

MPWSP Desalinization Plant Master Plan

JOHN DONLEY
JOANNE HA
DÁIRE HENEGHAN
THOMAS SHOREY

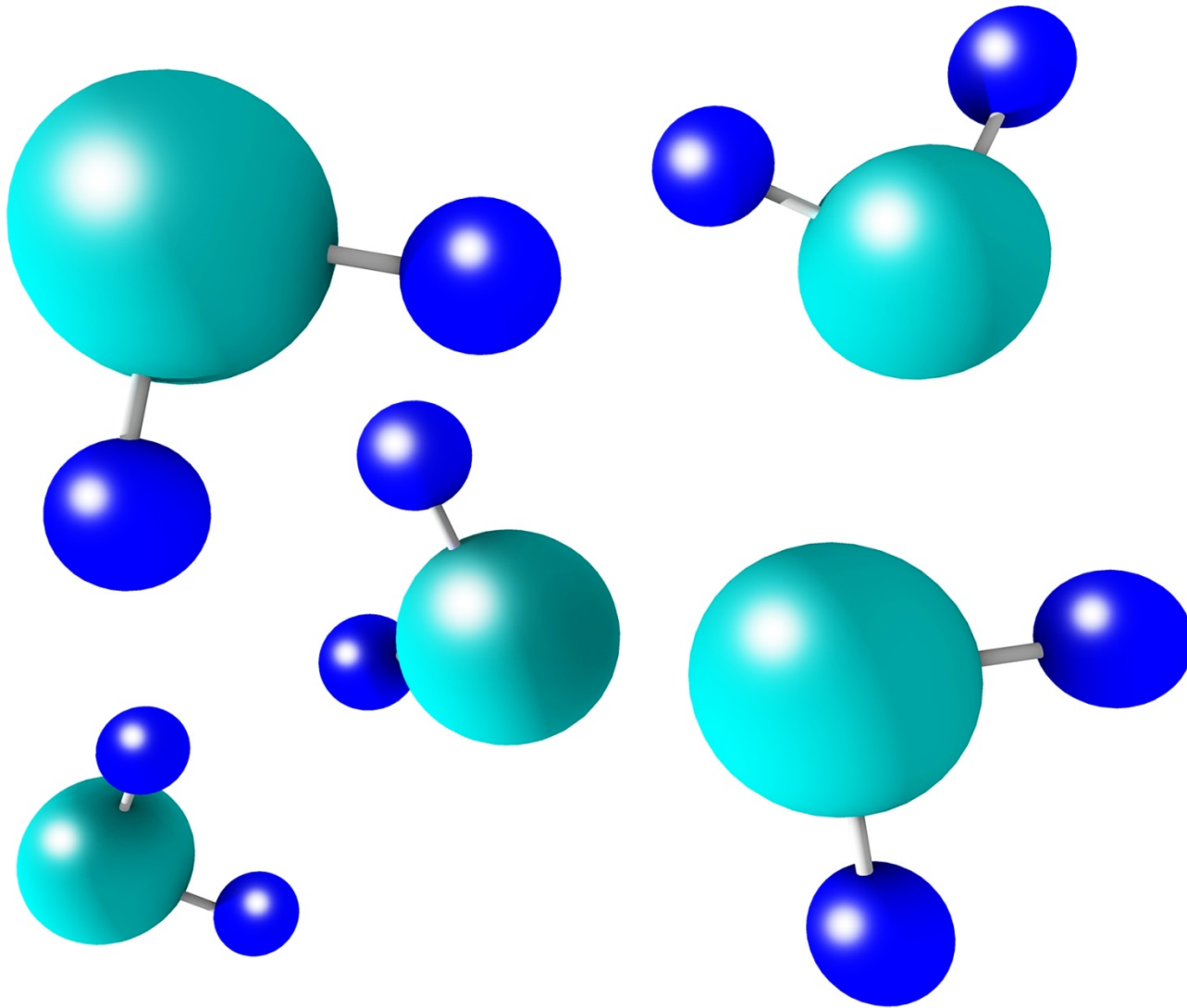


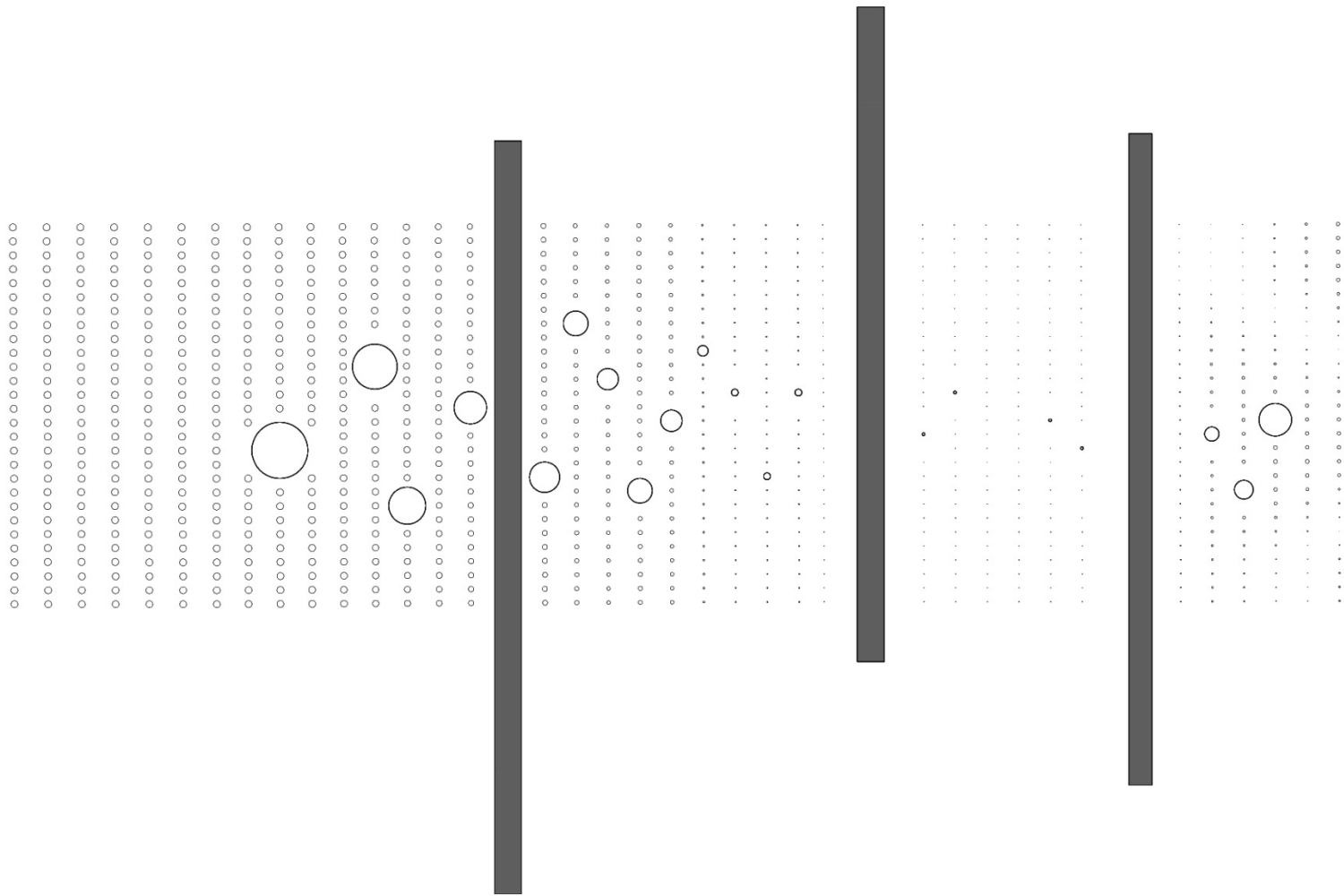
MPWSP Desalination Plant

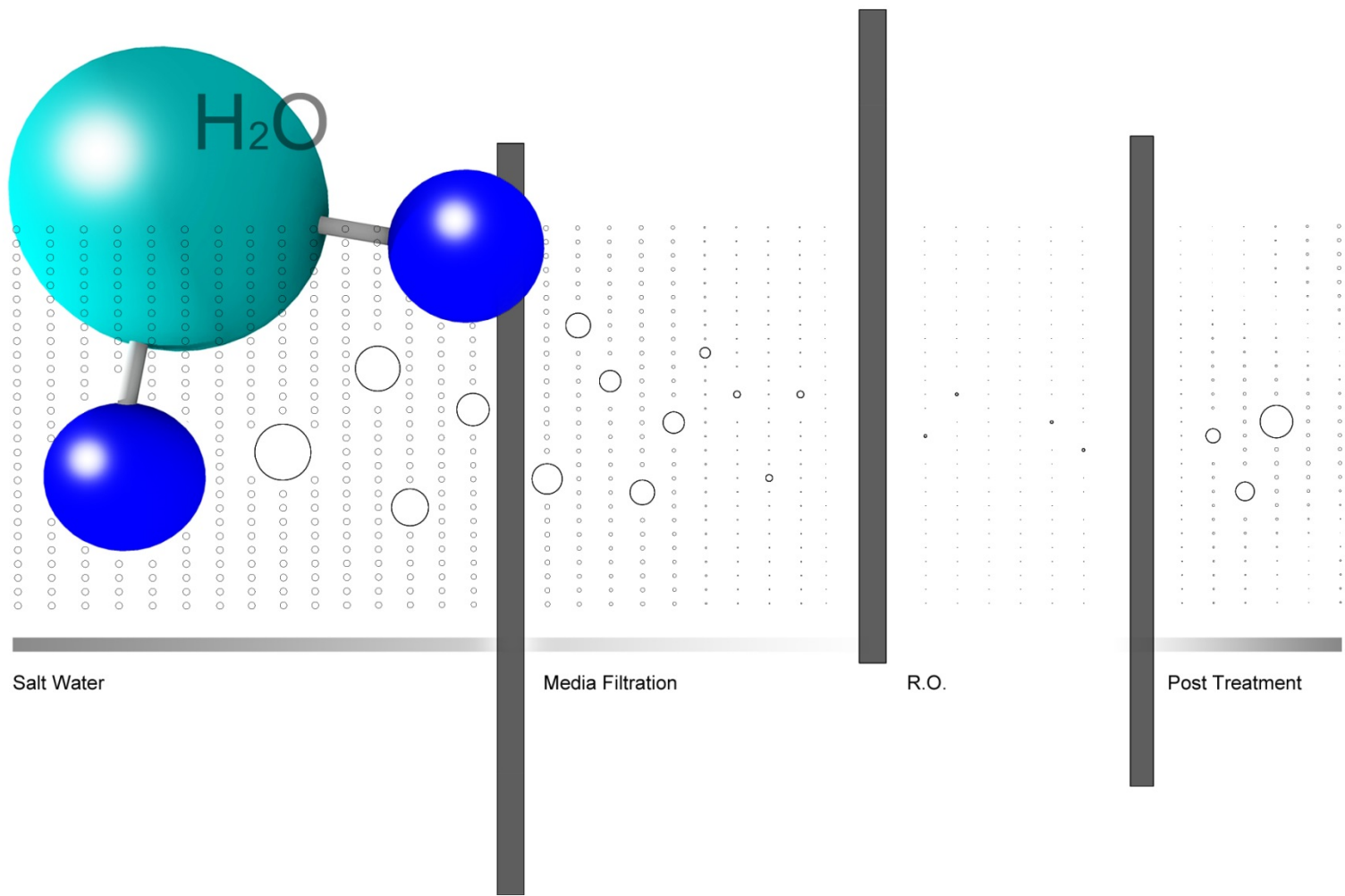
Cal Poly Architecture and Environmental Design: Graduate Research Studio - Spring 2013

