a viable option, leading to a decision to rebuild the facility within the existing plant footprint, all while providing a constant supply of water throughout construction. This presentation discusses innovative design solutions implemented to overcome the unique challenge of constructing the 16 mgd capacity plant within a highly restricted footprint situated three miles up a steep and narrow canyon in immediate proximity to the heart of downtown Salt Lake City. Solutions include utilizing high-rate sedimentation, minimizing excavation using existing infrastructure, optimizing layout to maximize access, and obtaining chlorine contact time with whole plant chlorination.

Agenda

1 City Creek Water Treatment Plant

2 Challenge 1 Canyon Access

Challenge 2 Public Safety

Challenge 3 Project Schedule

Challenge 4 Site Constraints



City Creek Water Treatment Plant

Plant History

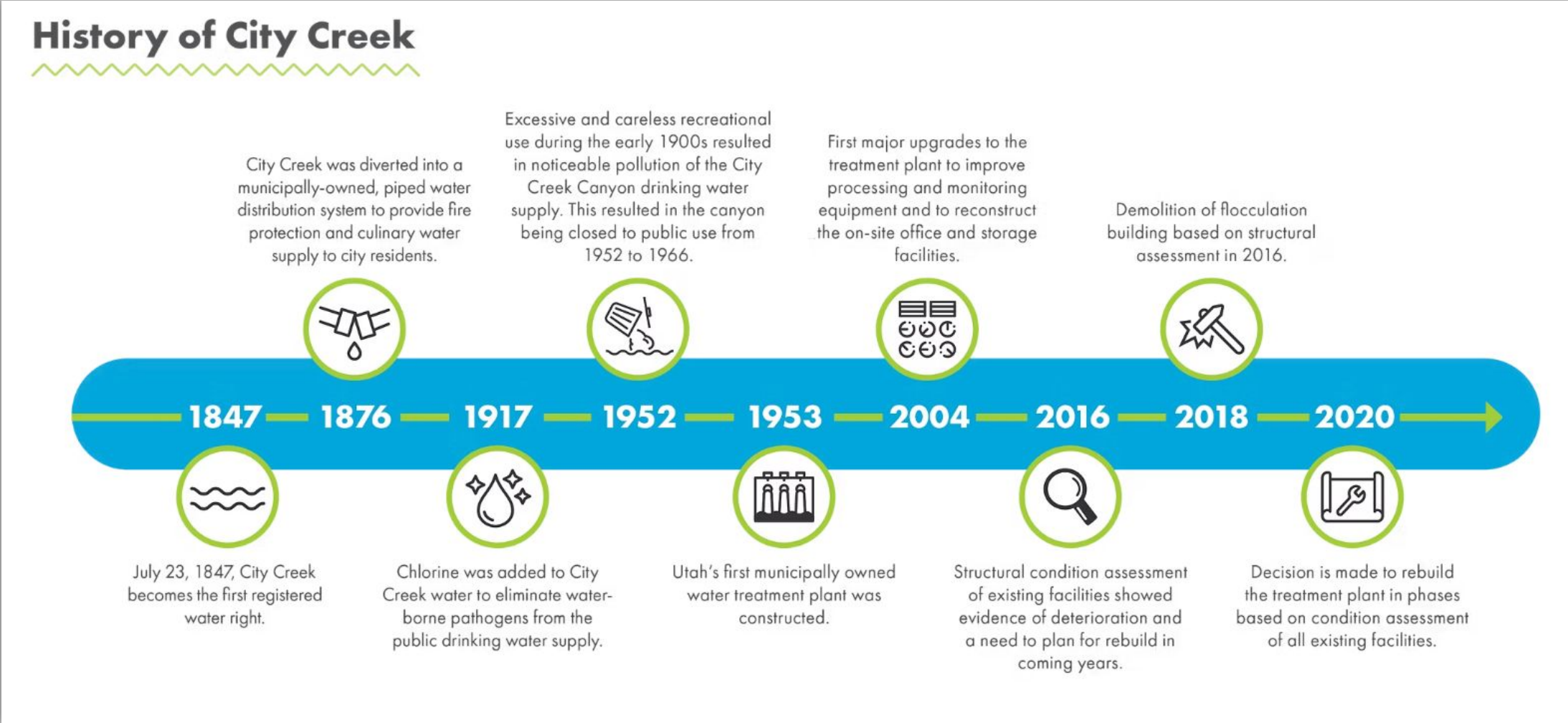


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Plant History



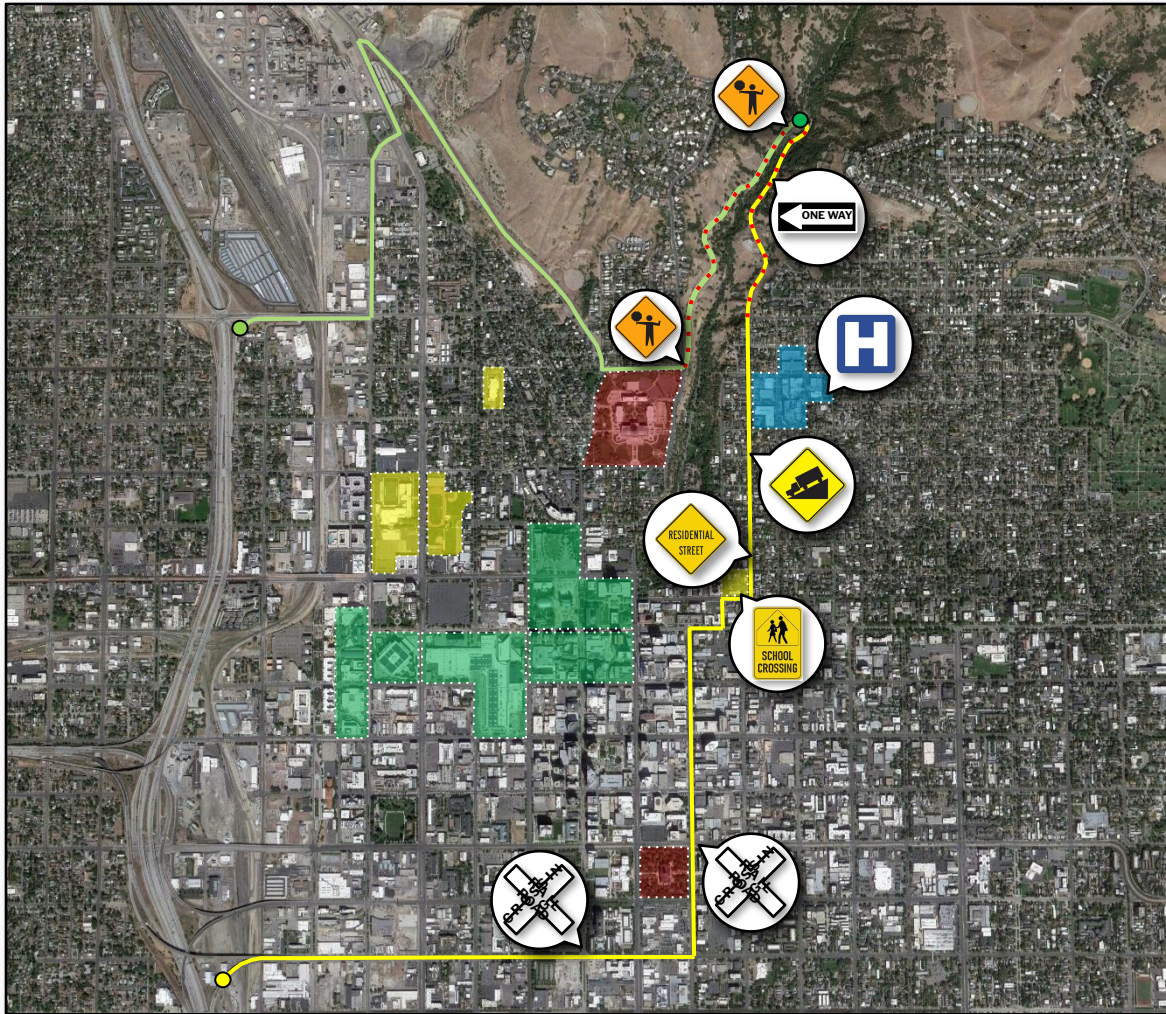


Project Challenge 1

Canyon Access



Canyon Access



Access Concerns

- Hospitals
- Schools
- Tourism and Traffic
- Light Rail
- Residential Area
- Multiple Unprotected Intersections
- Steep Incline
- Recreation



Project Challenge 2

Public Safety

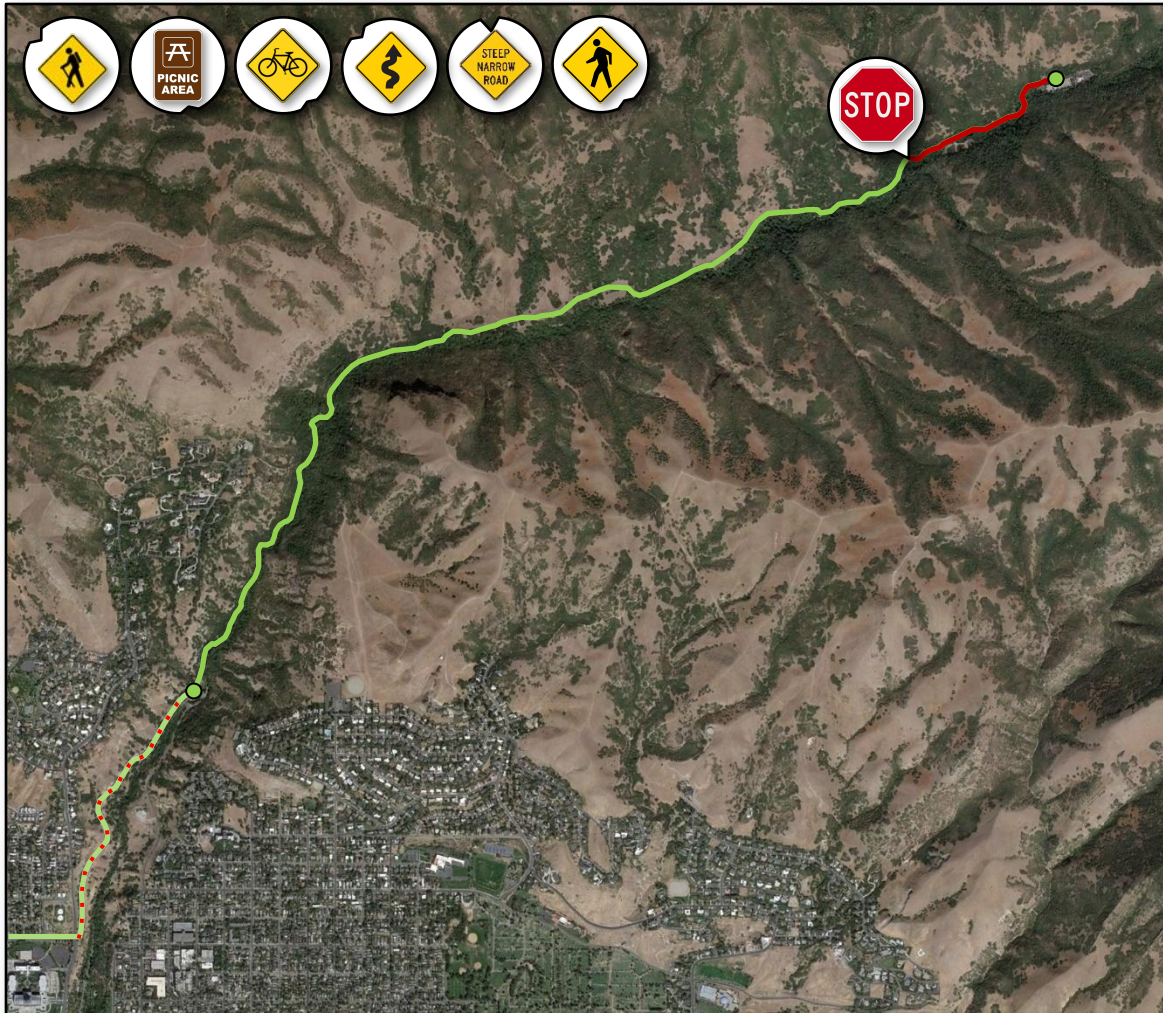


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Public Safety



Recreational Activities

- Biking
- Hiking
- Running
- Picnic Sites

Concerns

- Narrow Pathways
- Blind Corners
- Low Visibility
- Heavy Equipment
- High Speeds (Bikes)
- Debris

Resolution

- No Public Access on Weekdays
- Saturday and Sunday Public Access
- No Public Vehicles
- No Access Above Site 16