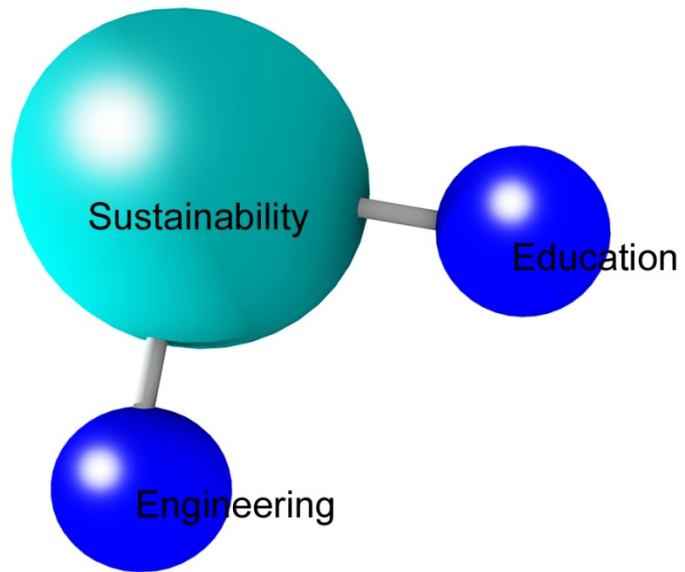


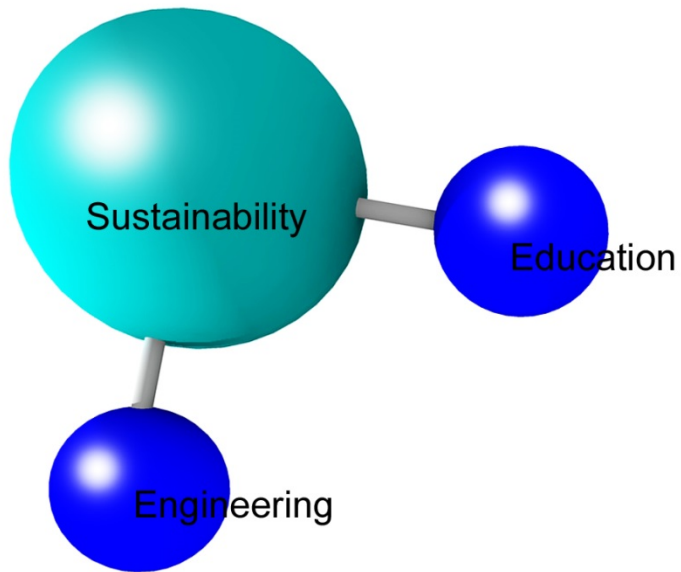
MPWSP Desalination Plant









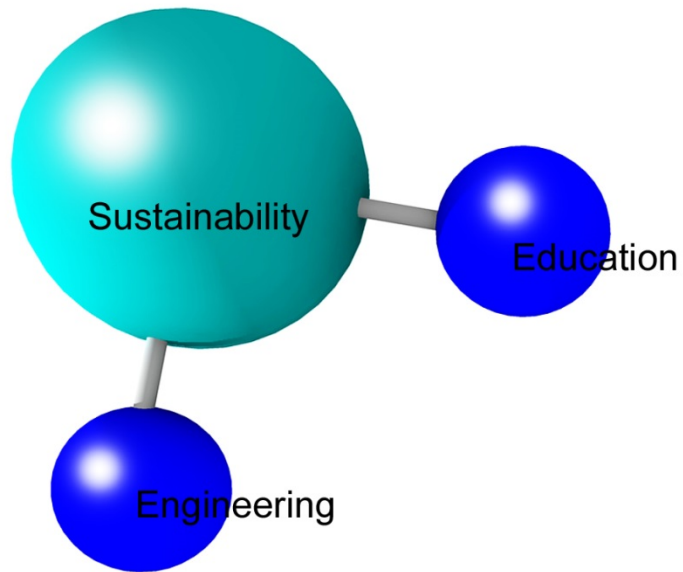


Sustainability

Minimize Impact / Maintain Habitat

Net Zero Administration Building

Minimize Water Use

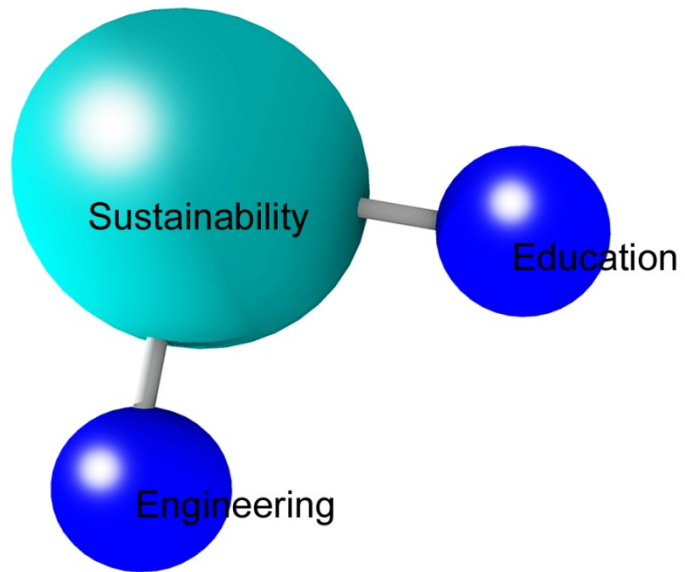


Engineering

Efficiency in Cost

Efficiency in Use

Life Cycle

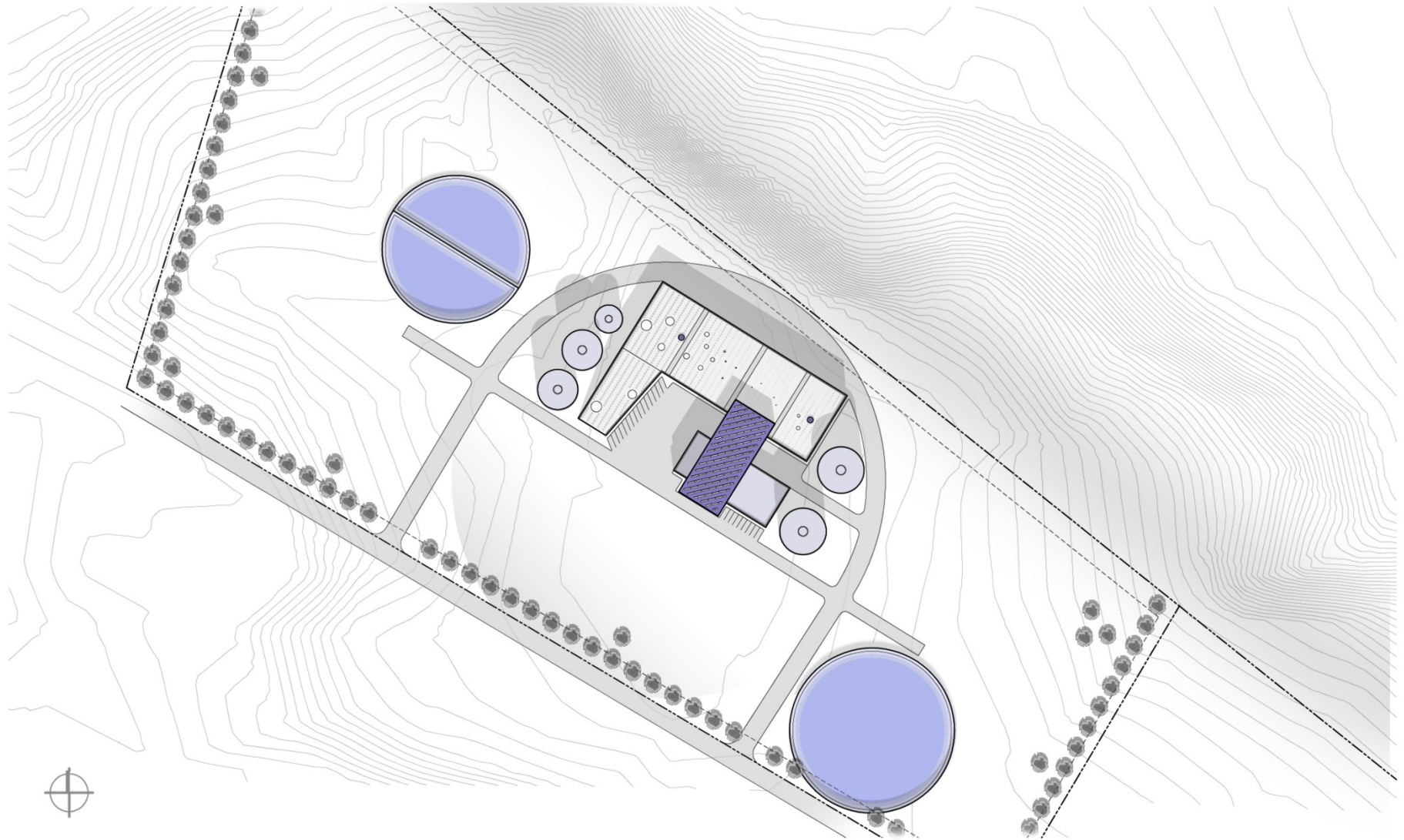


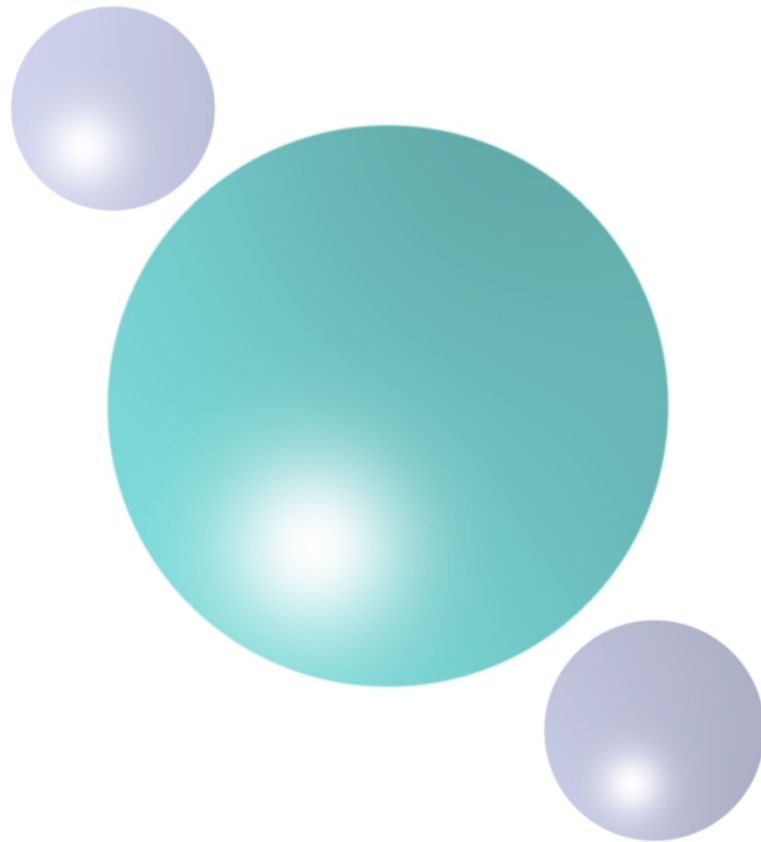
Education

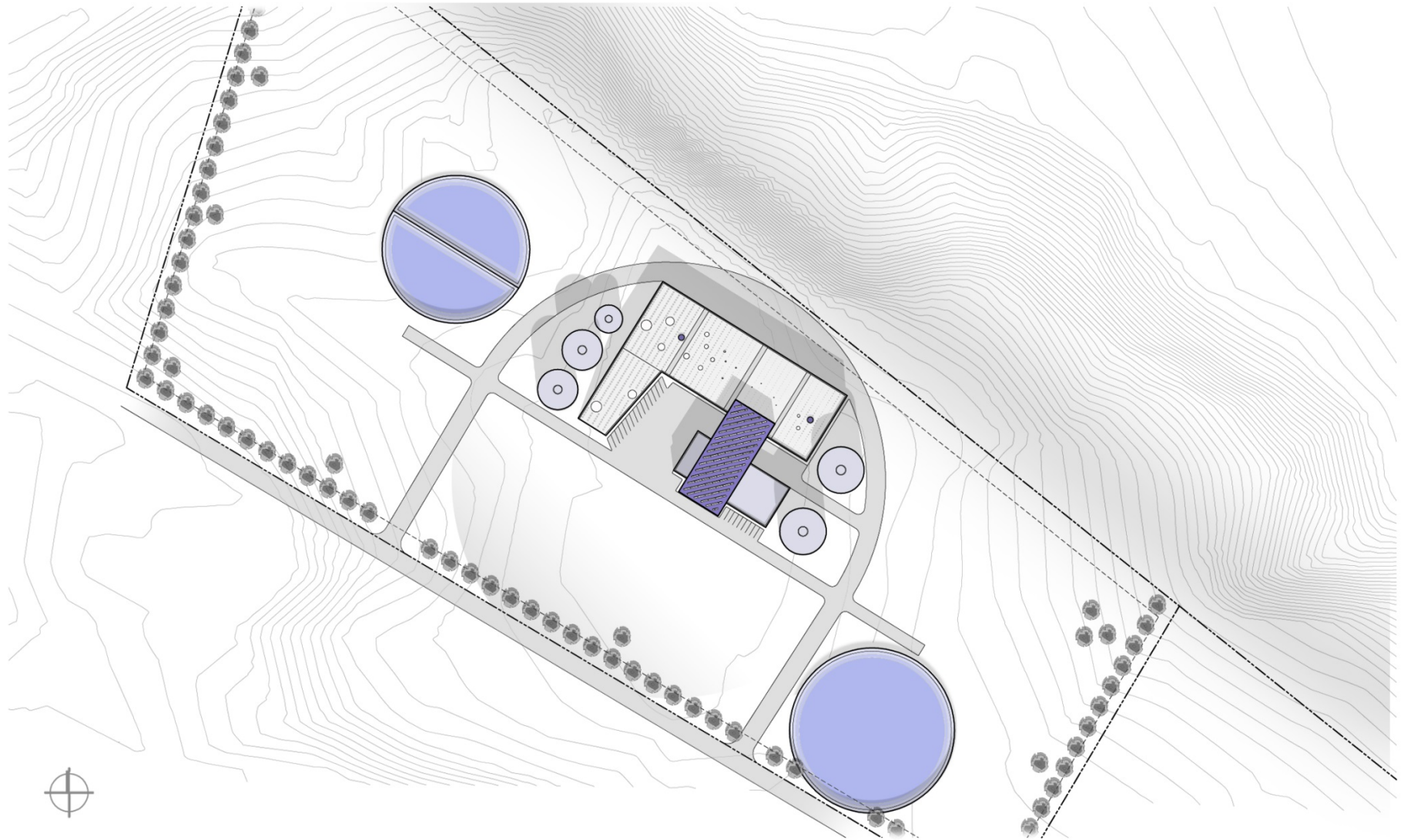
Water is Finite

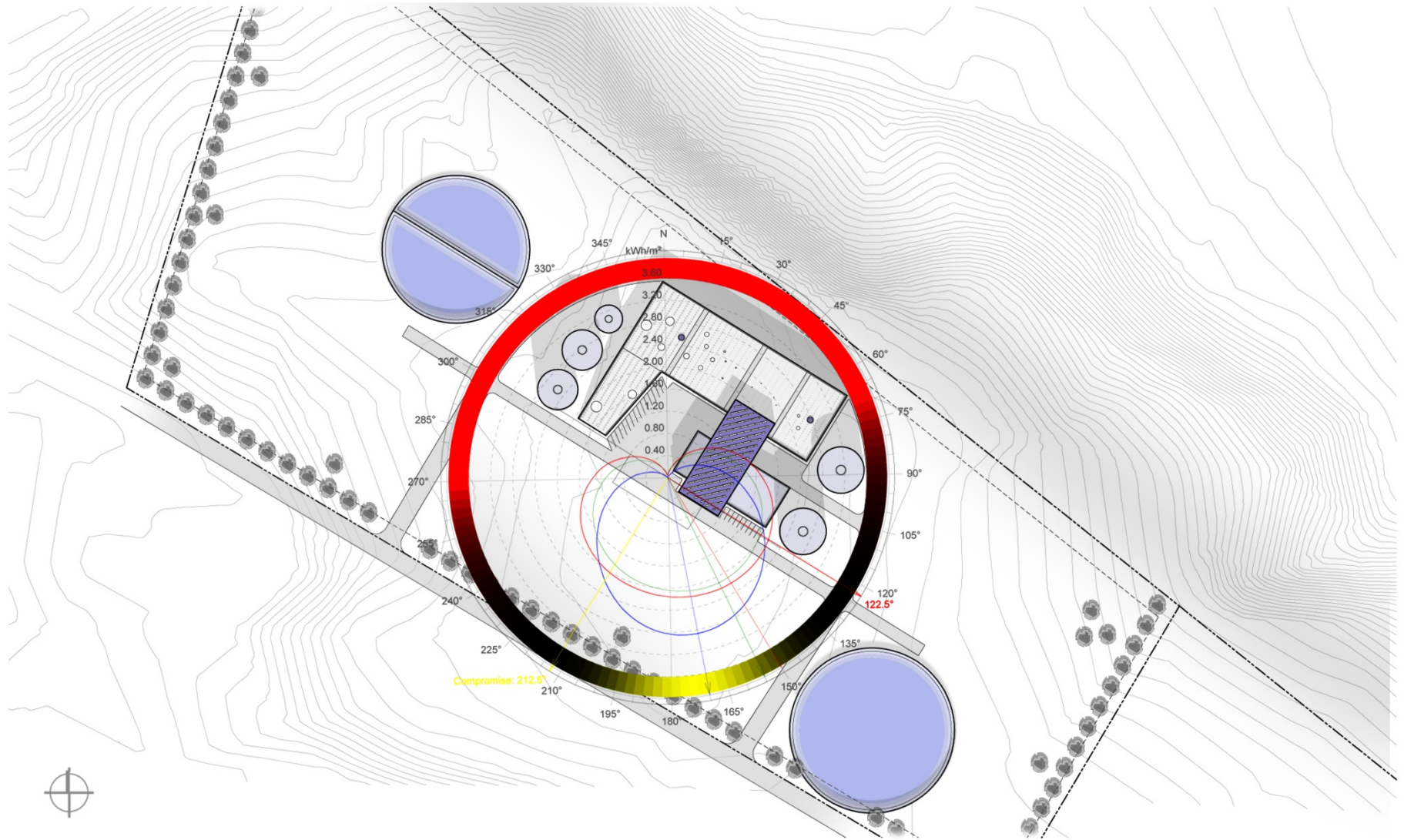
Conservation

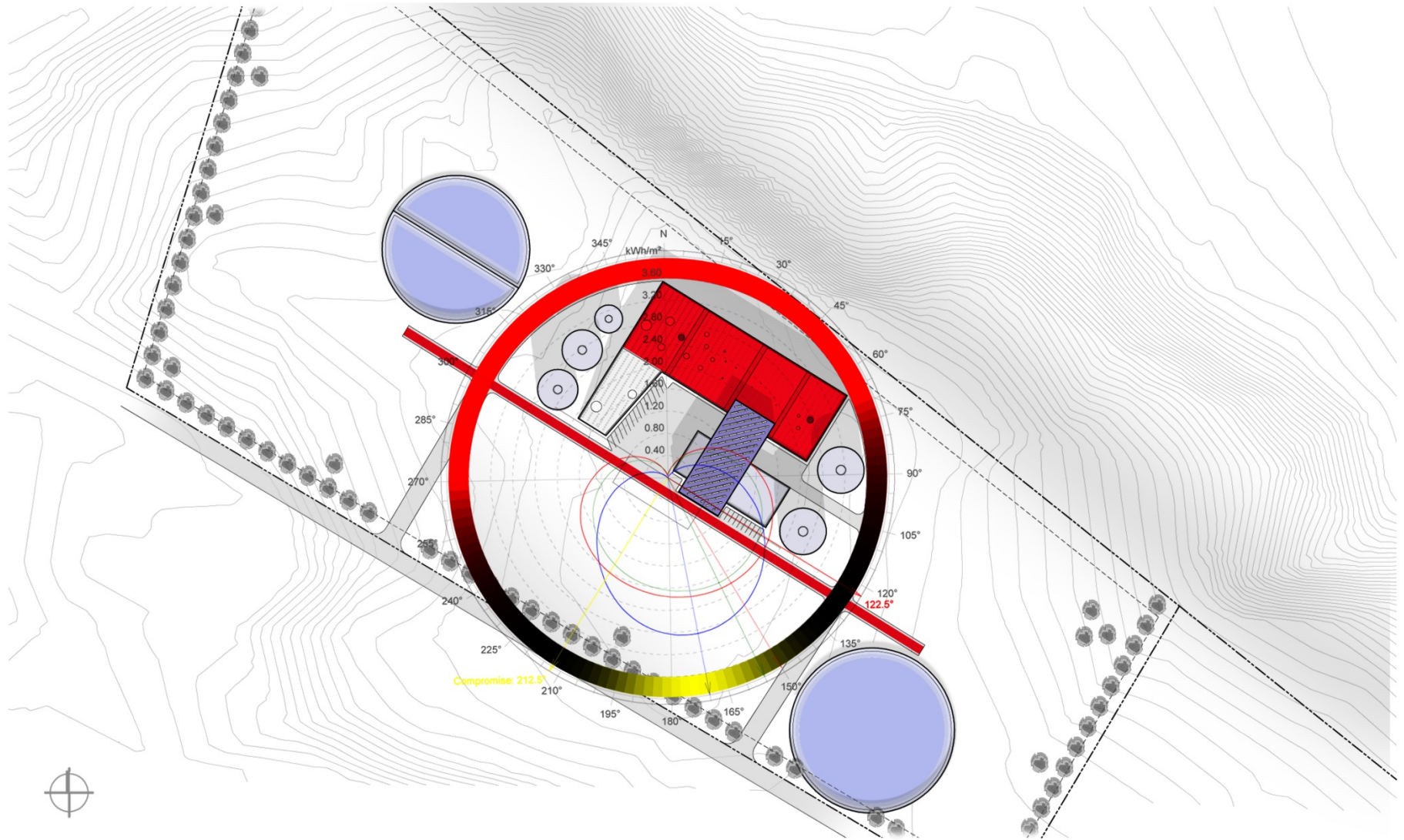
Desalinization Process

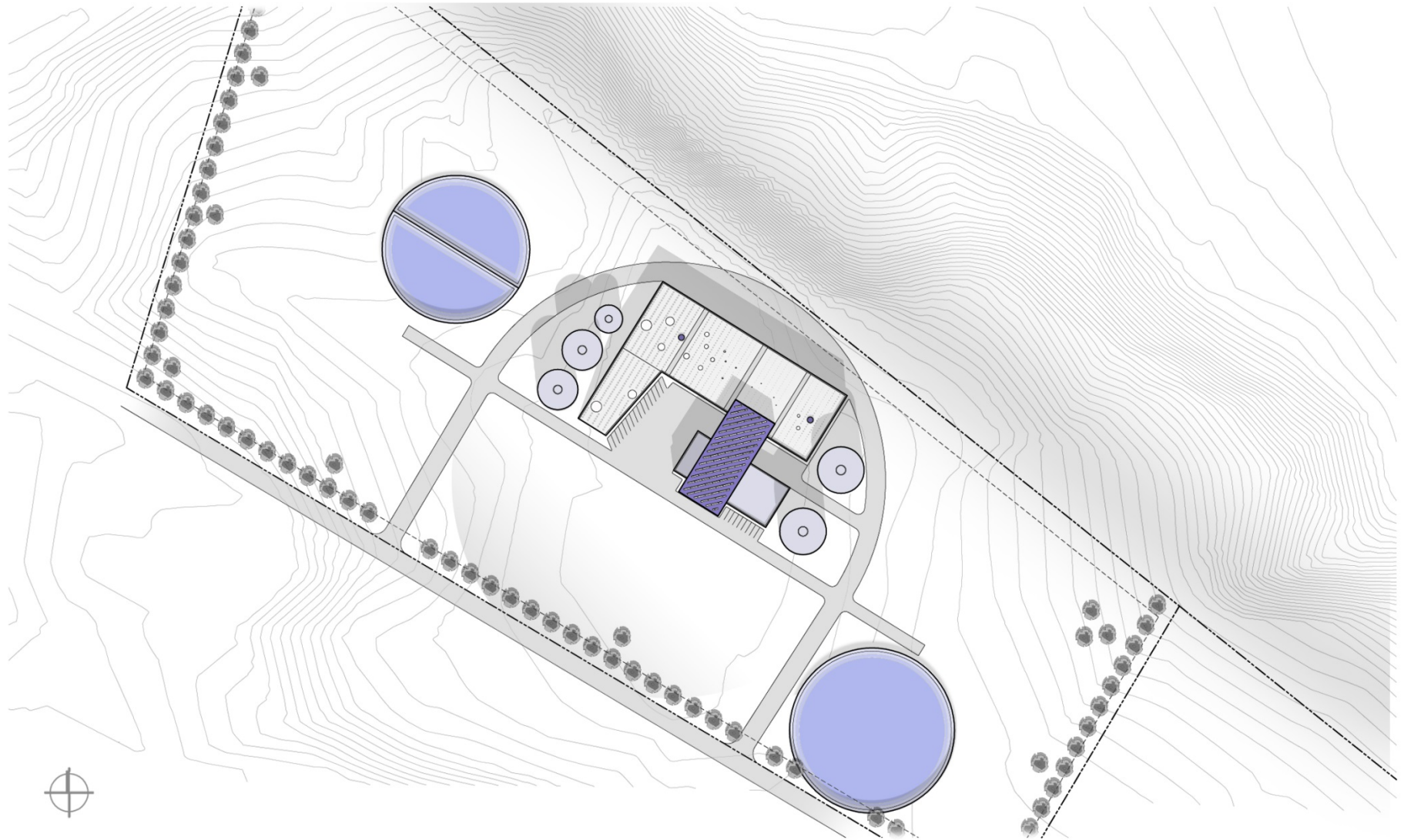


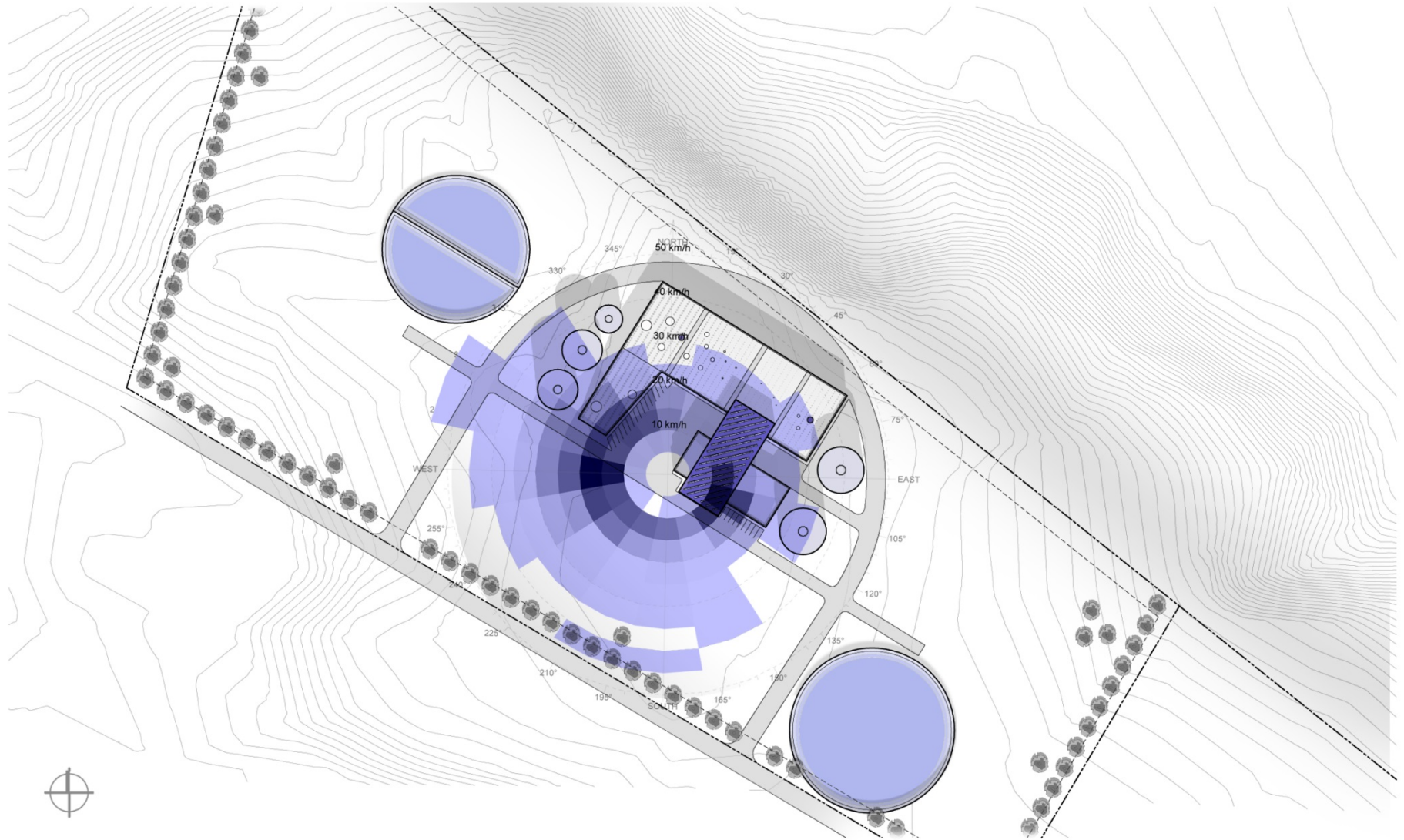