Project Challenge 3

Project Schedule



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BRIC Funding

**REDUCING
RISK
FROM:**



Earthquakes



Floods



Landslides



Wildfires

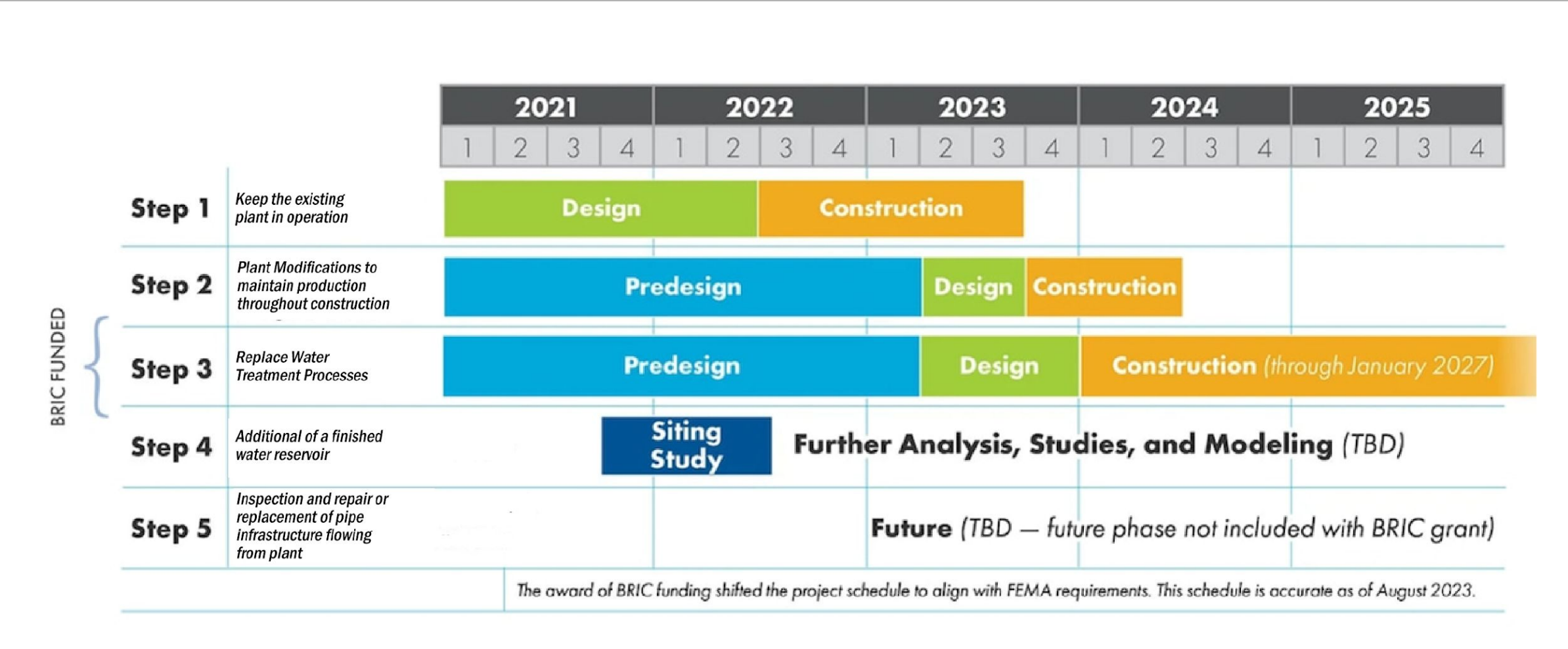


Drought



Severe Weather

Project Schedule





Project Challenge 4

Site Constraints



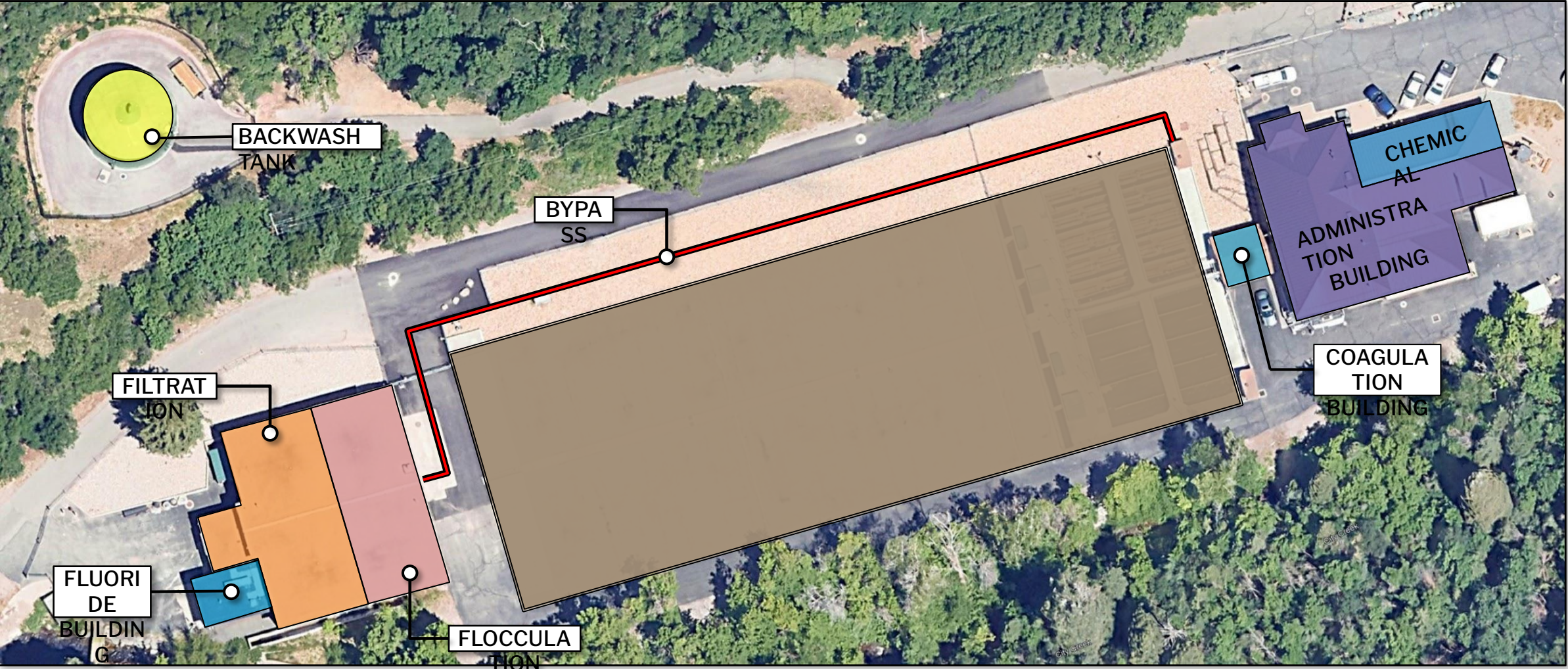