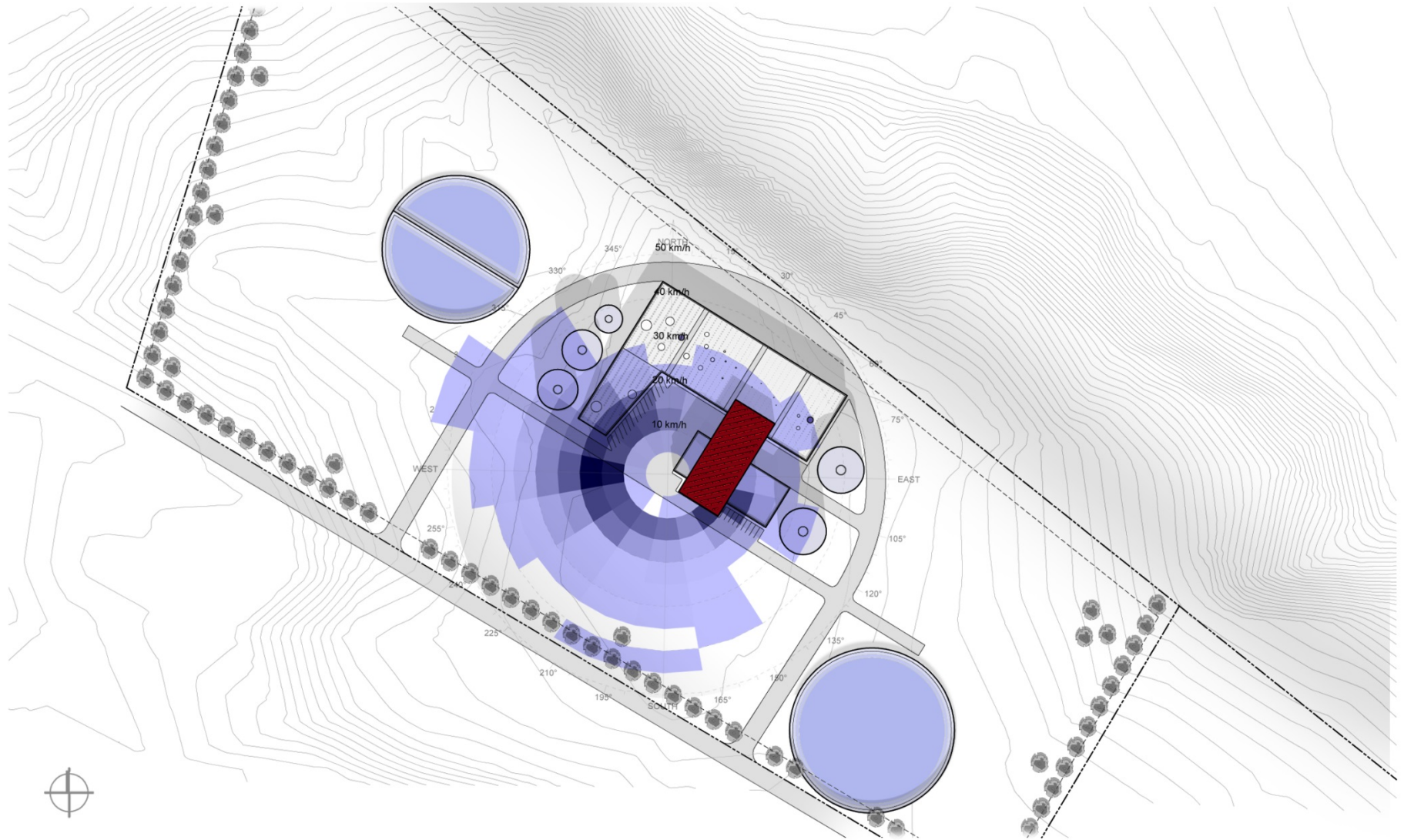




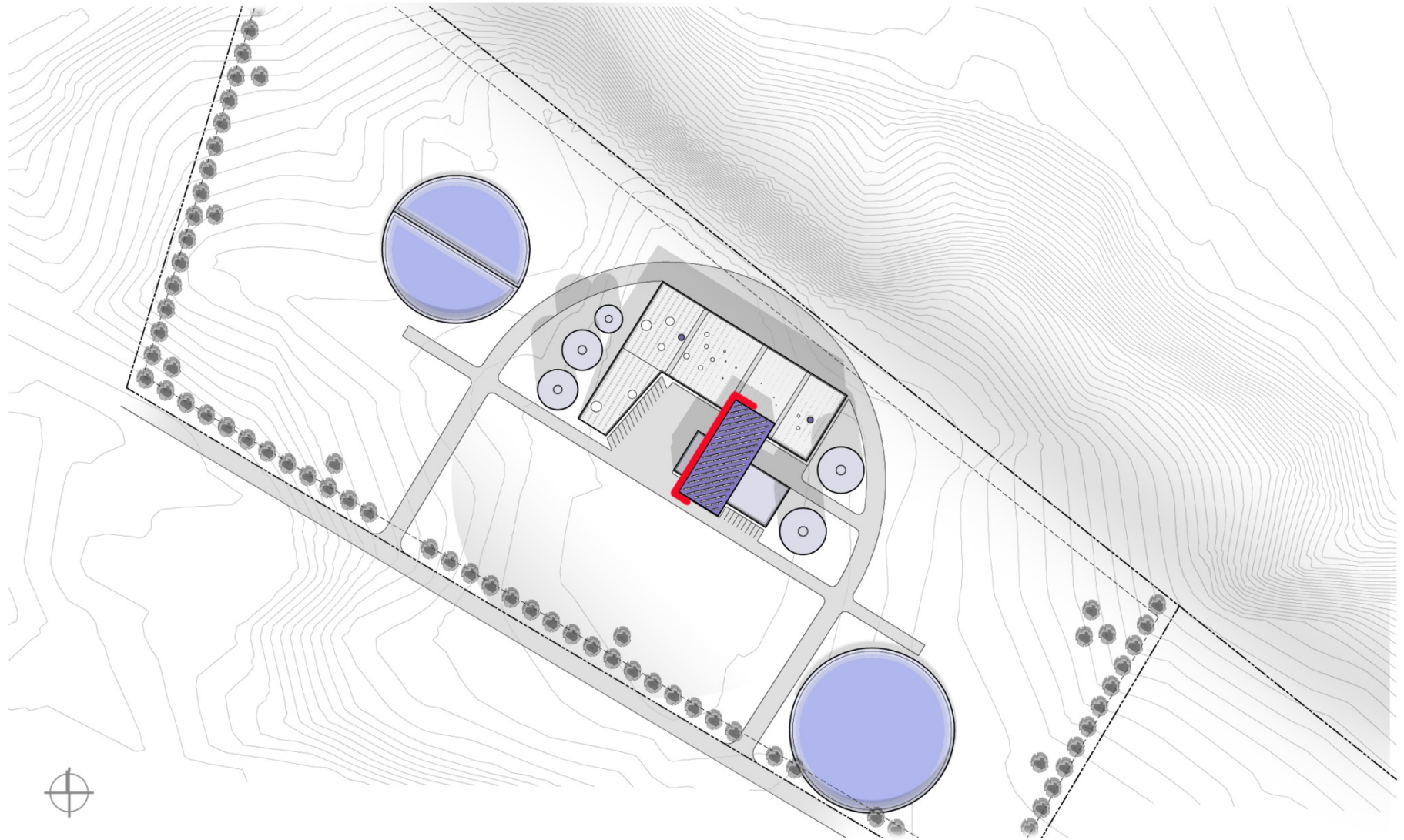


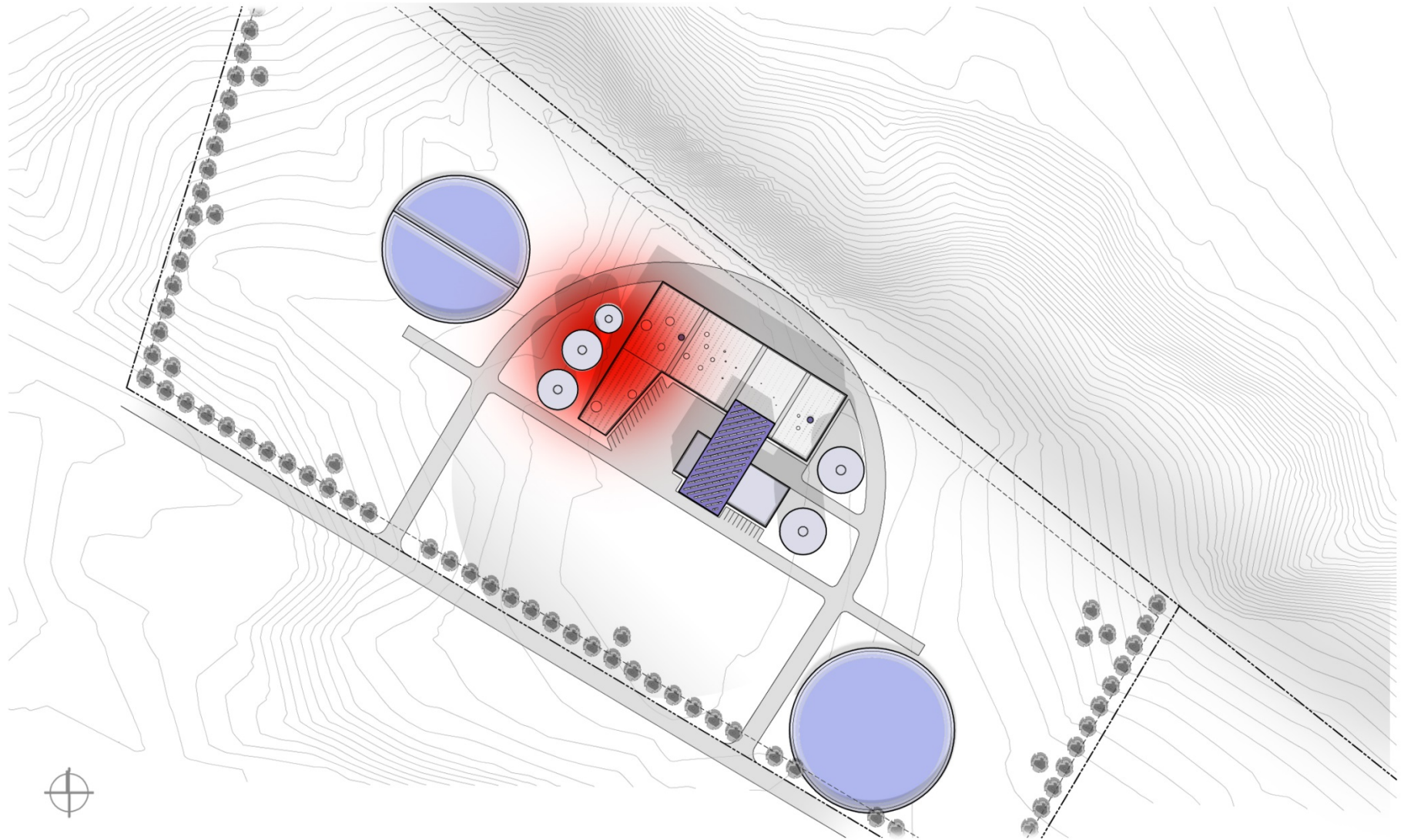


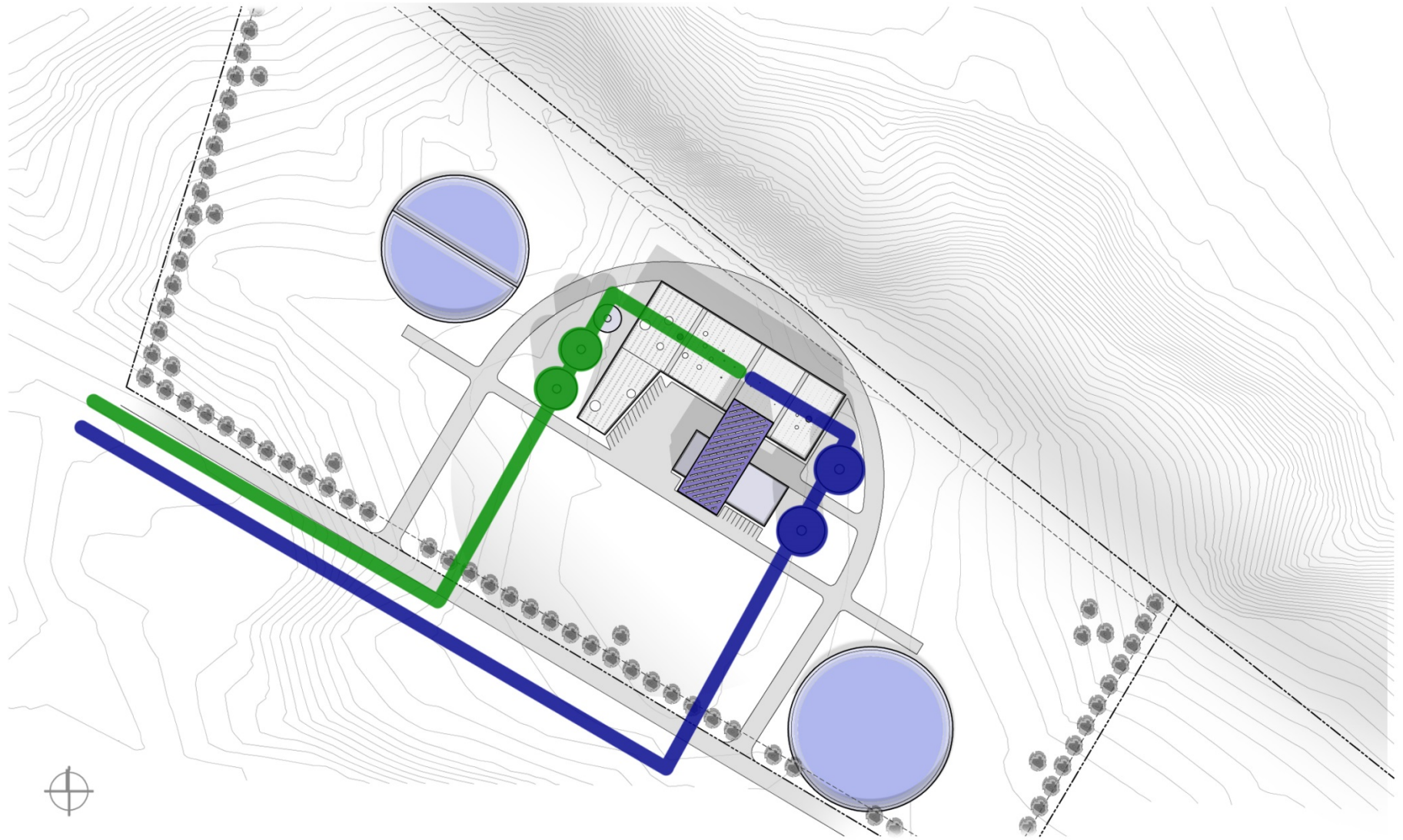


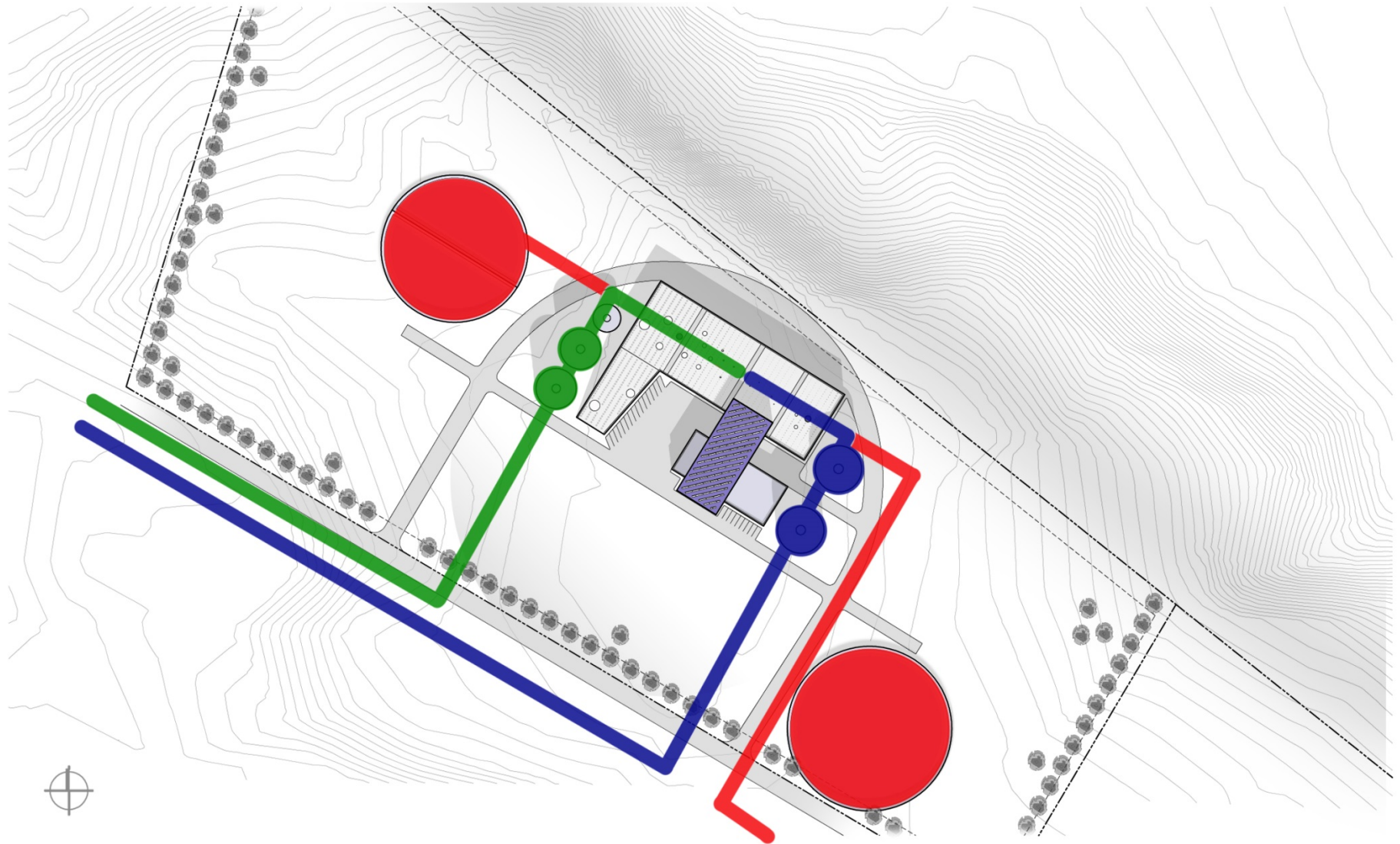


MPWSP Desalinization Plant

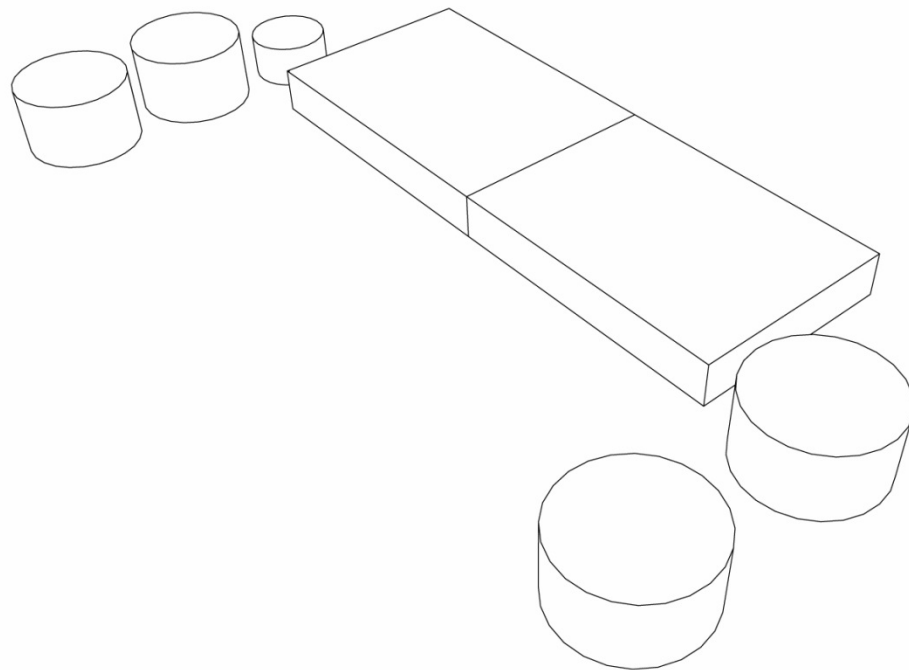




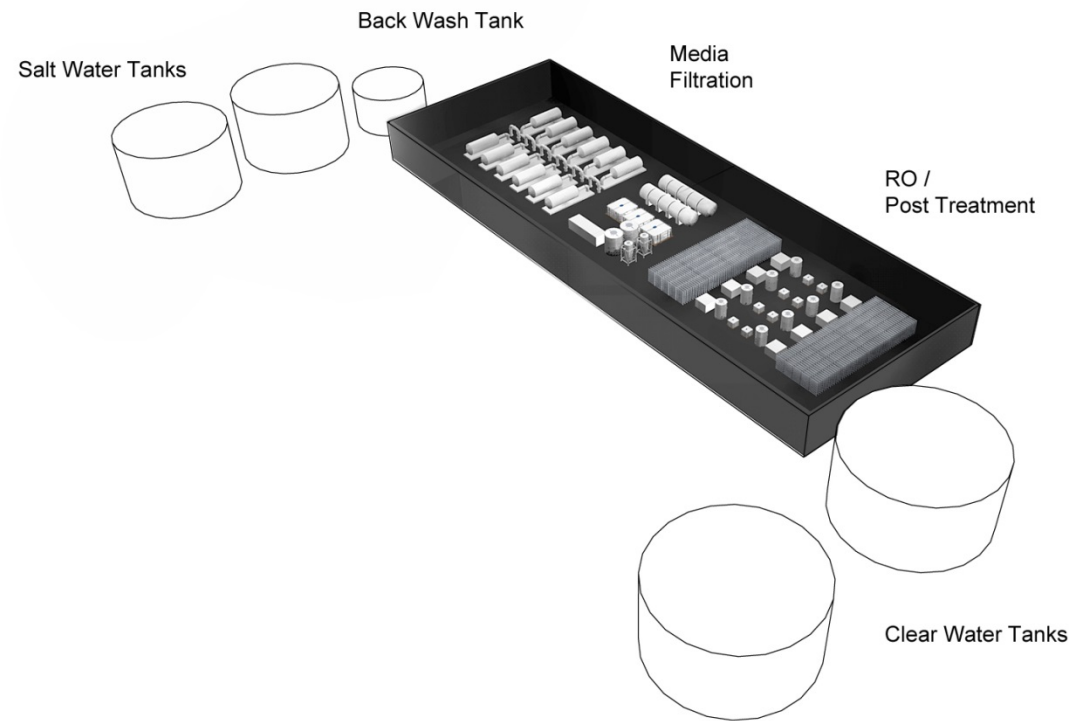




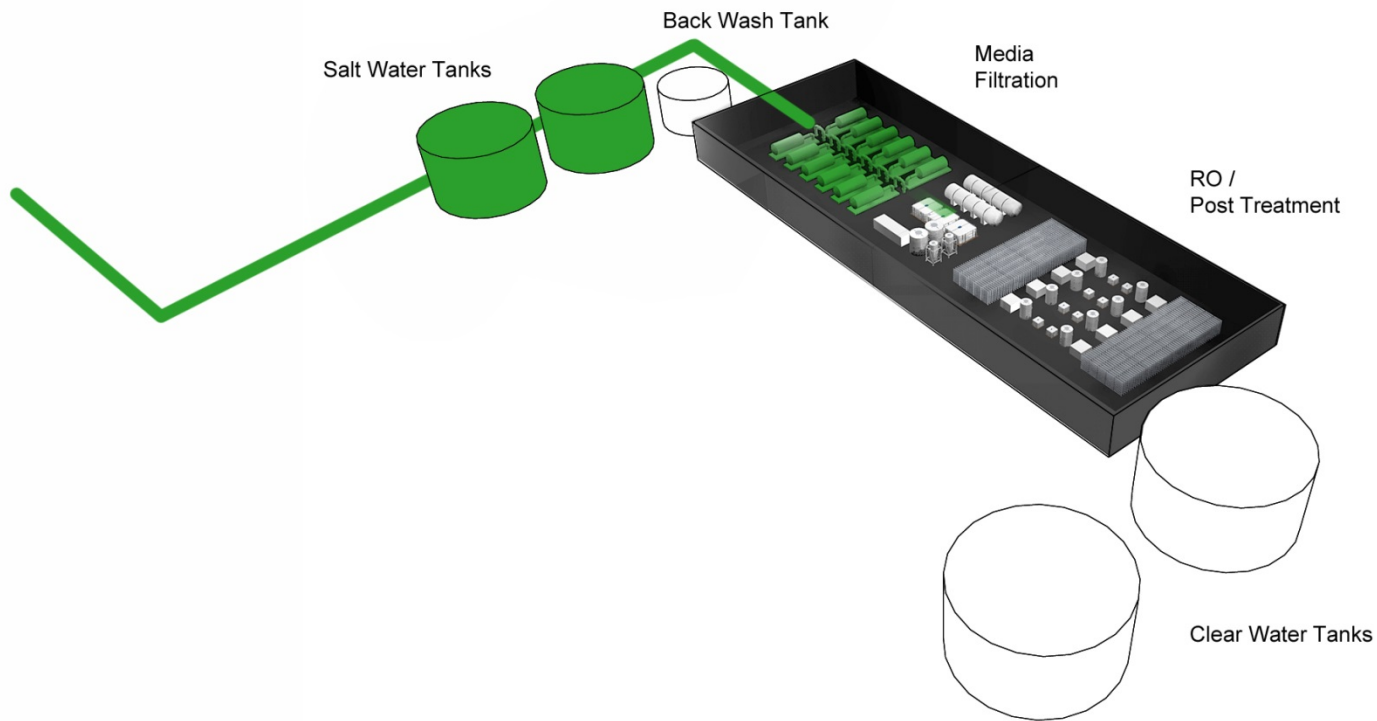
MPWSP Desalinization Plant



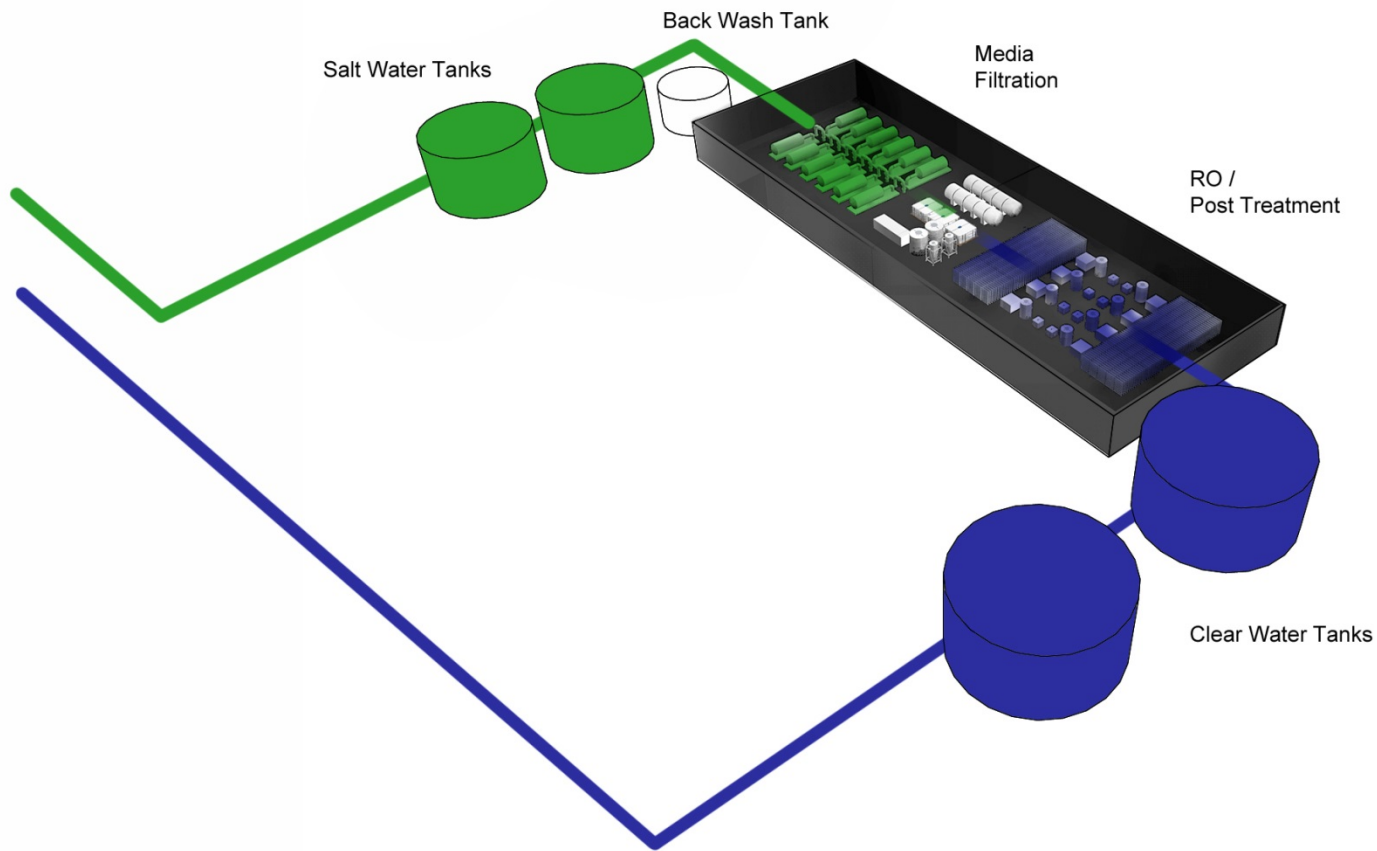
Gravity Water Flow Diagram



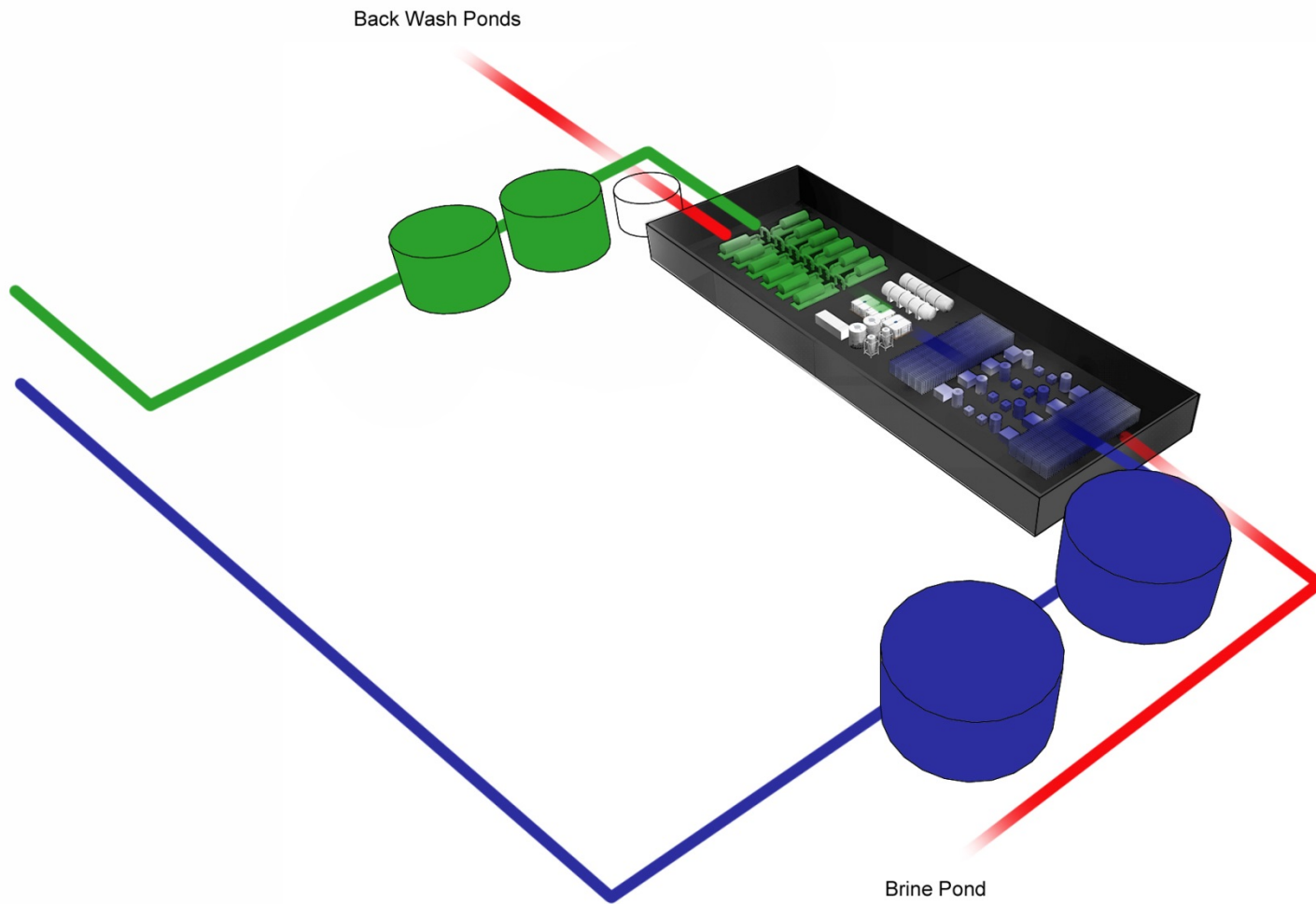
Gravity Water Flow Diagram



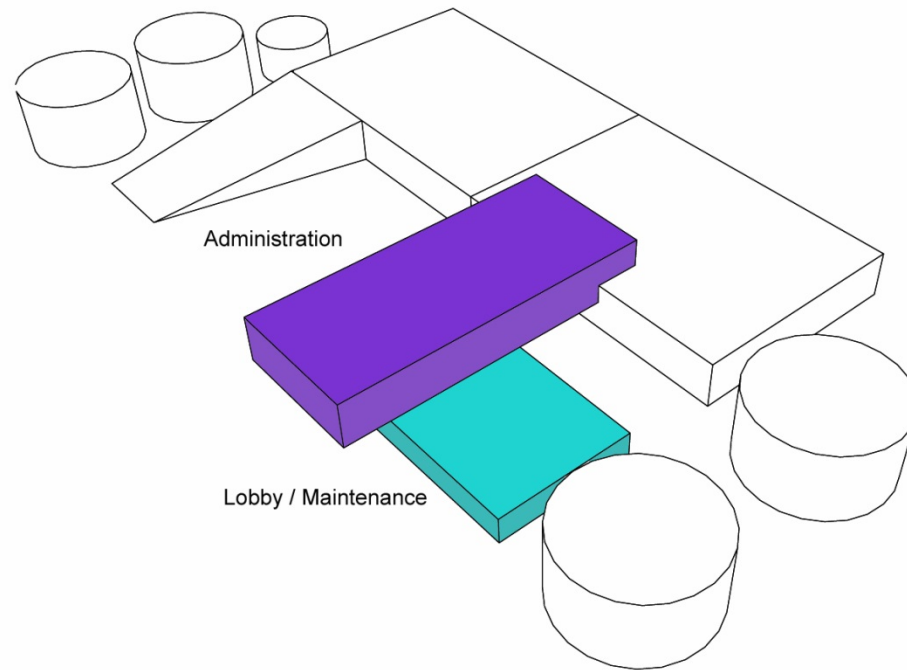
Gravity Water Flow Diagram



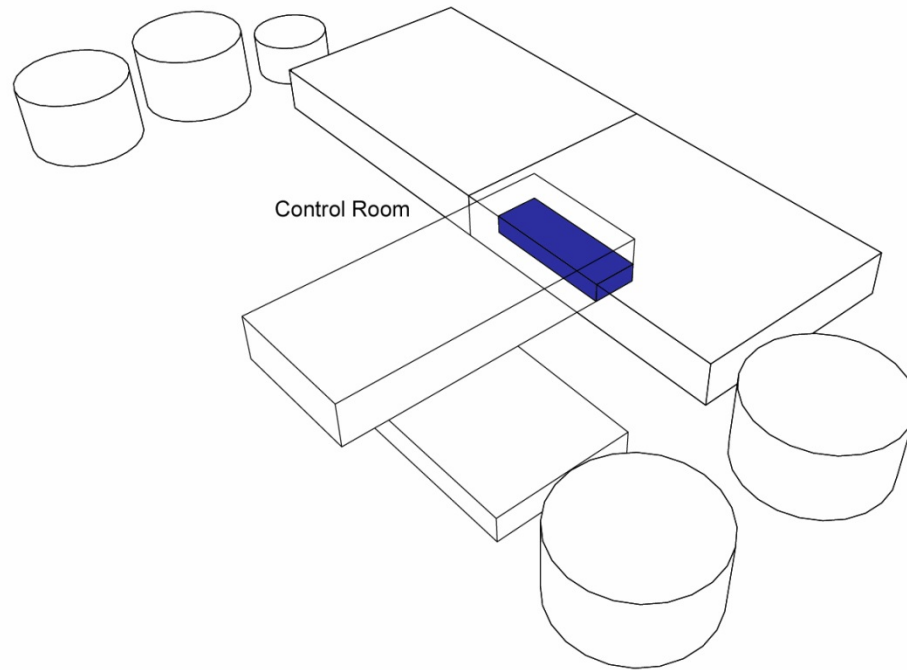
Gravity Water Flow Diagram