JUNE
2023



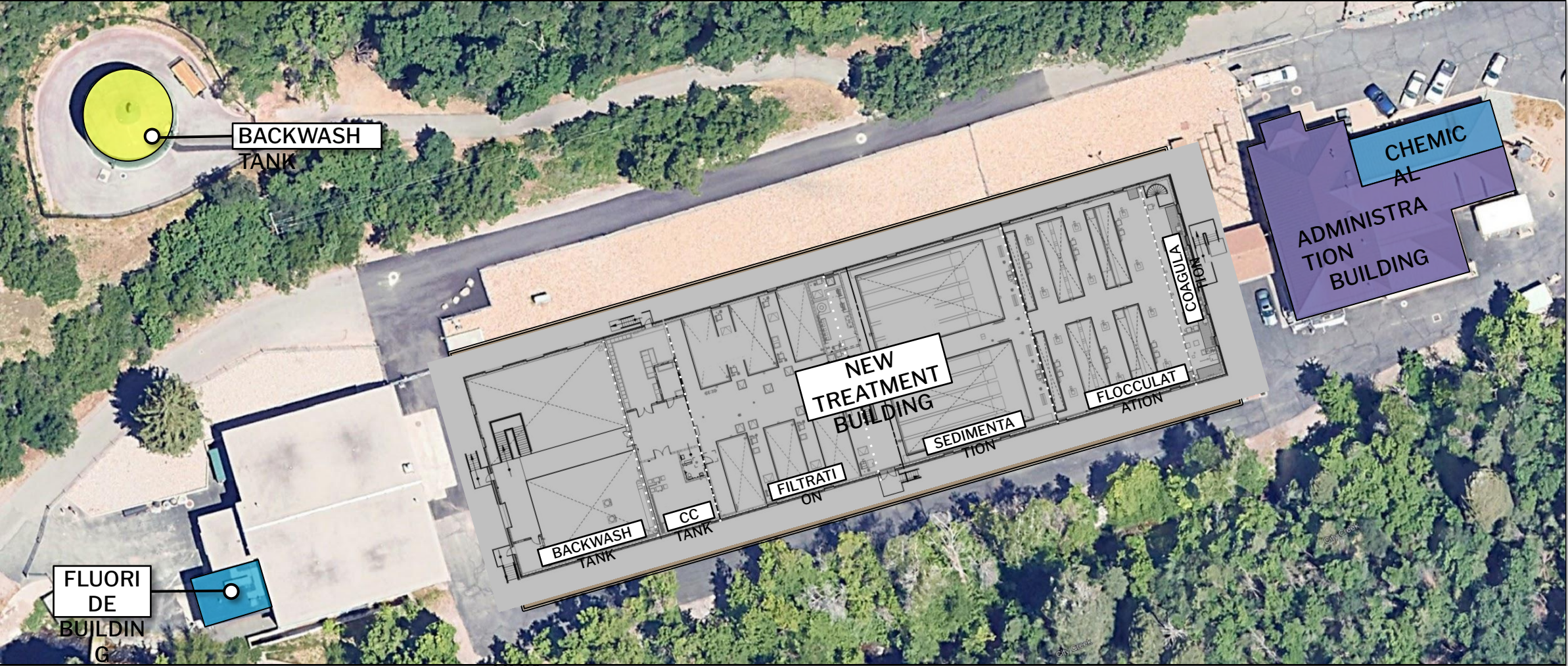
City Creek Water Treatment Plant [2023]



City Creek Water Treatment Plant [2025]



City Creek Water Treatment Plant [2027]