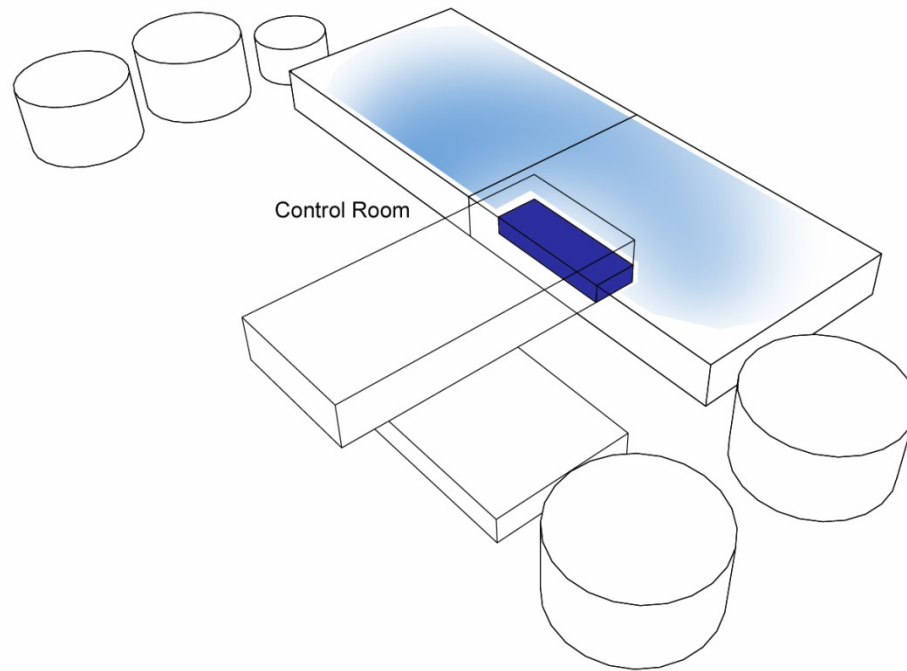
Program Diagram



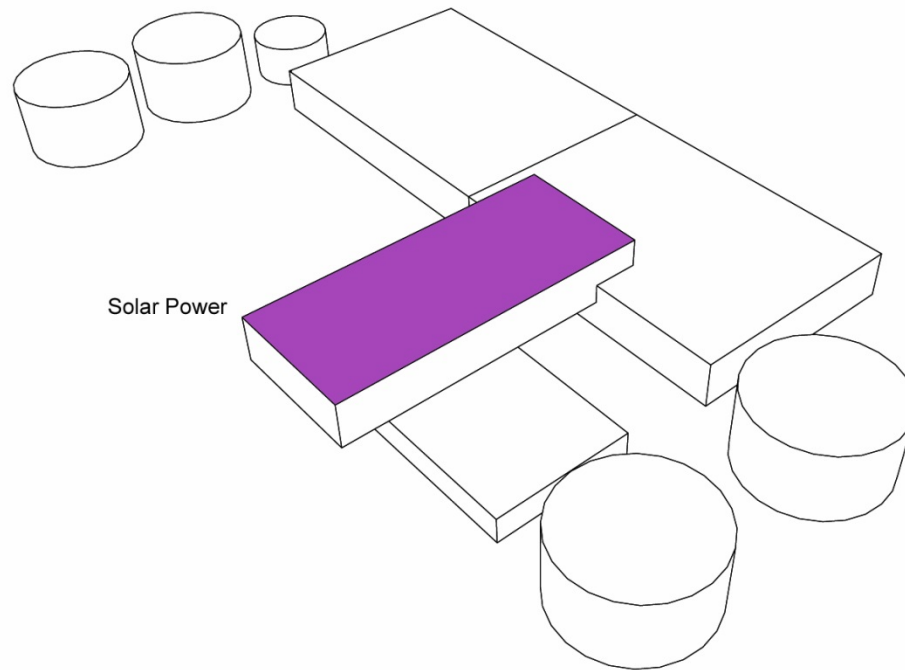
Program Diagram



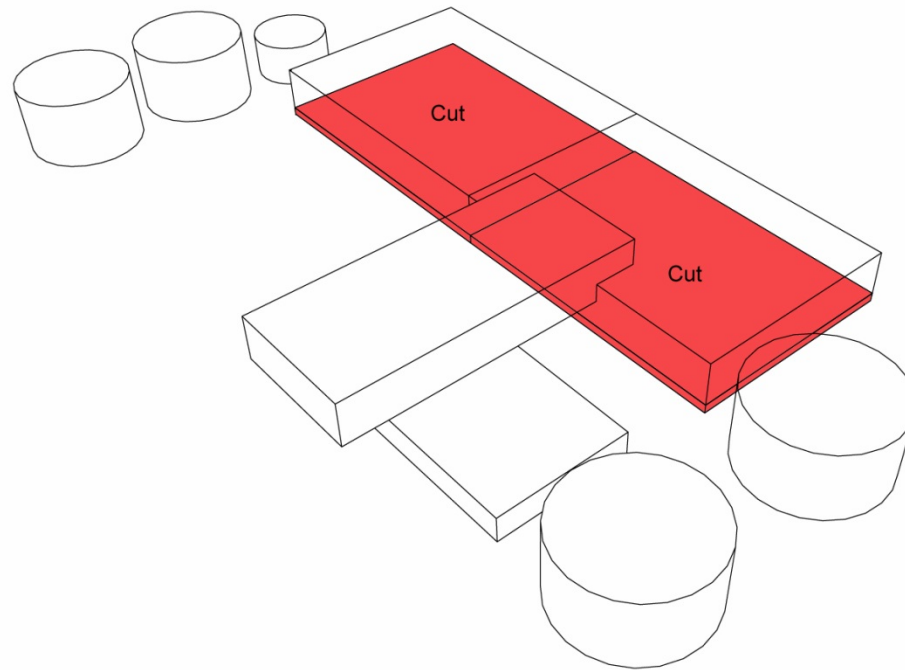
Program Diagram



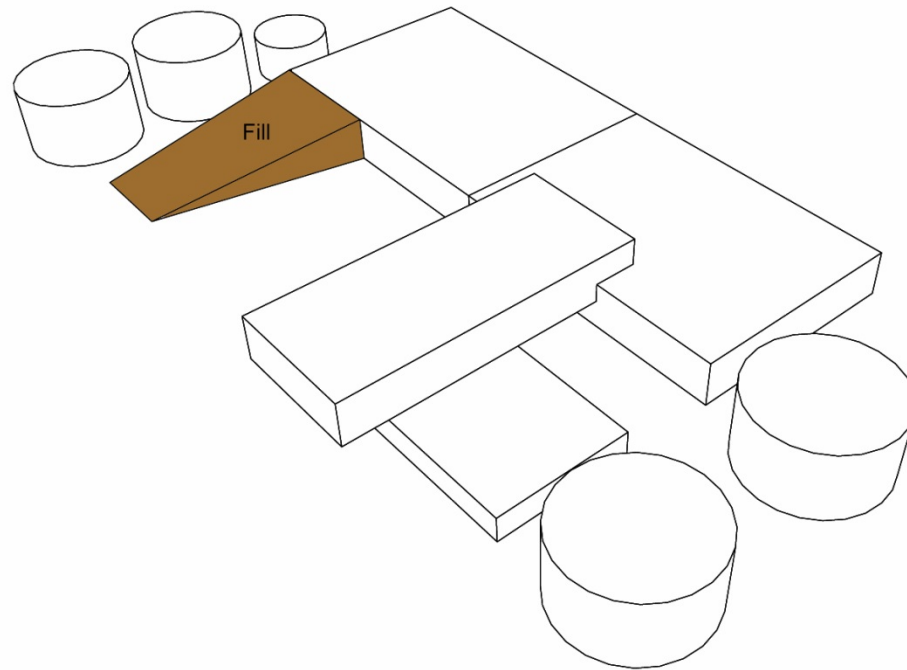
Solar Power Diagram



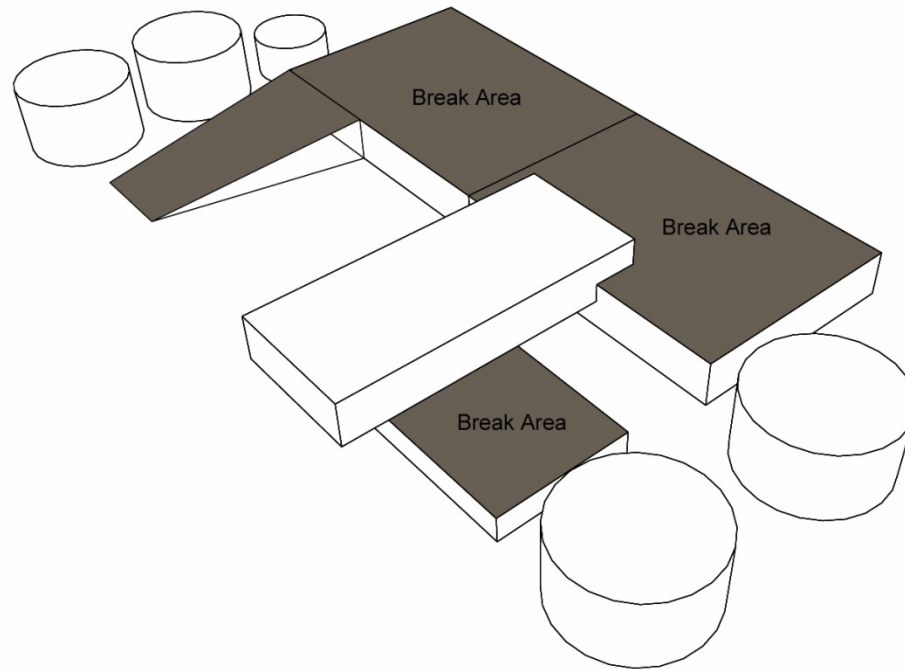
Cut and Fill Diagram



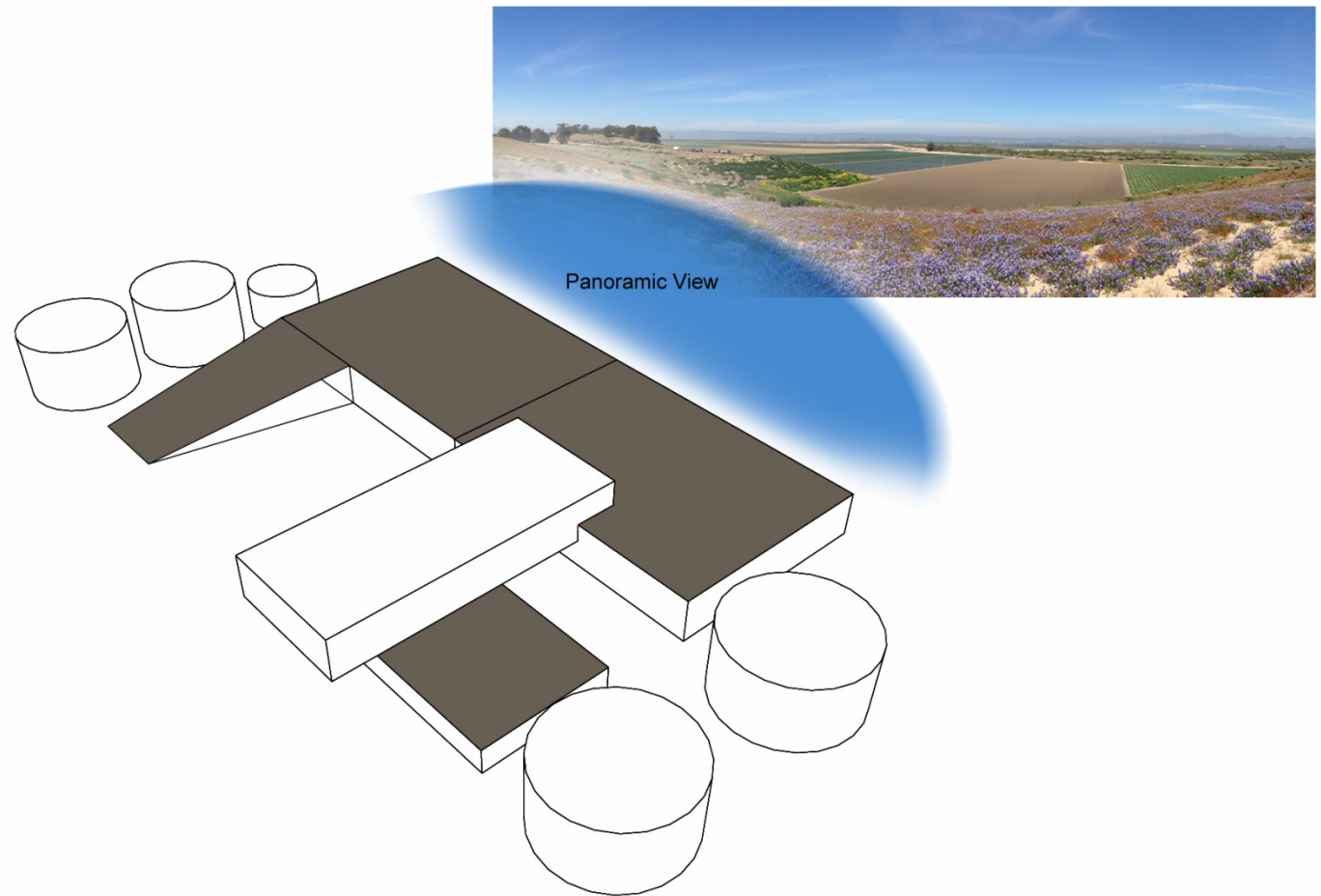
Cut and Fill Diagram



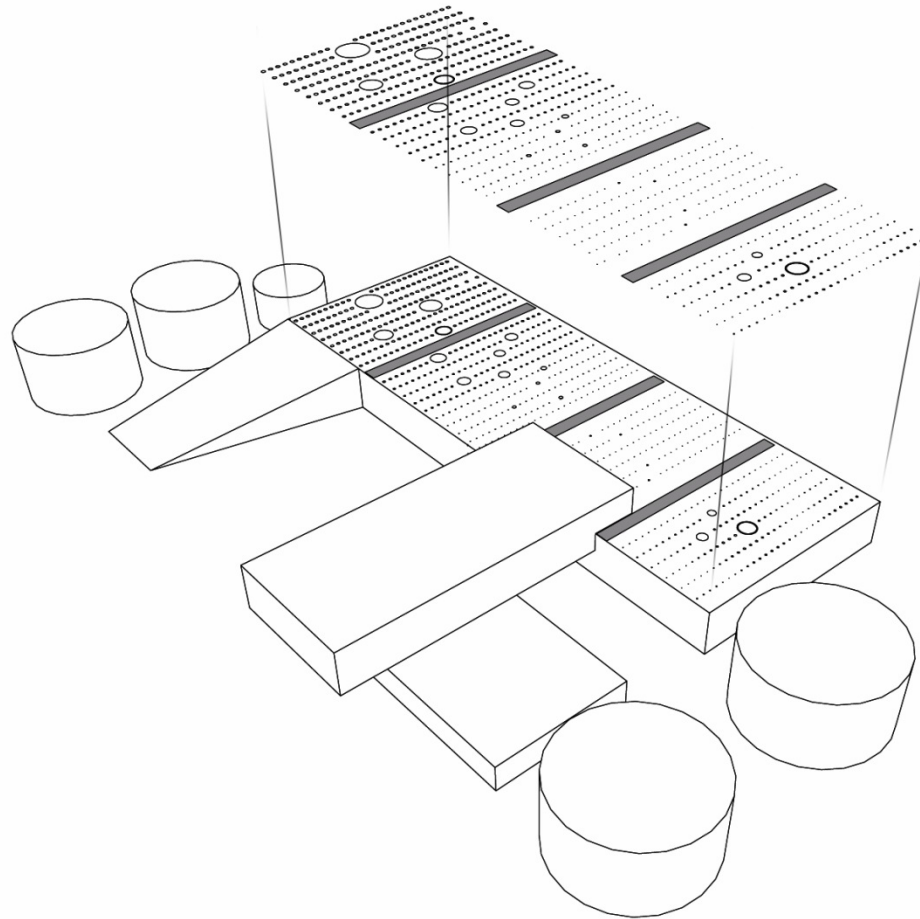
Occupiable Roof Diagram



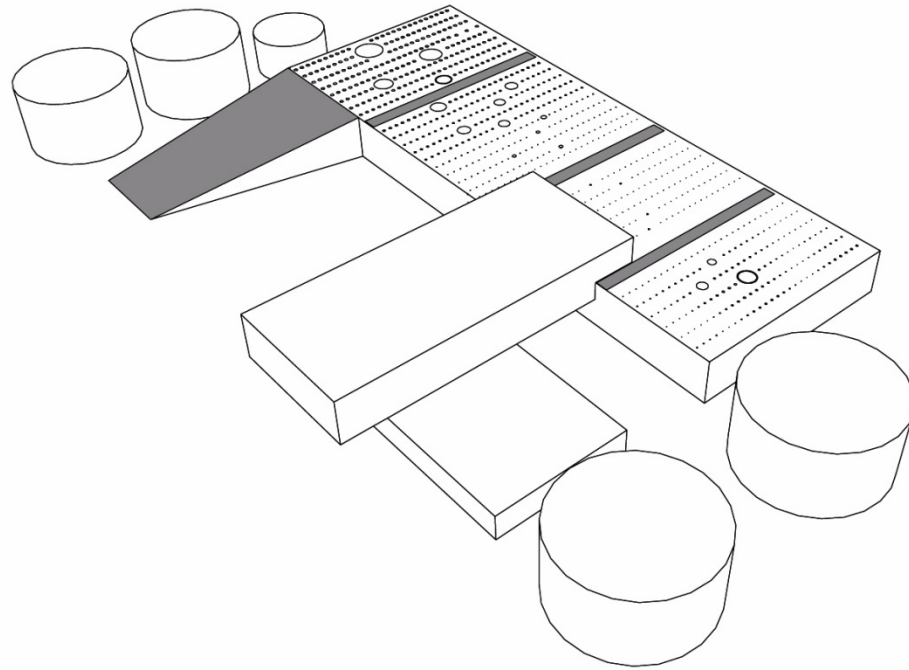
Occupiable Roof Diagram



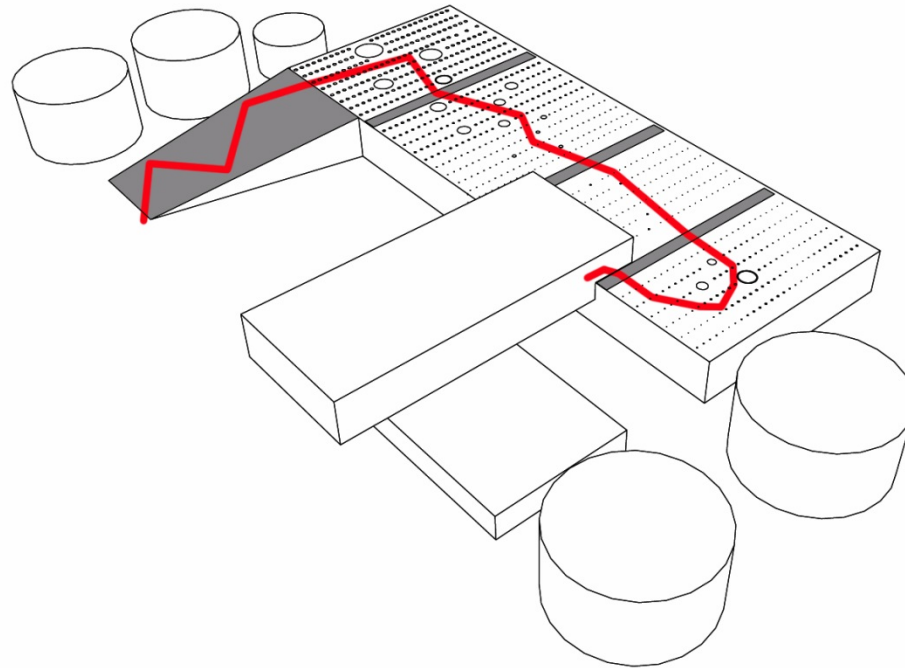
Visitors Path Diagram



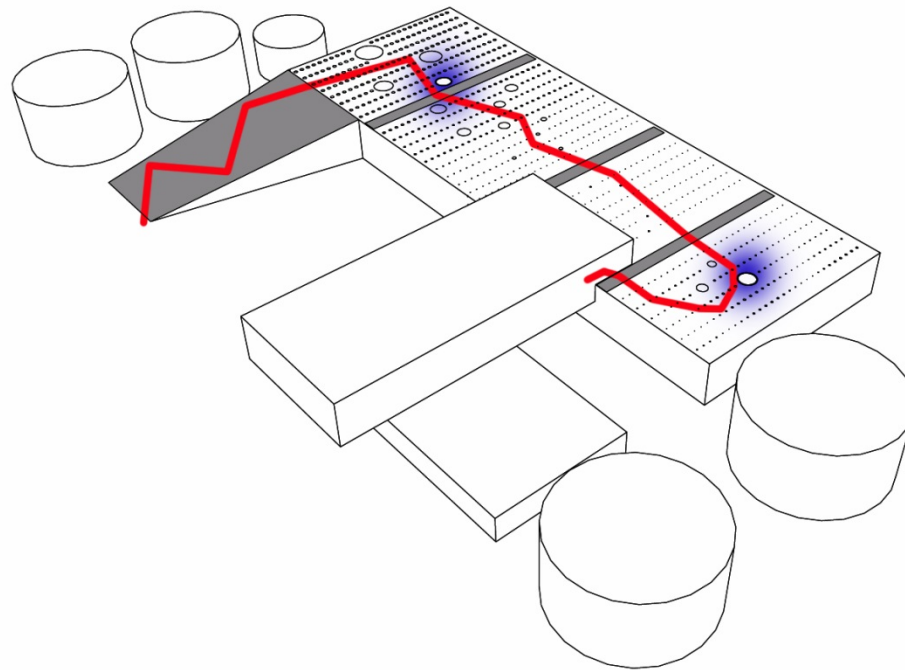
Visitors Path Diagram



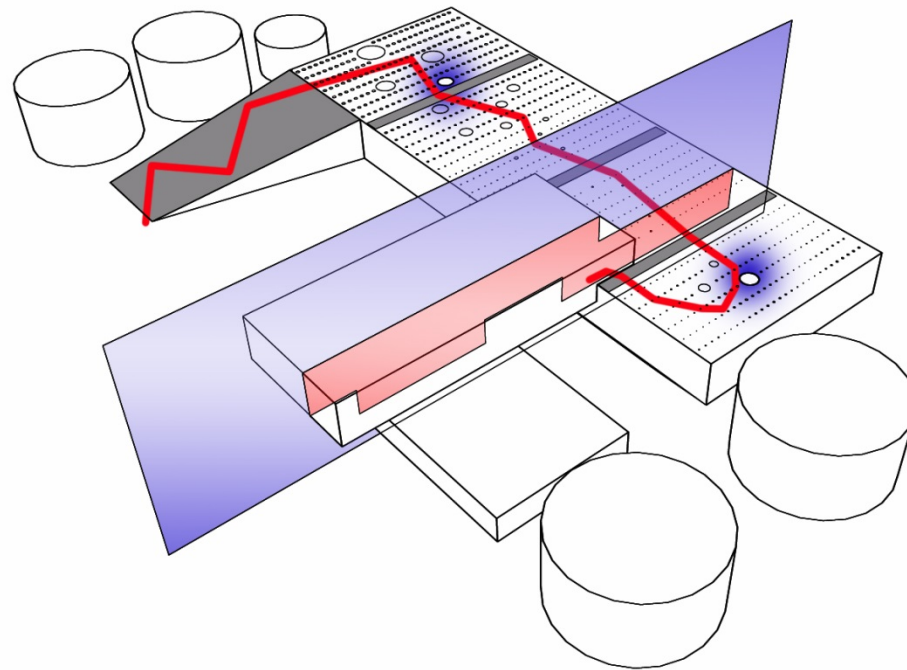
Visitors Path Diagram



Visitors Path Diagram



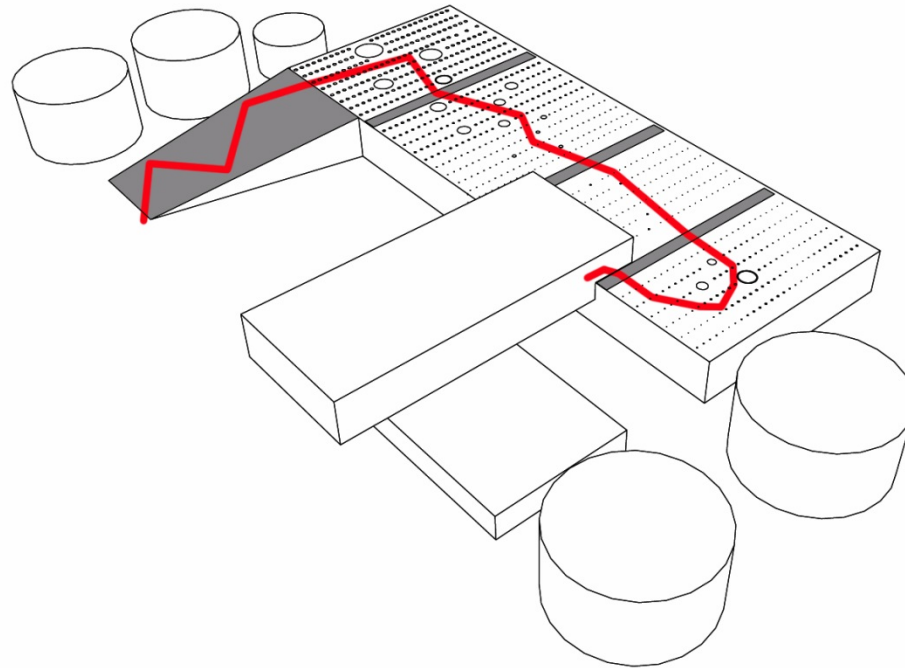
Visitors Path Diagram



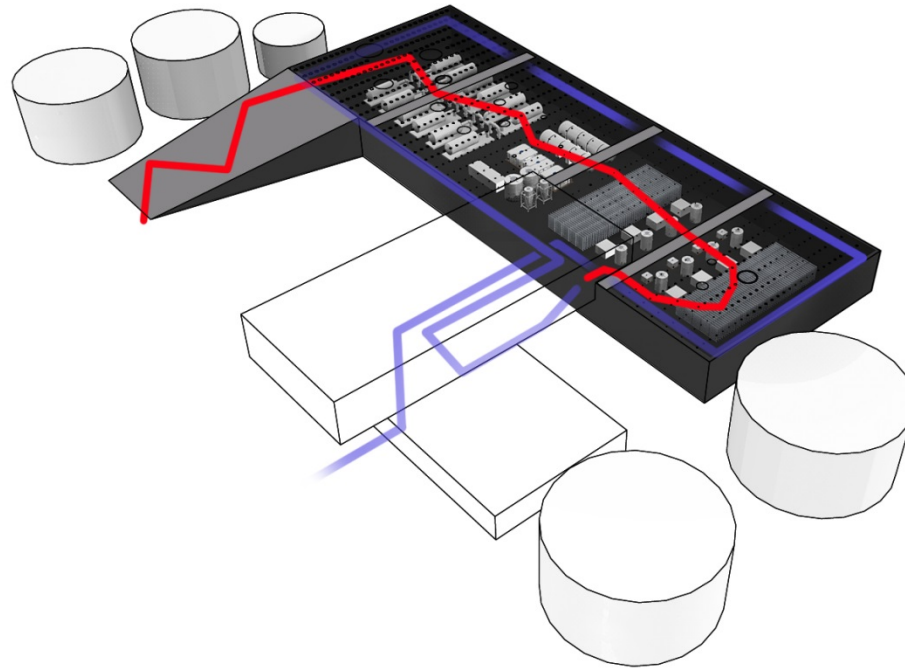
Section Diagram

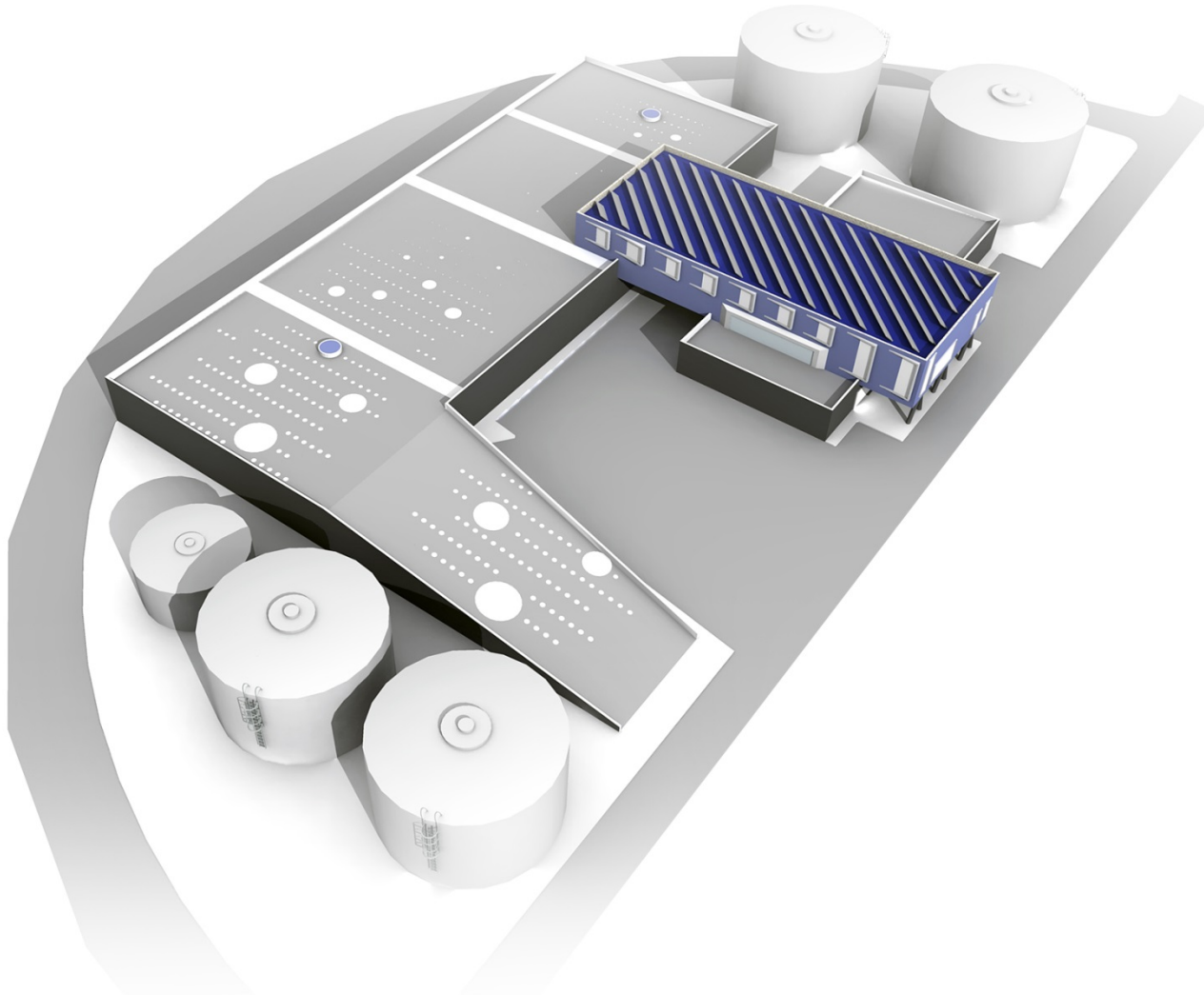


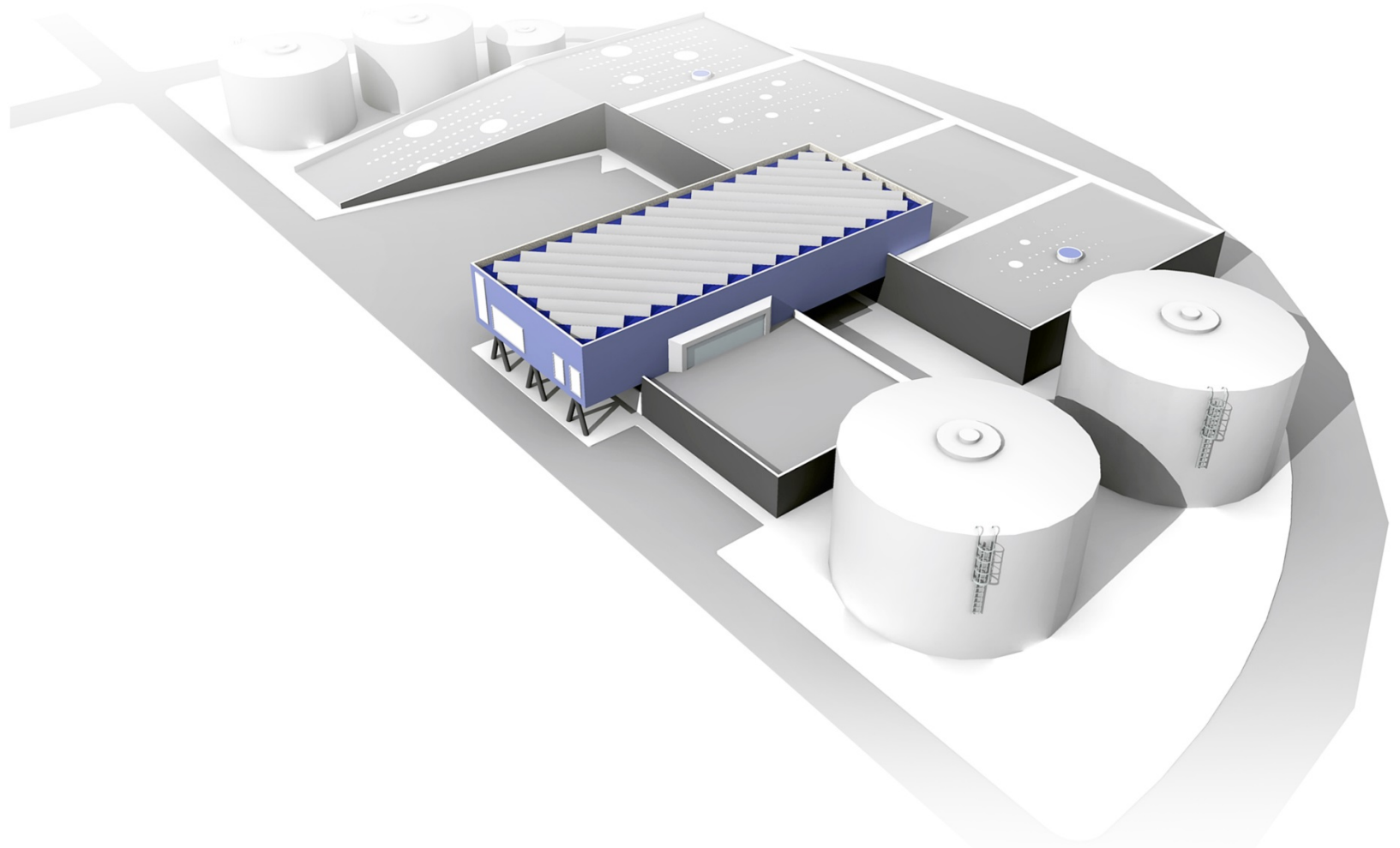
Visitors Path Diagram



Visitors Path Diagram

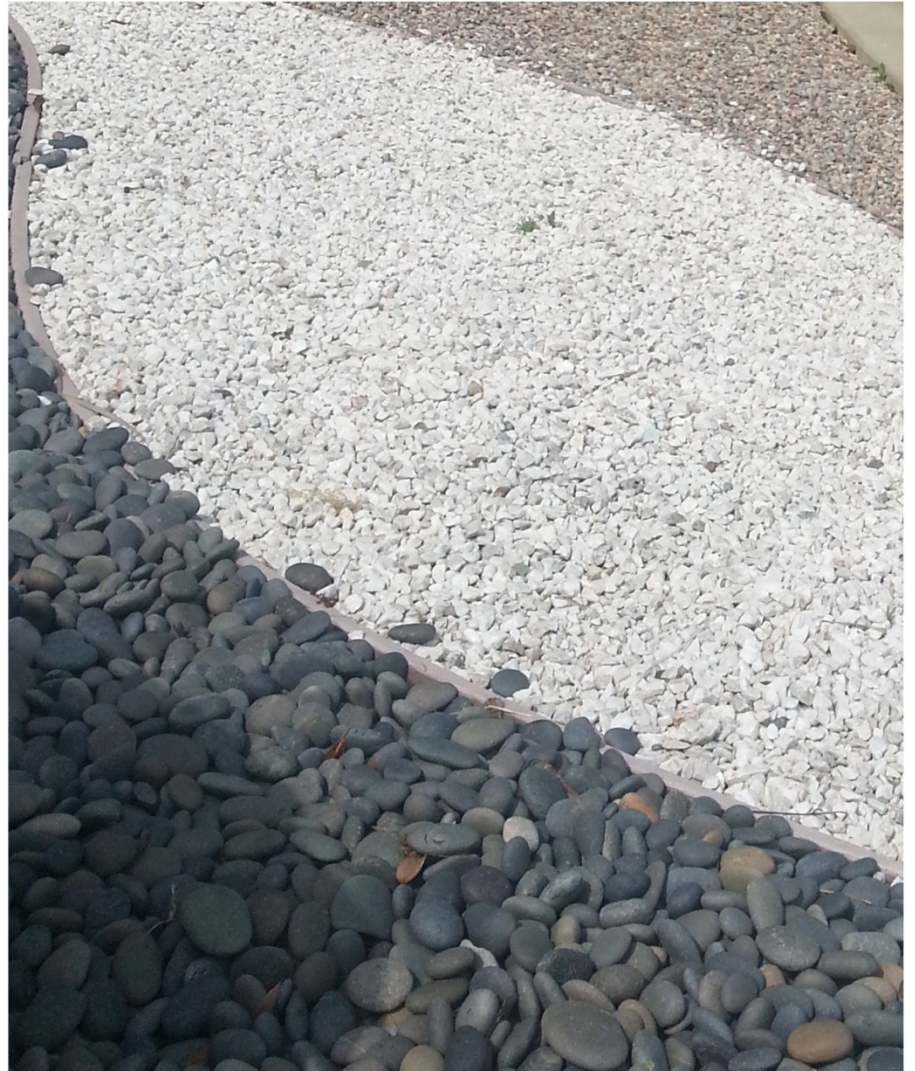




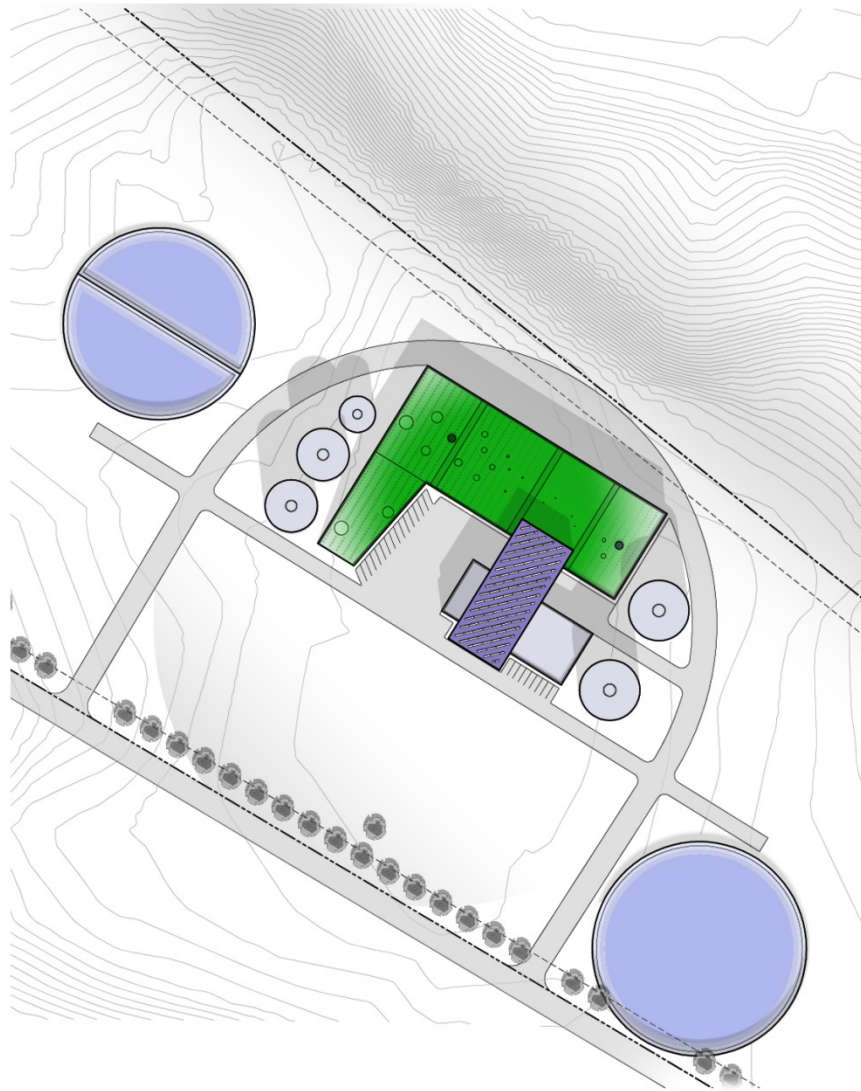




MPWSP Desalinization Plant



Cal Poly Architecture and Environmental Design: Graduate Research Studio - Spring 2013



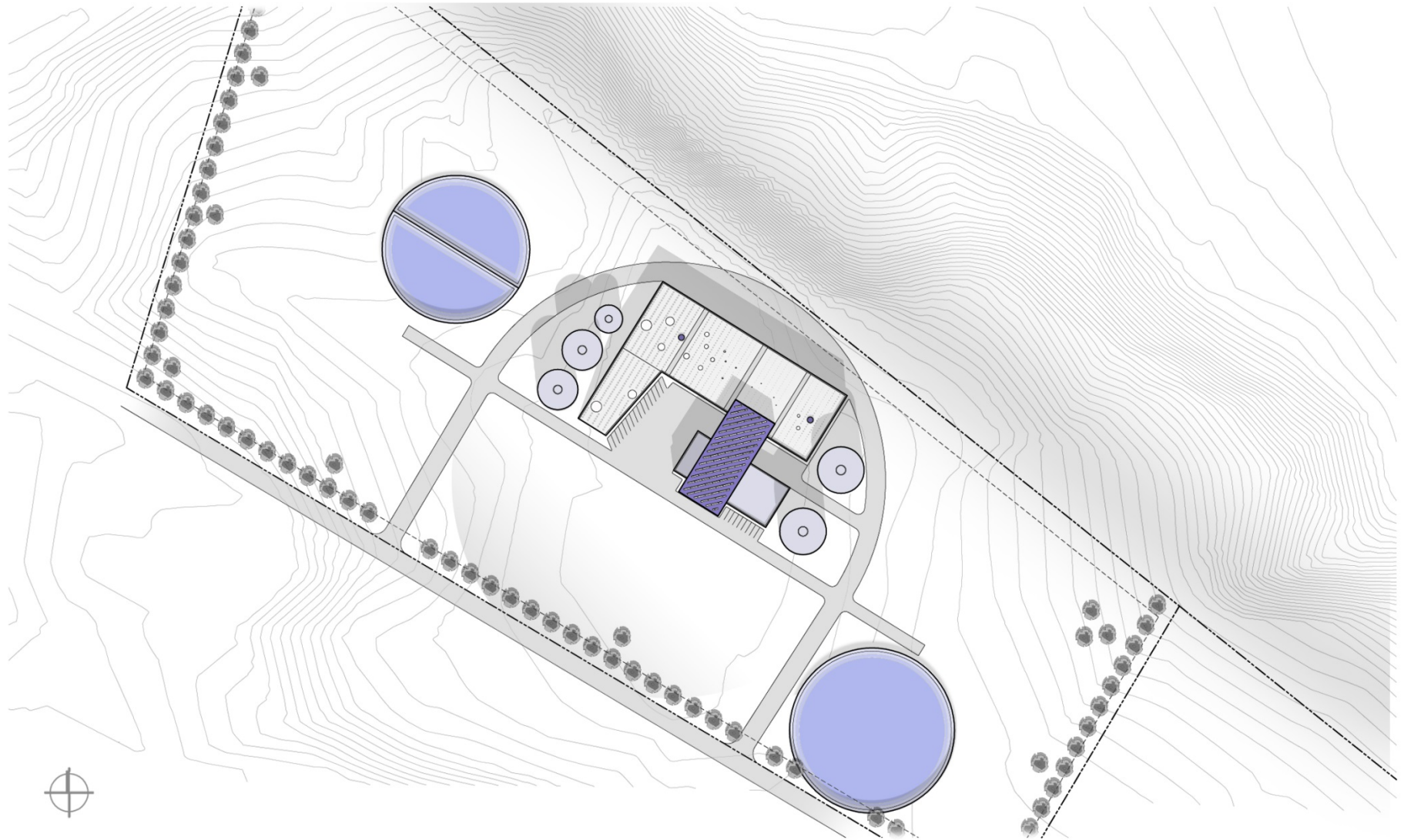
MPWSP Desalinization Plant

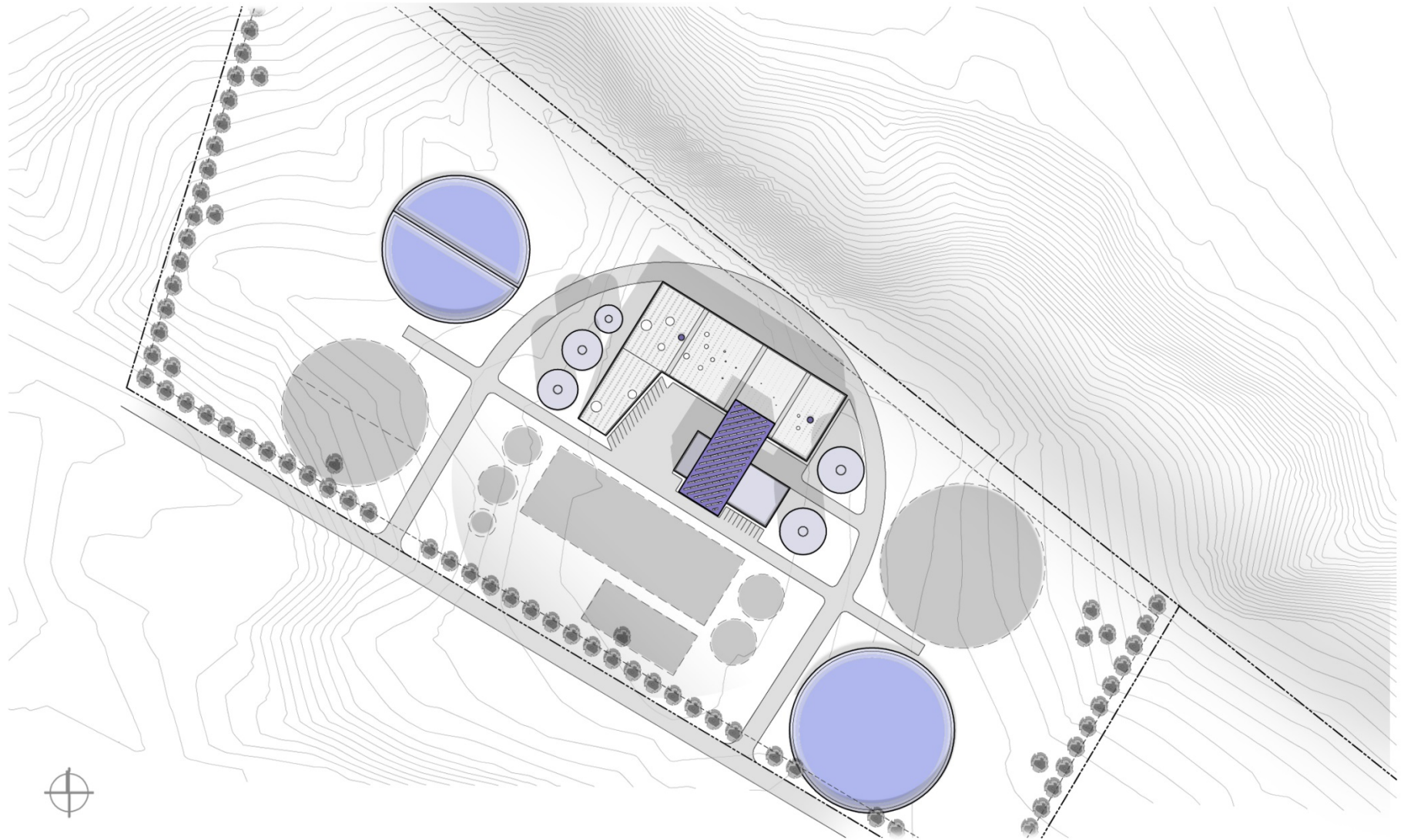


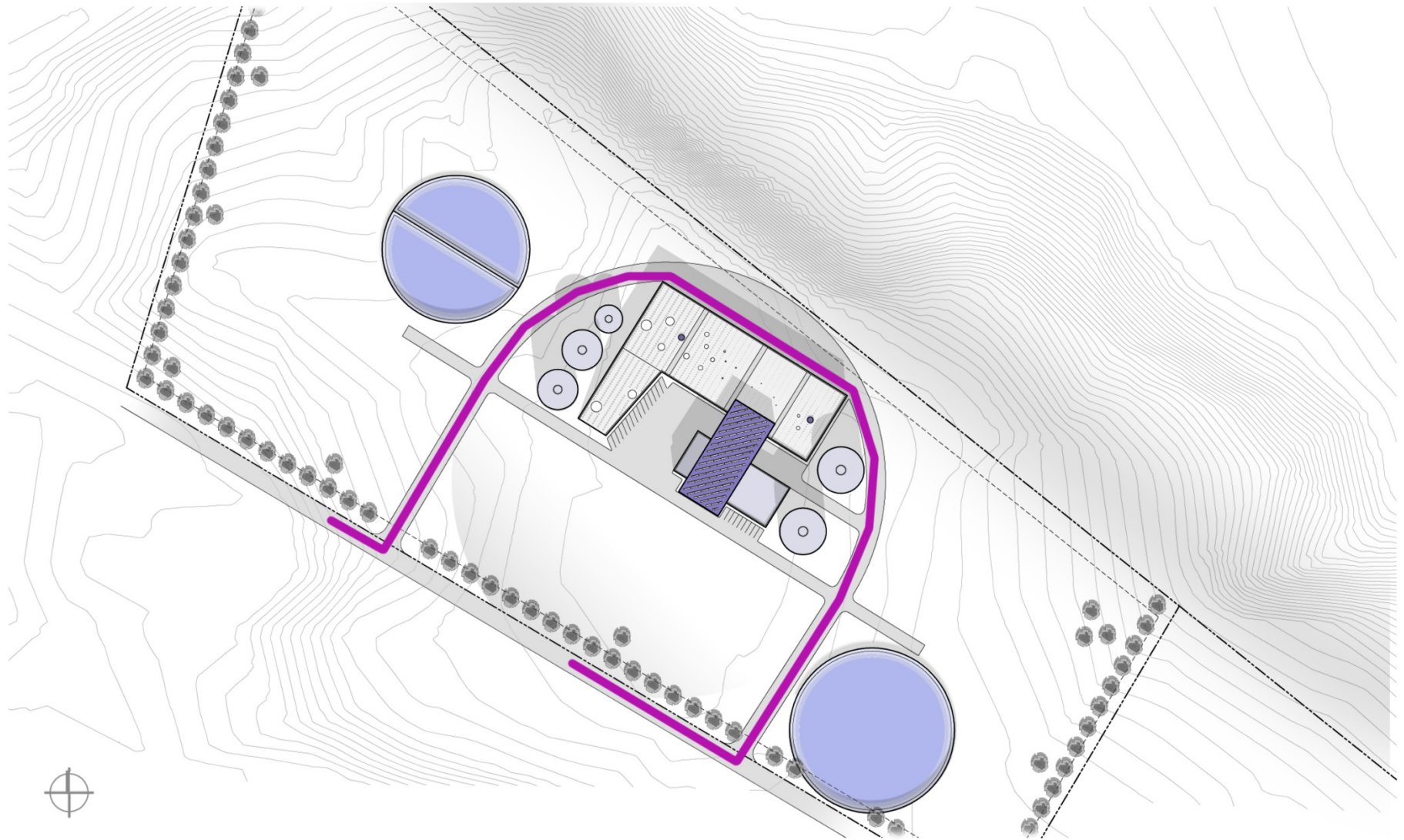
Cal Poly Architecture and Environmental Design: Graduate Research Studio - Spring 2013