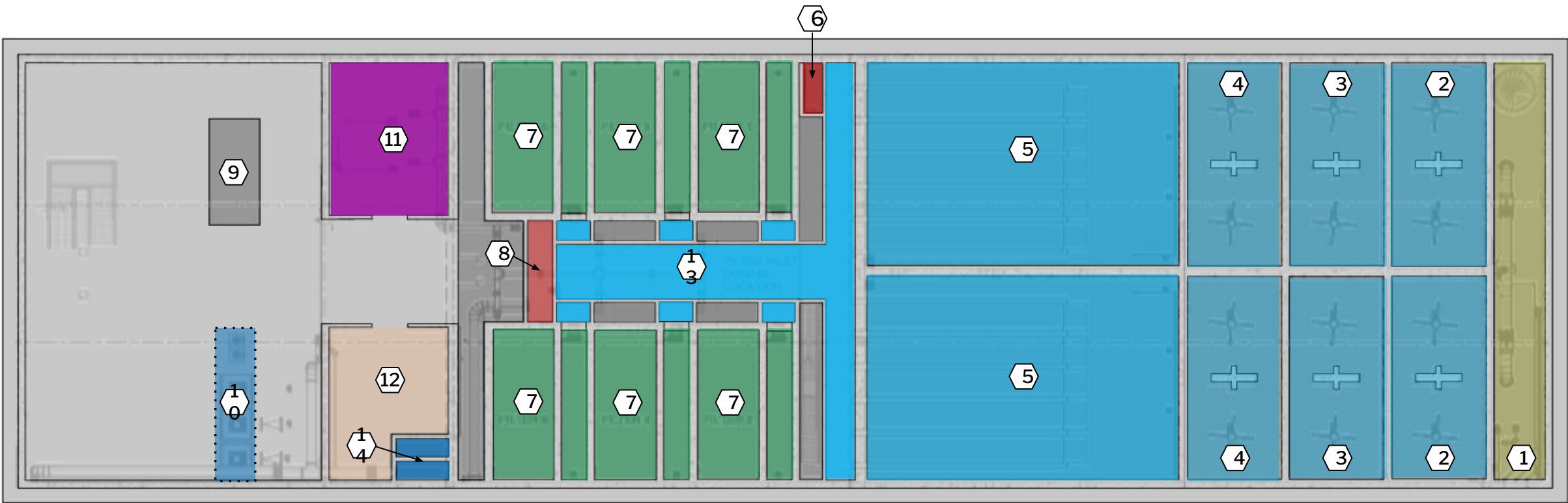


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2025



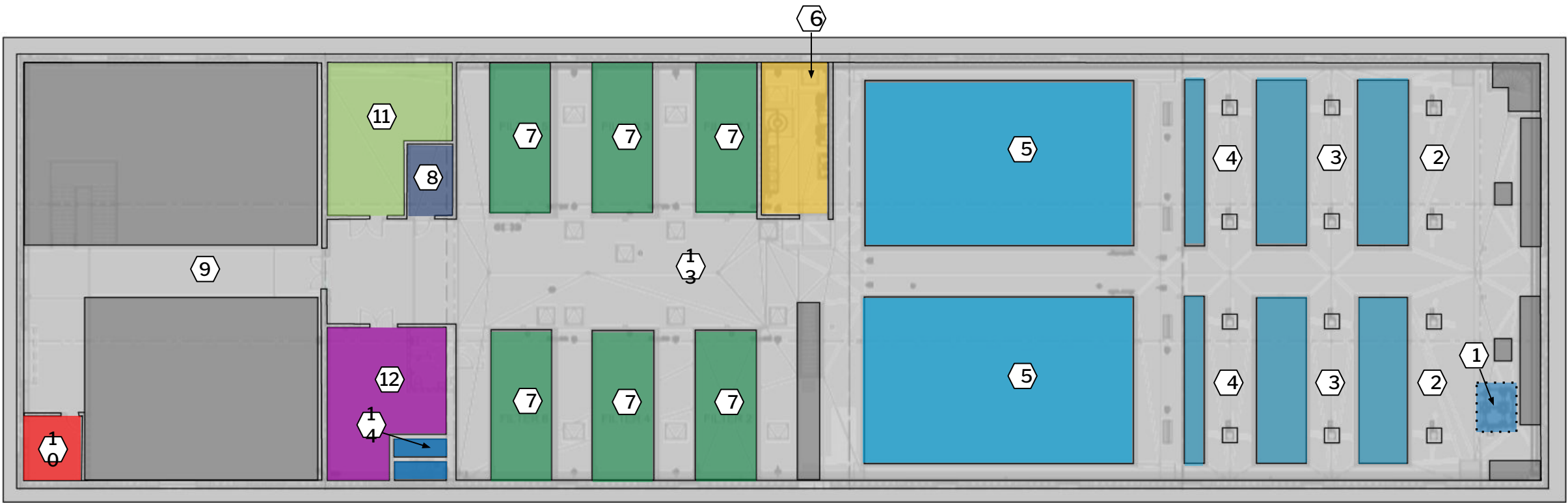
- | | | | | | |
|---|--|---|--|---|---------------------------------------|
| ① | COAGULATION AREA [PUMP
DISCUSSION] | ⑥ | SOLIDS COLLECTION BOX | ⑪ | BACKWASH WATER TANK |
| ② | DECOAGULATION [STAGE 1][13.5
MIN] | ⑦ | HIGH RATE FILTRATION [7.4
GPM/FT ²] | ⑫ | CHLORINE CONTACT TANK [12
MINUTES] |
| ③ | FLOCCULATION [STAGE 2][13.5
MIN] | ⑧ | SPILL-OVERFLOW SYSTEM | ① | CONCRETE + BACKWASH TANK |
| ④ | FLOCCULATION [STAGE 3] [13.5 MIN] | ⑨ | PLANT FLOW METER VAULT | ② | DAVIDIAN PUMP VAULT |
| ⑤ | HIGH-RATE SEDIMENTATION
[INCLINED PLATES] | ⑩ | BACKWASH PW PUMP INTAKE | ③ | FILTER GALLERY |

Intermediate Level



- | | | |
|--|-------------------------------------|----------------------------|
| ① COAGULATION AREA [PUMP