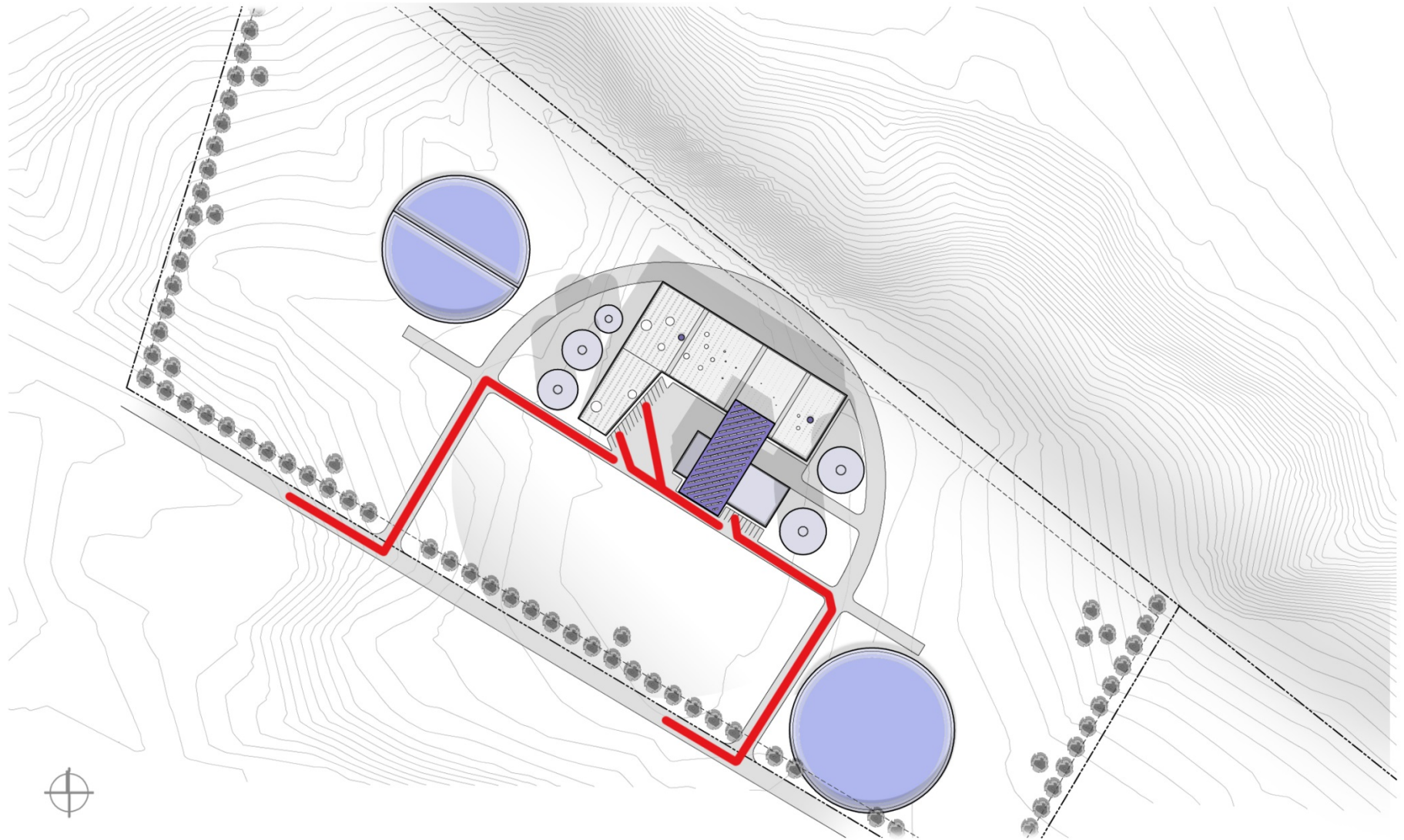


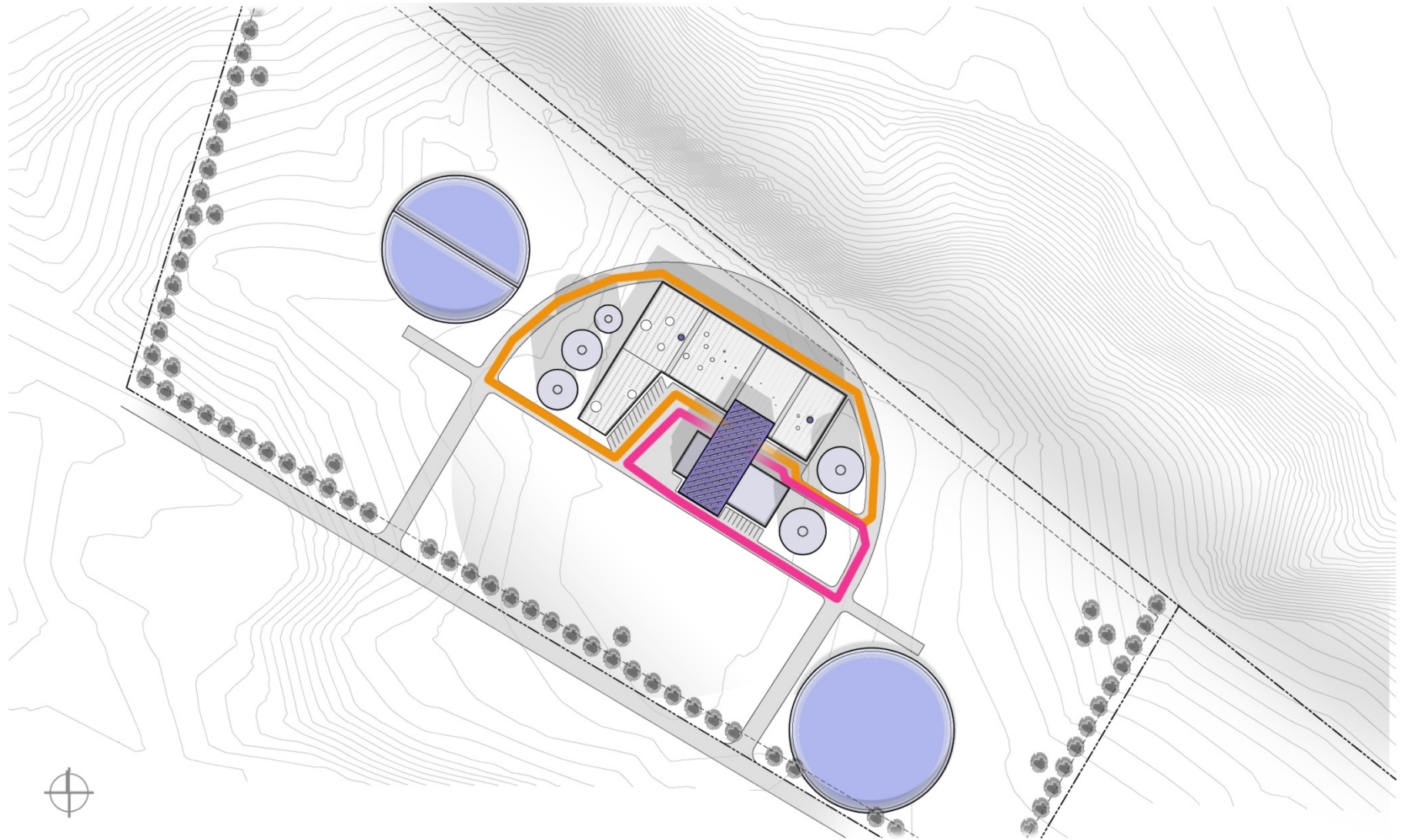
MPWSP Desalination Plant

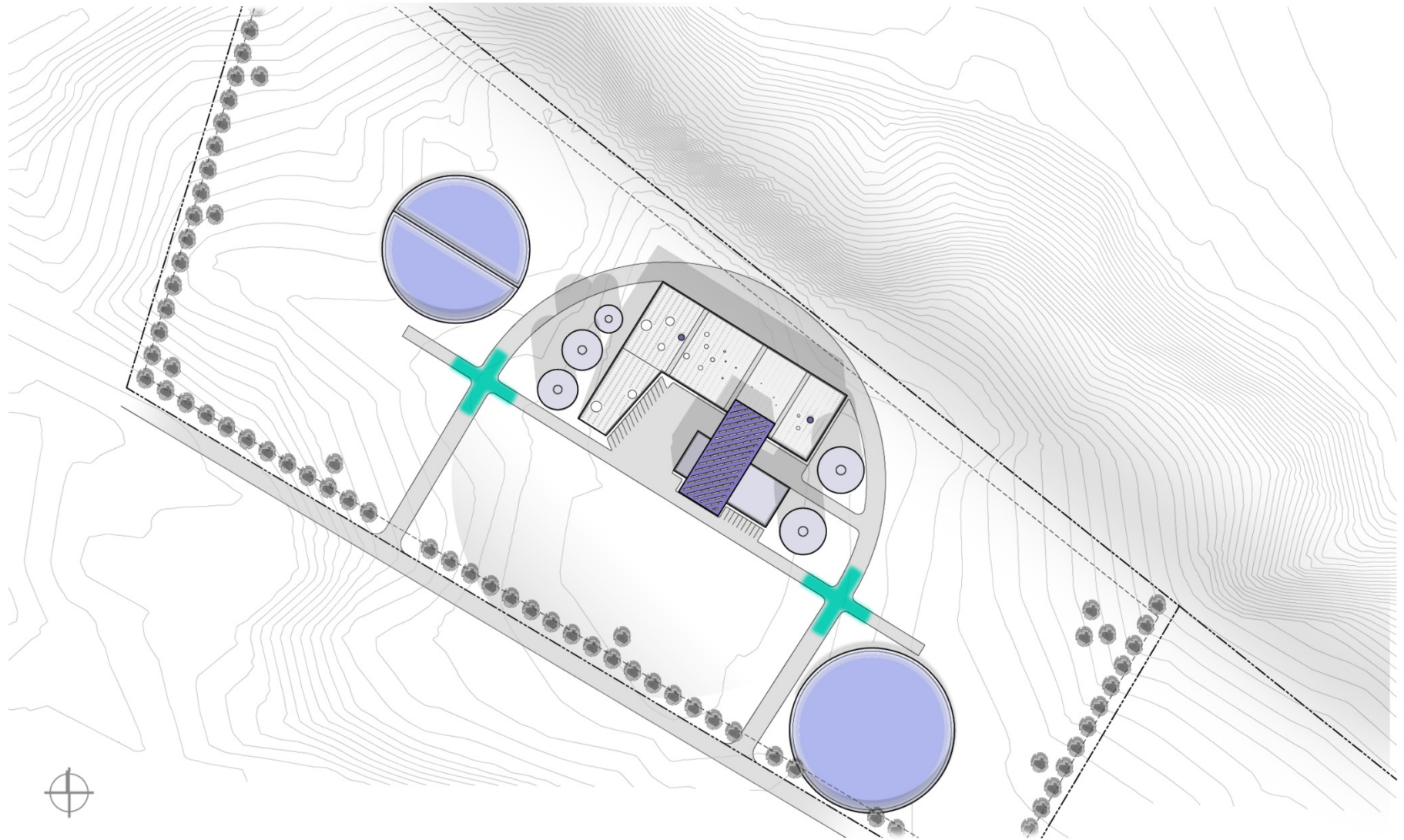




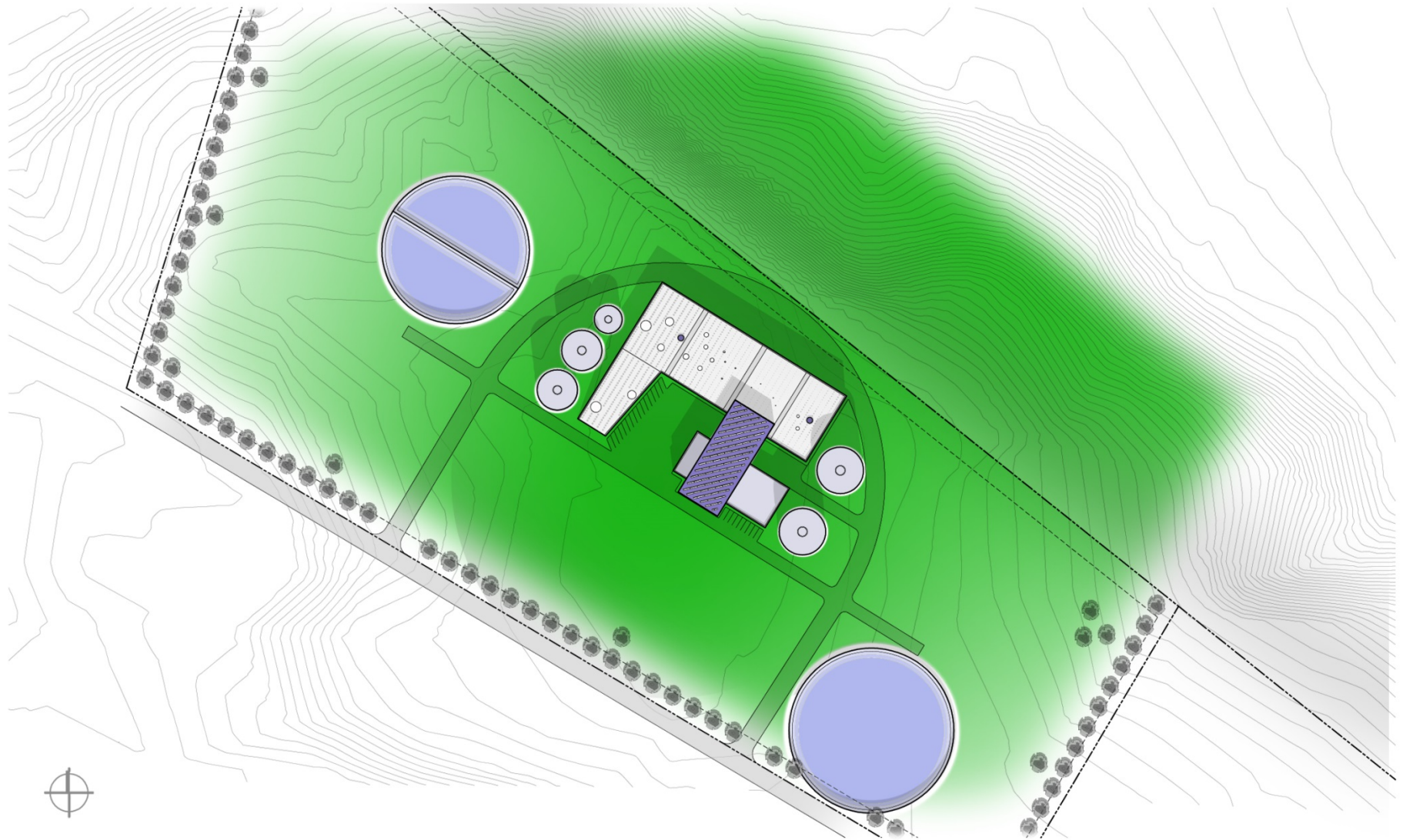




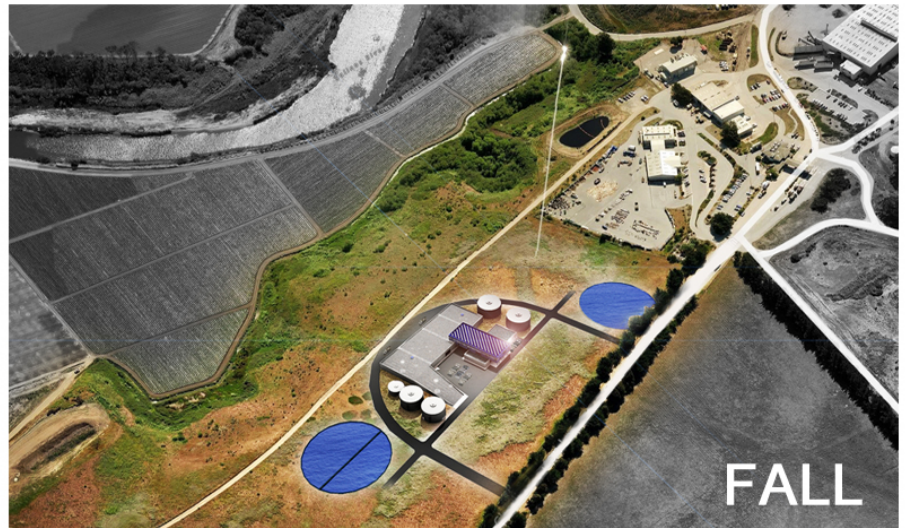
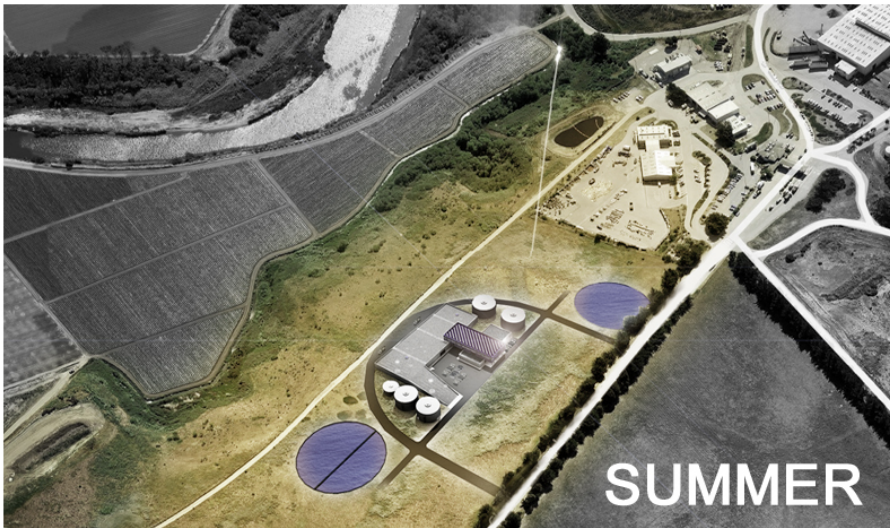
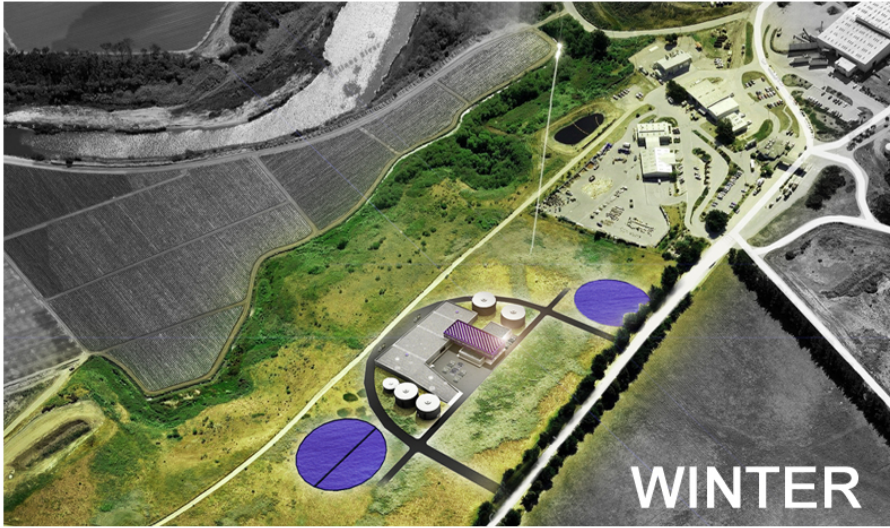




MPWSP Desalinization Plant

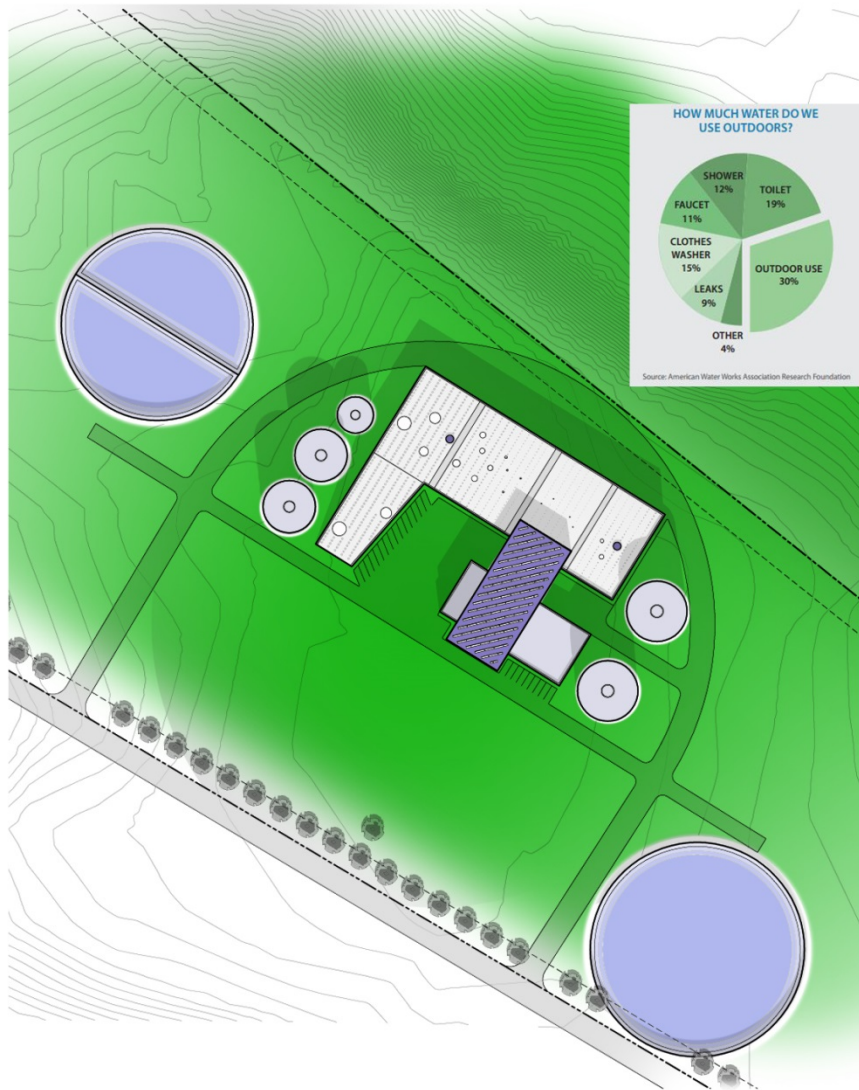


MPWSP Desalinization Plant



MPWSP Desalination Plant

Cal Poly Architecture and Environmental Design: Graduate Research Studio - Spring 2013



MPWSP Desalinization Plant



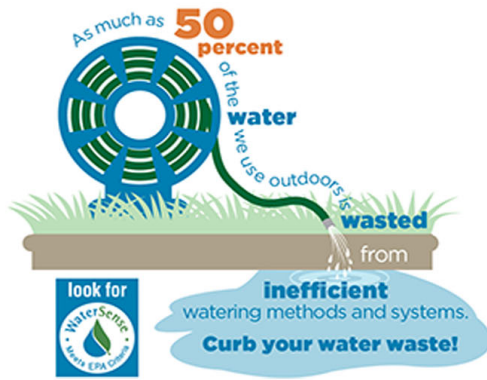
Before

After



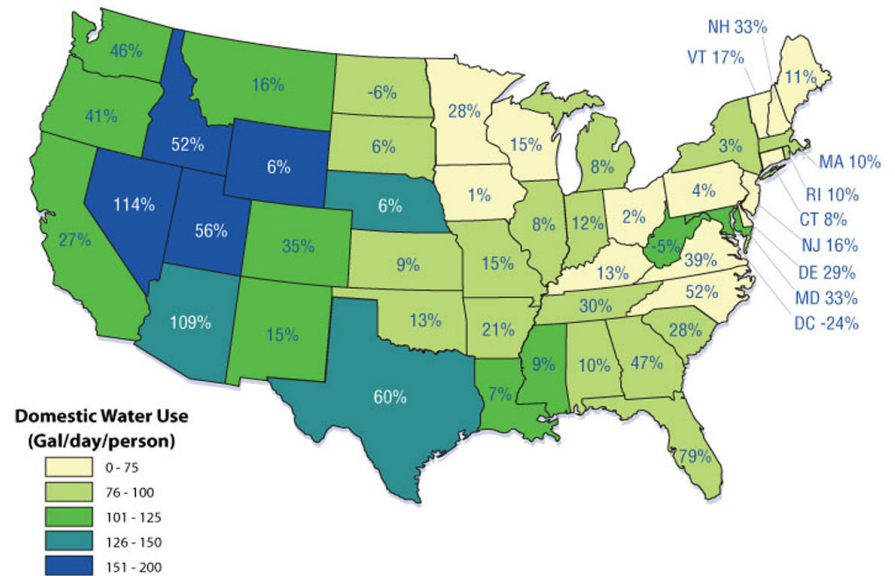
Before

After




Fixture Types		Gallons (Per Flush)	Rebate	Fixture Cost
Toilets	Conventional	1.6	N/A	\$253
	High Efficiency (WaterSense)	1.28	\$200	\$364
	Ultra High Efficiency	0.8	\$250	N/A
Urinals	Conventional	1.0	N/A	N/A
	High Efficiency (WaterSense)	0.5	\$200	\$236
	Ultra High Efficiency (Pint)	0.125	\$300	\$314
	Waterless Urinals	0	\$300	N/A
Faucets		Gallons (Per Minute)	Rebate	Fixture Cost
	Conventional	2.2	N/A	N/A
	High Efficiency (WaterSense)	1.5	N/A	\$250
Showerheads	Conventional	2.5	N/A	\$45
	High Efficiency (WaterSense)	2.0	N/A	\$55

Domestic Water Use in Gallons per Day per Person and Projected Percent population Change by 2030



rainwater harvesting in san francisco daisy chain system

safety sticker

barrel safety strap (screwed to wall)

fully closed lid & screw top with air vacuum relief valve (or use screen)

disconnected downspout


filter (if watering edibles, a first flush diverter is required)

elbow


hose bibb

overflow hose to landscape

inside barrel




male electrical conduit adapter

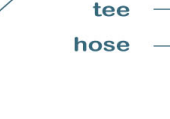


rubber washer (between inside wall of barrel and male electrical conduit adapter)


outside barrel




reducer (glued to female electrical conduit with PVC cement)



tee




nipple (connects reducer to tee)




tee hose


elbow




female electrical conduit



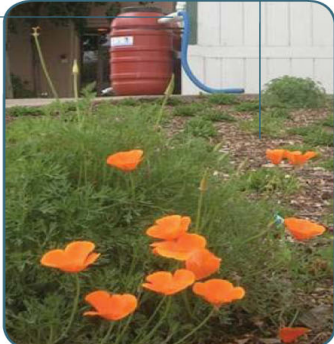
reducer



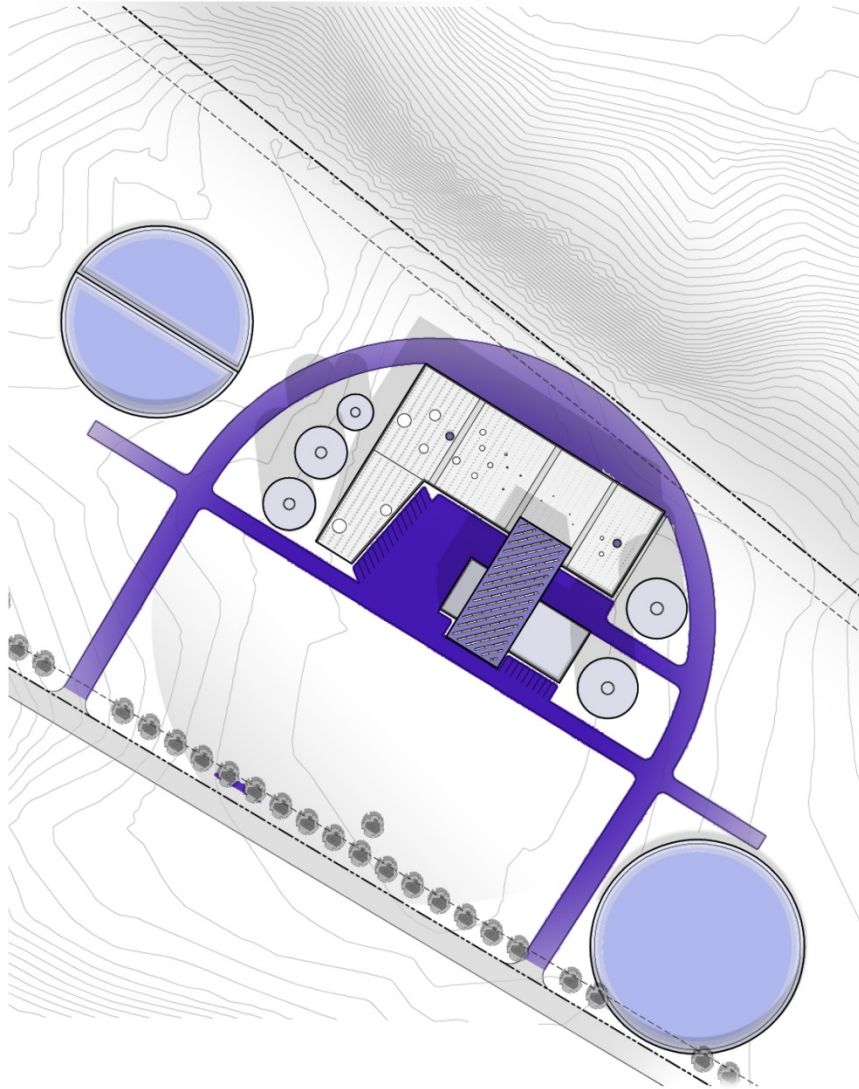
Teflon tape (white)



hose clamp



A daisy chain system is an alternative to a cistern, and an easy way to expand on a single rain barrel system in order to capture more water. The photos above show a rainwater harvesting demonstration project at the San Francisco Public Utilities Commission Southeast Treatment Plant. For more information, email greenstormwater@sfgwater.org.



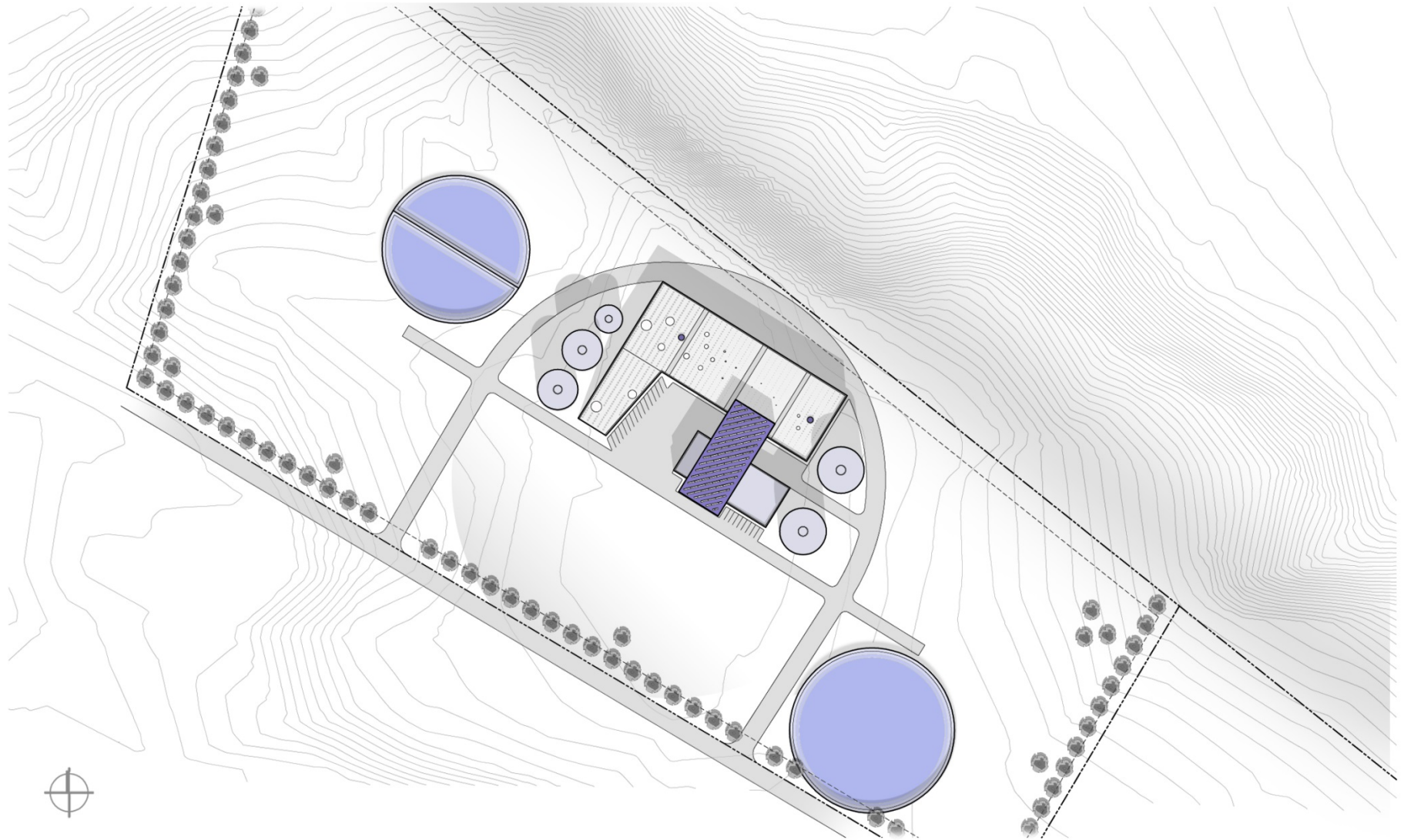
MPWSP Desalination Plant

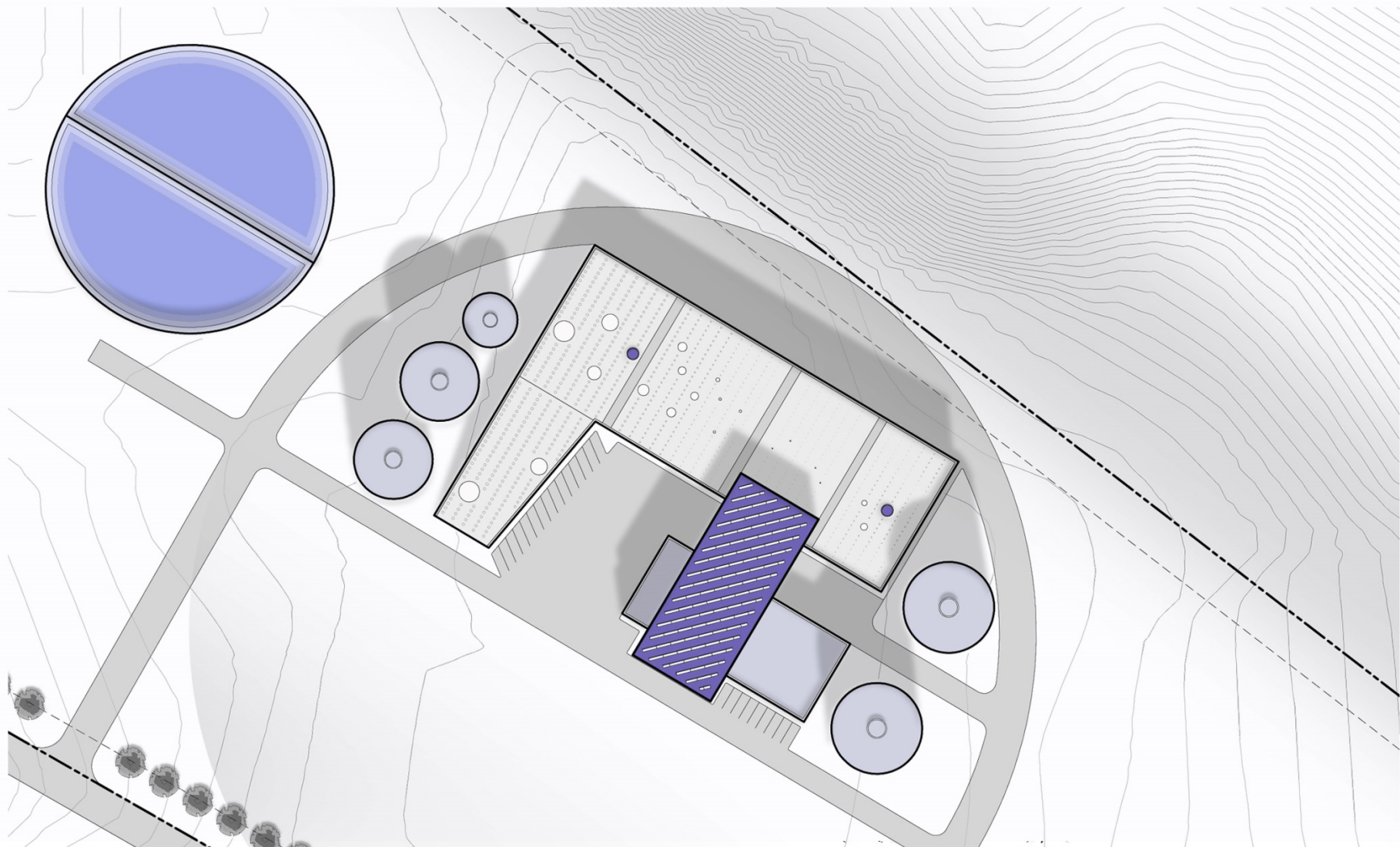


Cal Poly Architecture and Environmental Design: Graduate Research Studio - Spring 2013

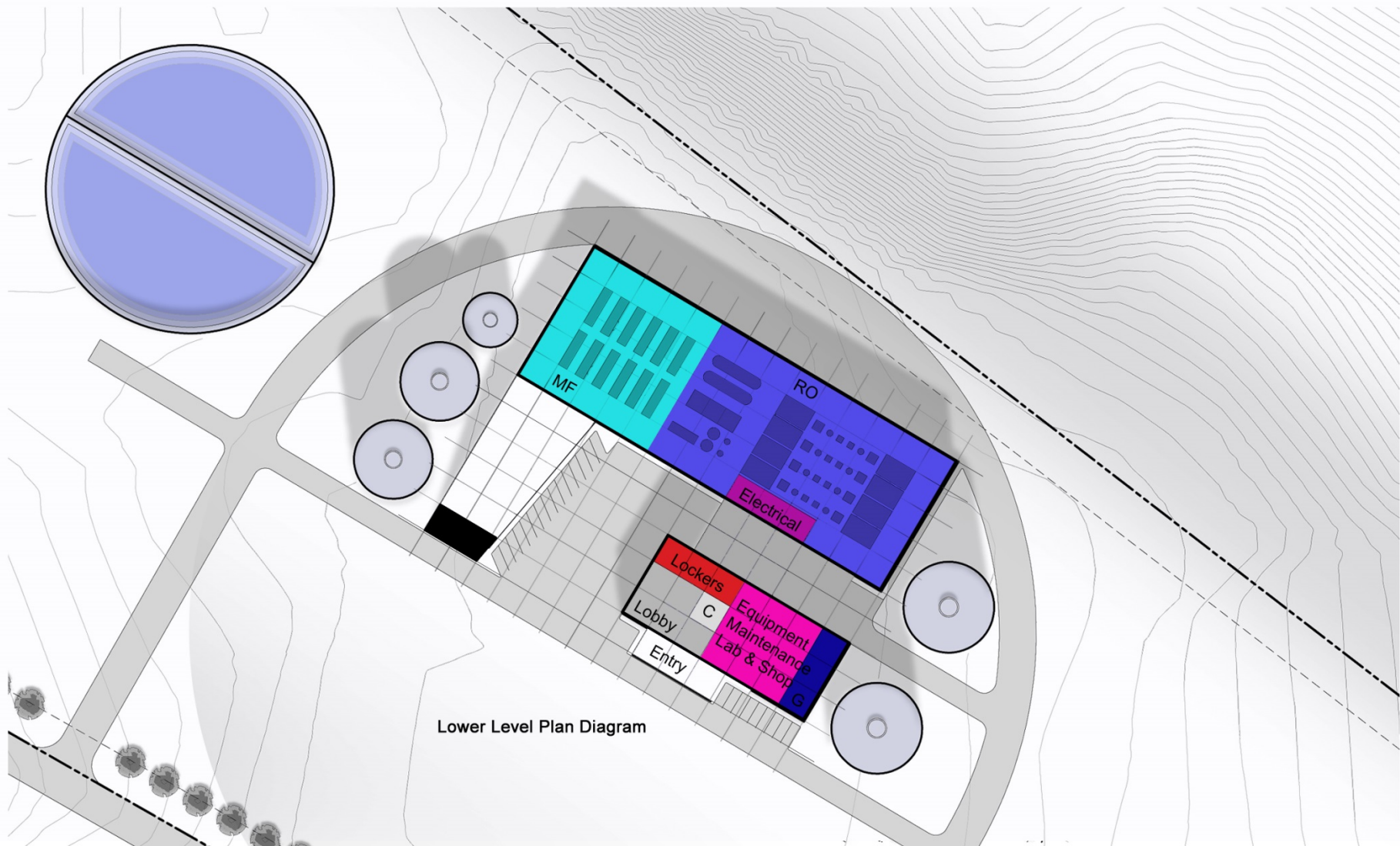


MPWSP Desalination Plant

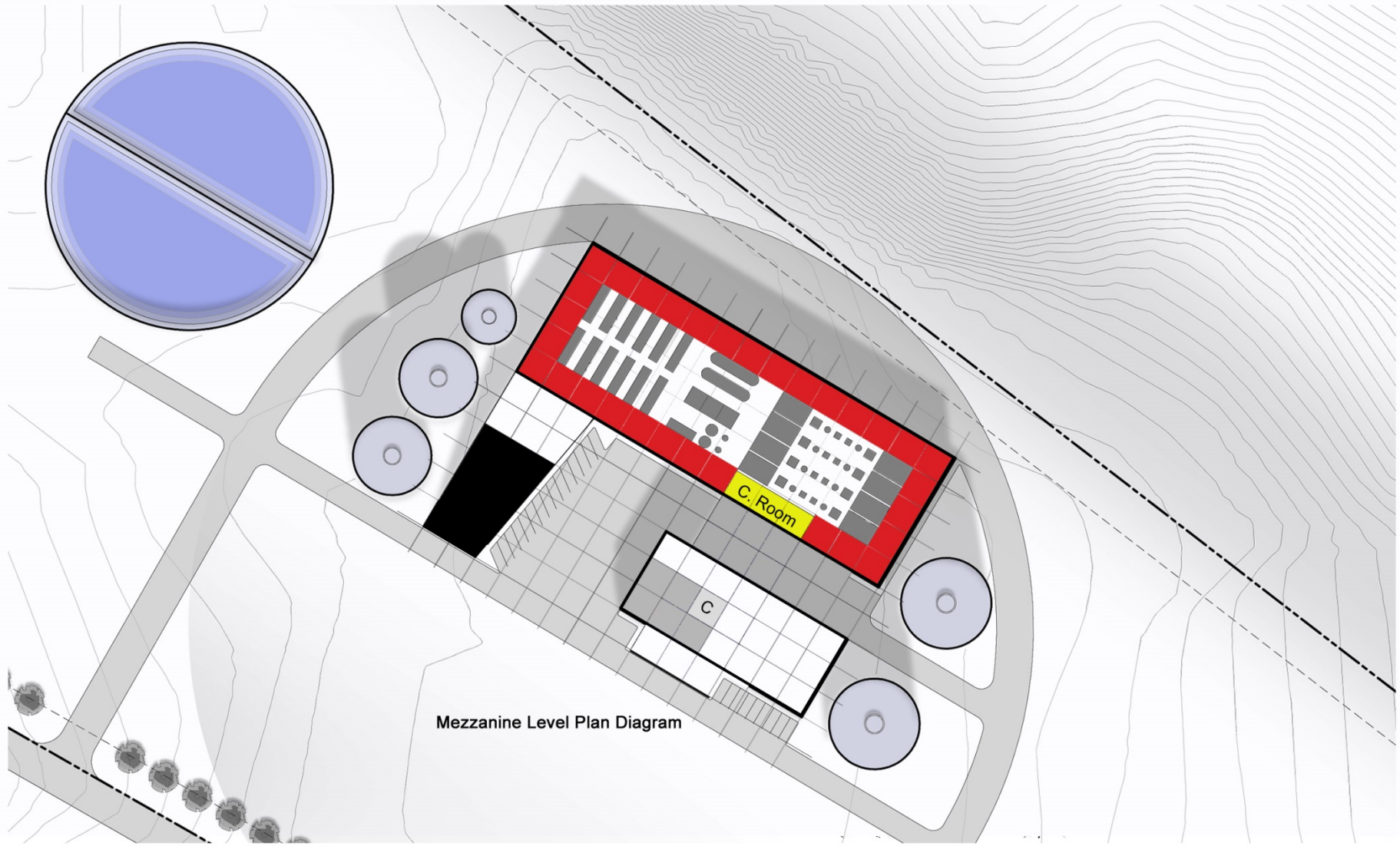




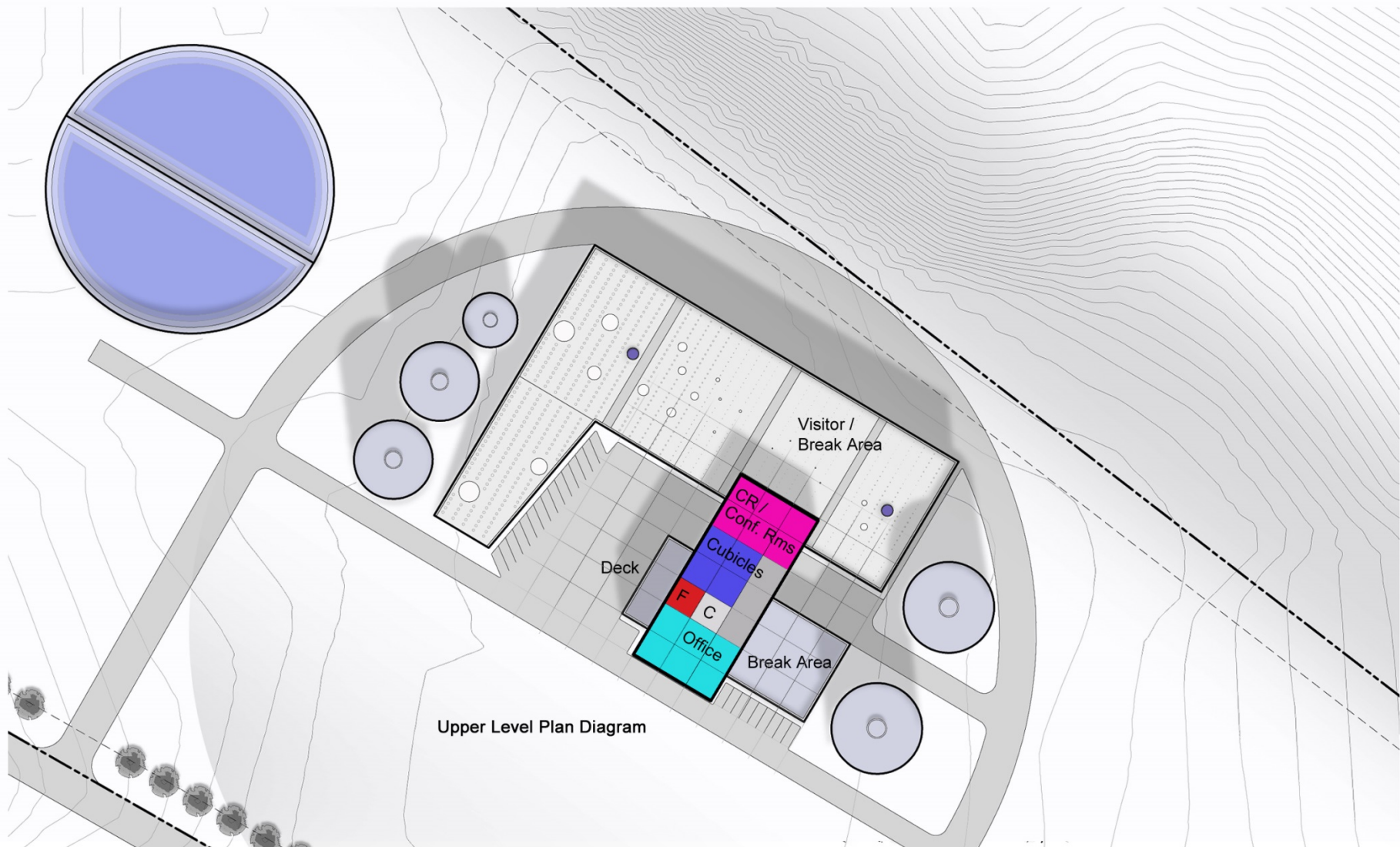
MPWSP Desalination Plant



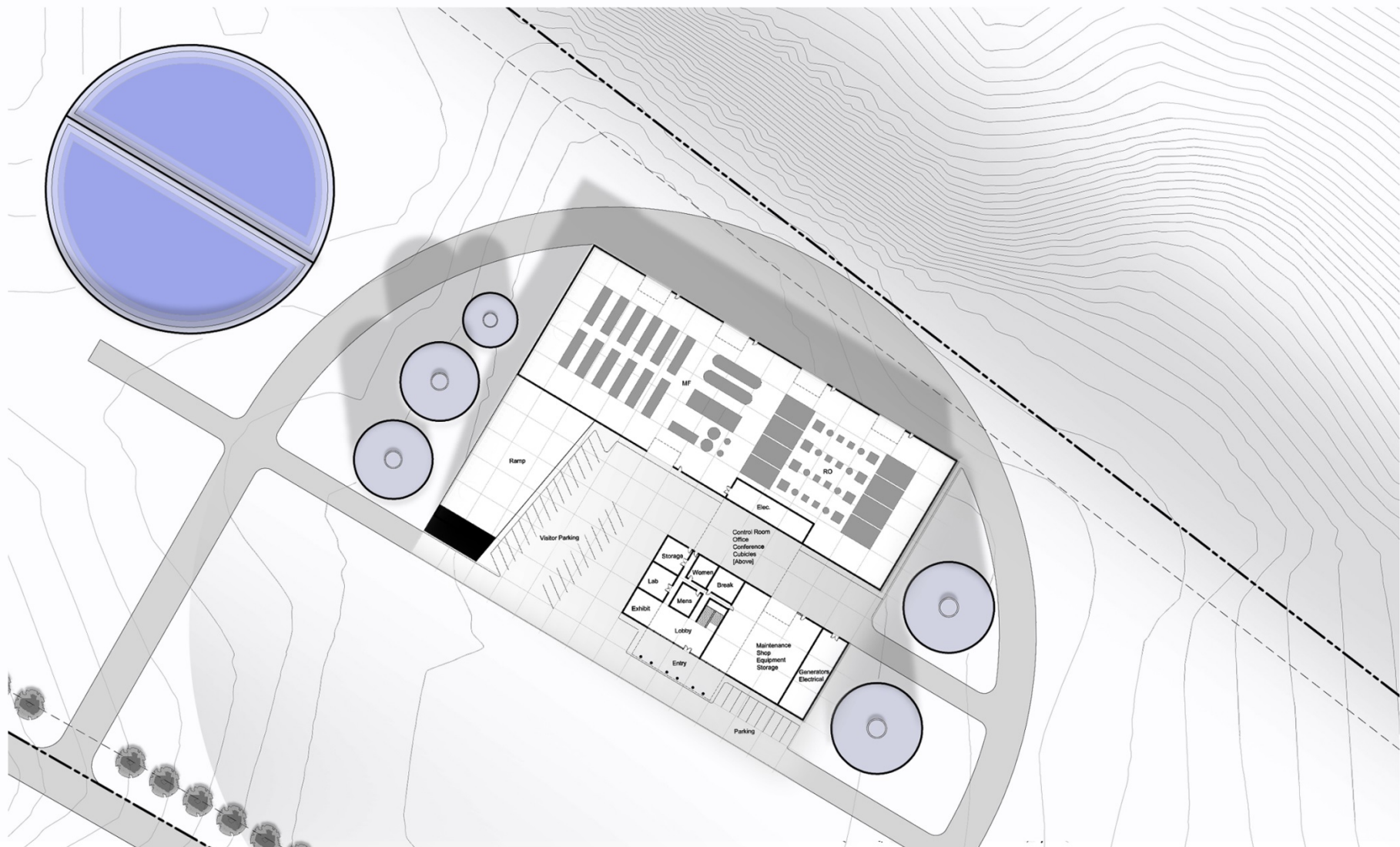
Lower Level Plan Diagram



Mezzanine Level Plan Diagram



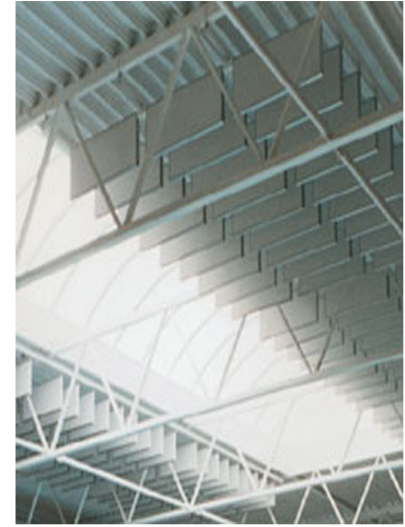
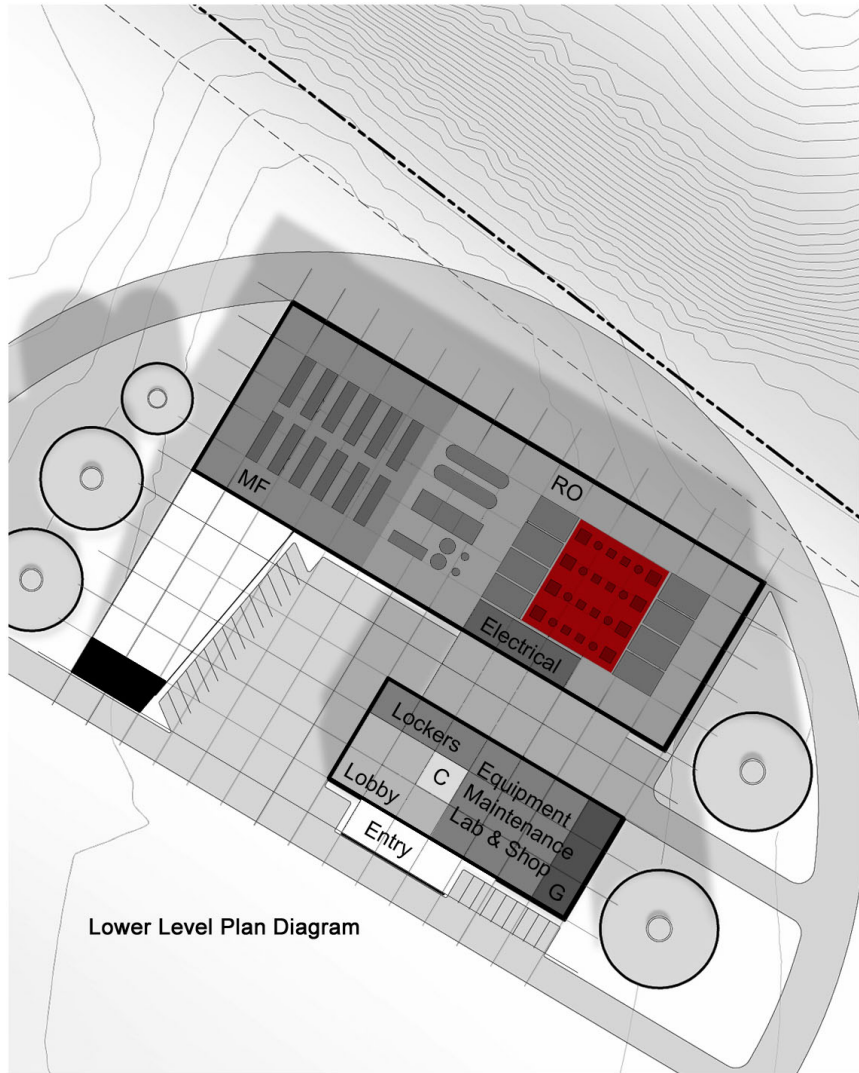
Upper Level Plan Diagram