DIFFUSION] | ⑥ SOLIDS COLLECTION BOX | ⑪ AIR SCOUR BLOWER ROOM |
| ② DIFFUSION [STAGE 1][13.5
MIN] | ⑦ HIGH RATE FILTRATION [7.4
MIN] | ⑫ UTILITY ROOM |
| ③ DIFFUSION [STAGE 2][13.5
MIN] | ⑧ PLANT FLOW METER VAULT | ①③ FILTER INFLUENT CHANNEL |
| ④ DIFFUSION [STAGE 3] [13.5 MIN] | ⑨ PLANT FLOW METER VAULT | ①④ CONSTANT HEAD BOX |
| ⑤ HIGH-RATE SEDIMENTATION
[INCLINED PLATES] | ⑩ BACKWASH PW PUMPS | |

Operating Level



- | | | |
|---|-----------------------------|----------------------------|
| ① PUMP DIFFUSION SYSTEM | ⑥ POLYMER ROOM | ⑪ ELECTRICAL ROOM |
| ② FLOCCULATORS [STAGE 1] | ⑦ HIGH RATE FILTRATION [7.4 | ⑫ BUILDING MECHANICAL ROOM |
| ③ FLOCCULATORS [STAGE 2] | ⑧ CONTROL ROOM | ⑬ OPERATING FLOOR |
| ④ FLUCCULATORS [STAGE 3] | ⑨ ELEVATED WALKWAY | ⑭ CONSTANT HEAD BOX |
| ⑤ HIGH-RATE SEDIMENTATION [INCLINED PLATES] | ⑩ SHELTER IN PLACE | |



Questions?



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