MPWSP Desalination Plant

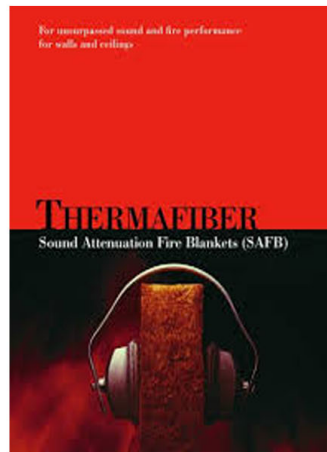
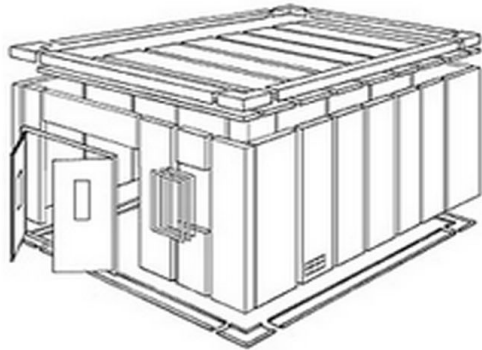
Examples of Exhibits, Desalination Process and Conservation





MPWSP Desalinization Plant

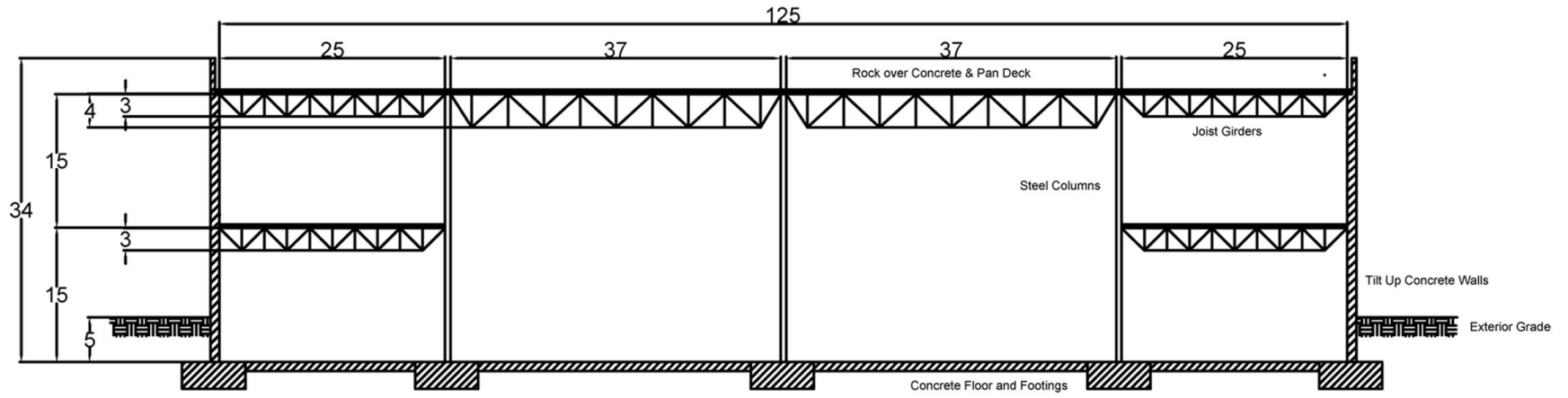
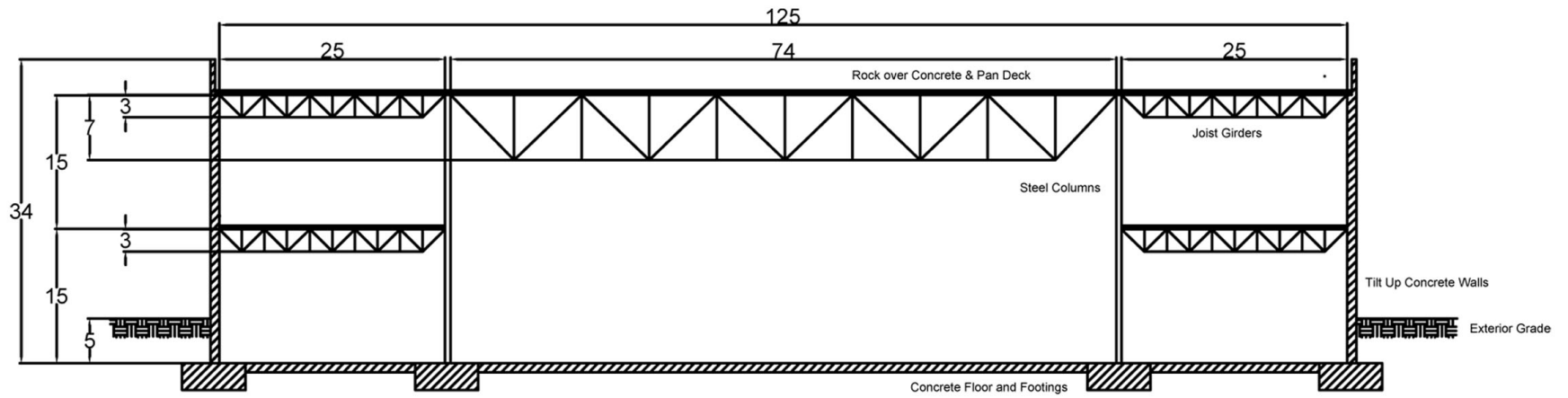
Cal Poly Architecture and Environmental Design: Graduate Research Studio - Spring 2013





MPWSP Desalination Plant

Cal Poly Architecture and Environmental Design: Graduate Research Studio - Spring 2013



Plastic Laminate Wall Panels

*A blend of wood-based fibers containing up to 70% of recycled craft paper and thermosetting resins

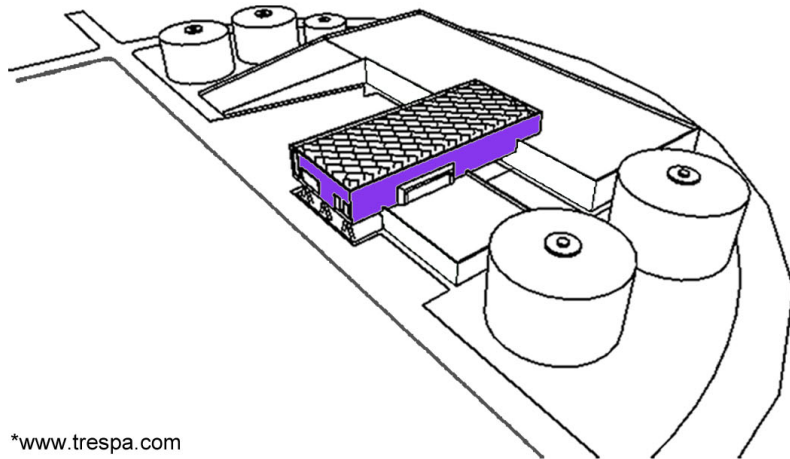
*Solid and sturdy

*Weather resistant and color stable

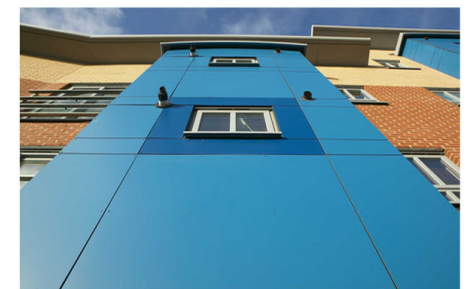
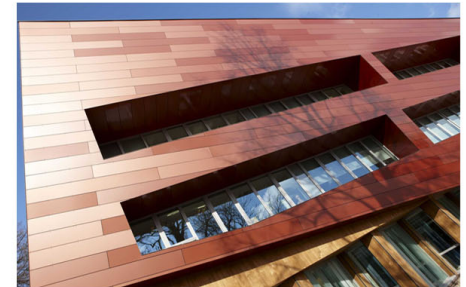
*A broad range of color choices

*Durability

*Low maintenance

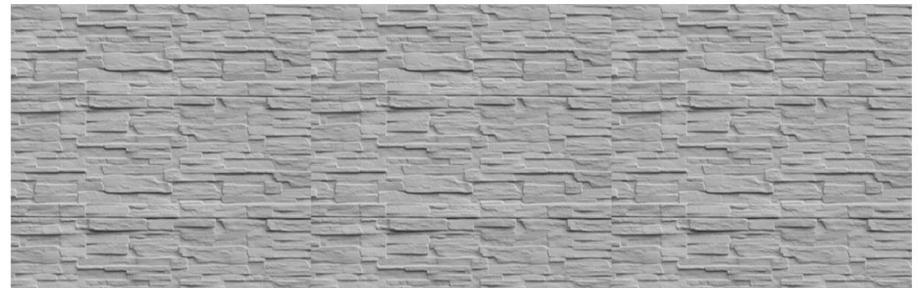
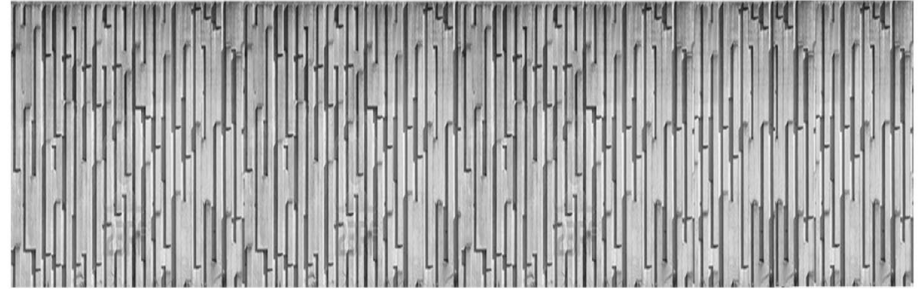
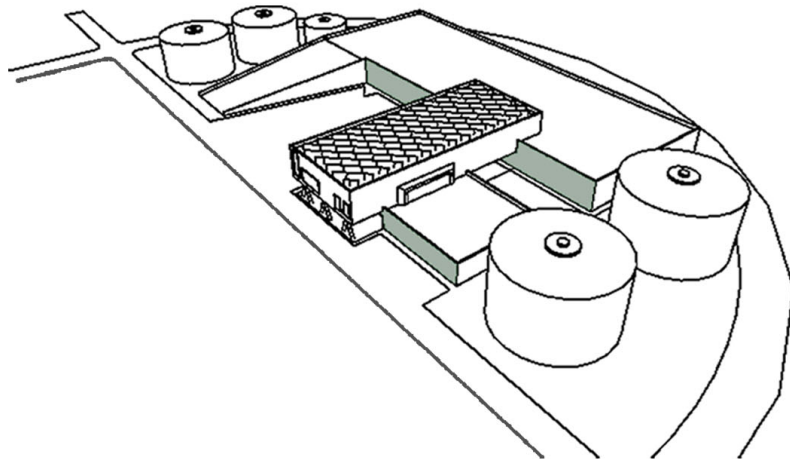


*www.trespa.com



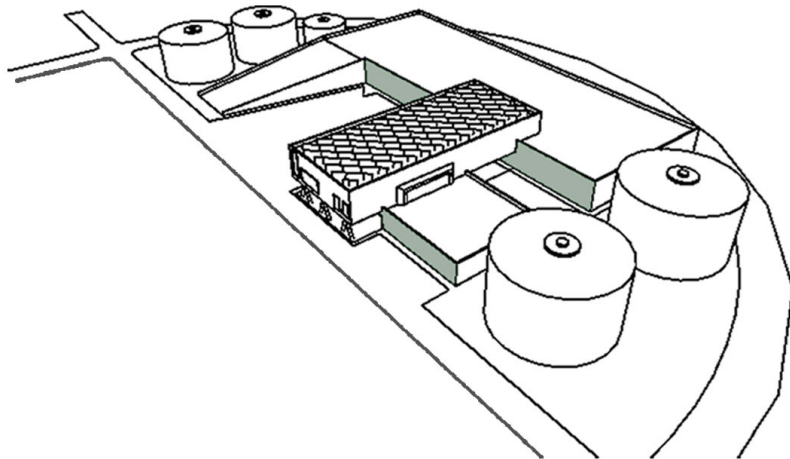
Precast Concrete Wall

- * Low construction cost
- * Low maintenance
- * Durability
- * Easy and effective construction
- * Offers the ability to create artistic pattern

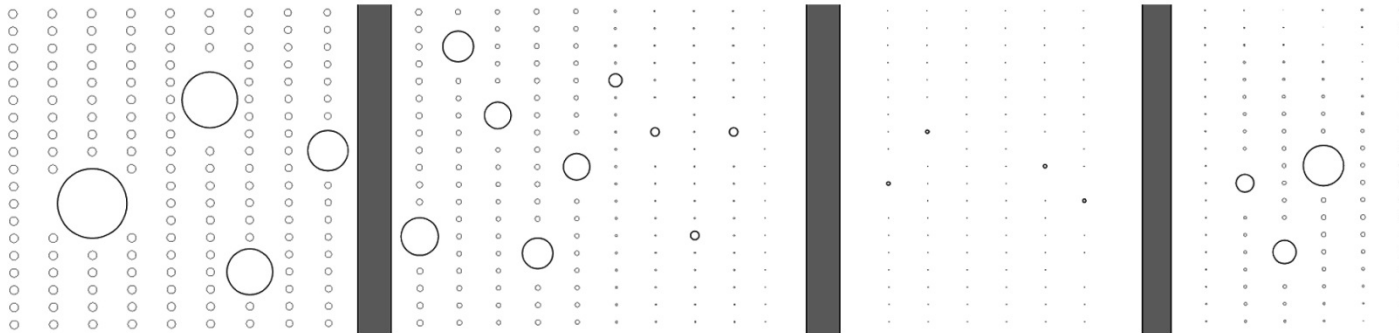
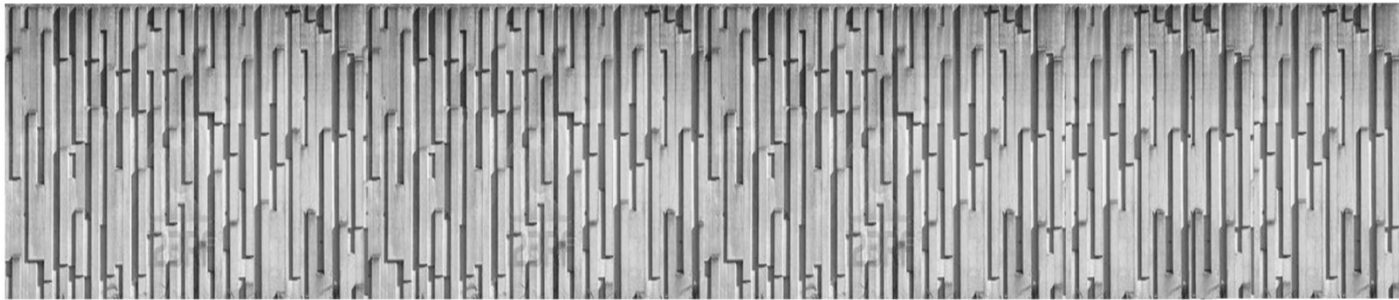


PVC Storm Drain Tubes

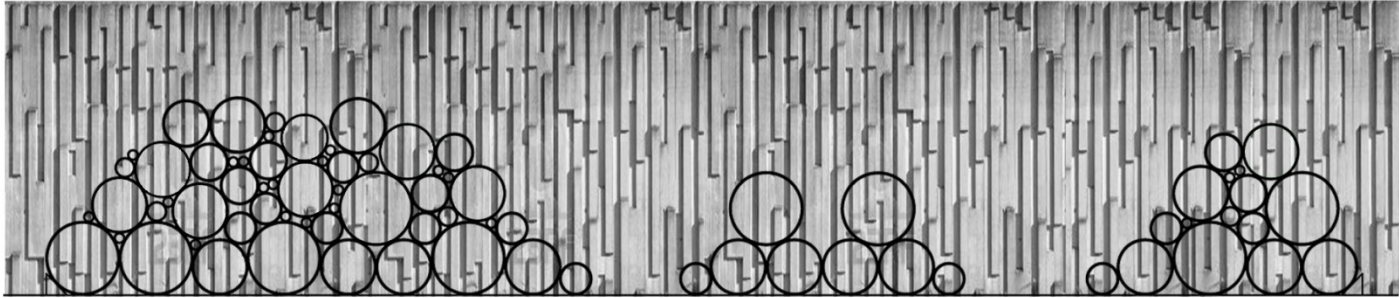
- *Reuse materials
- *Create a unique facade by overlaying tubes
- *Help to maintain the building at a moderate temperature
- *Tube facade offers a broad range of activities



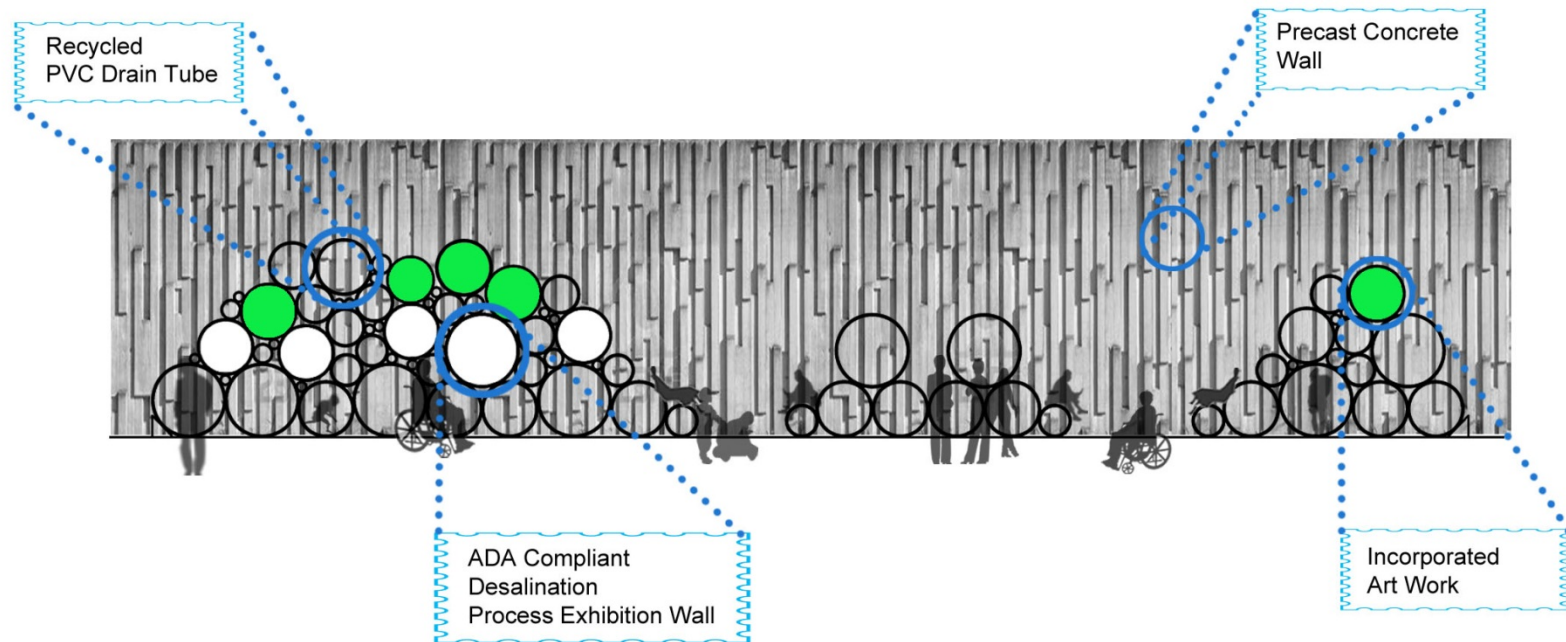
Molecular Process Concept Facade



Precast Concrete Wall and PVC Storm Drain Tube

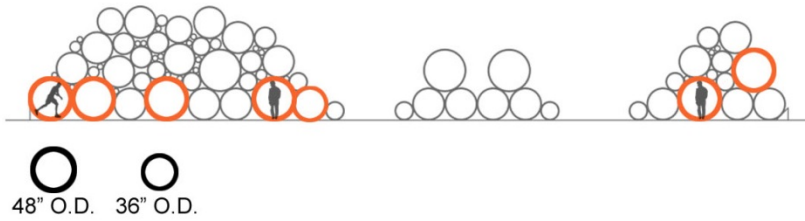


Precast Concrete Wall and PVC Storm Drain Tube

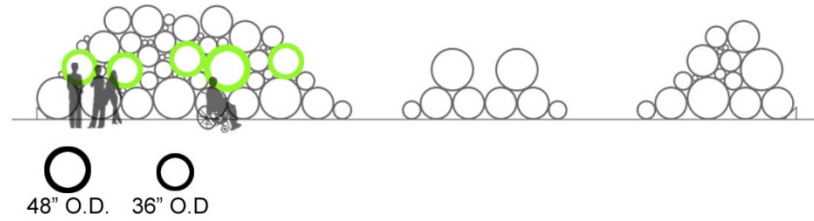


Reused PVC Storm Tube Facade

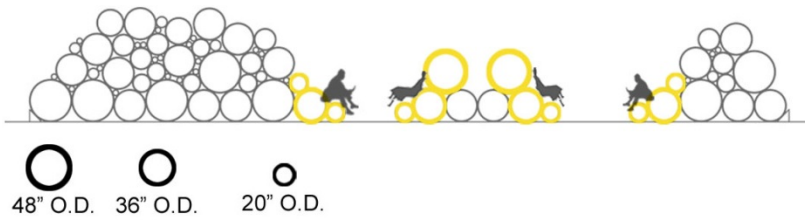
Be Inside Tubes



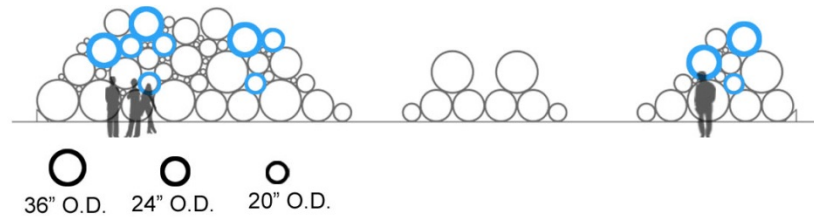
Desalination Process Exhibition Tubes



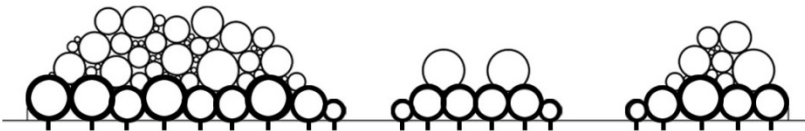
Sit on Tubes



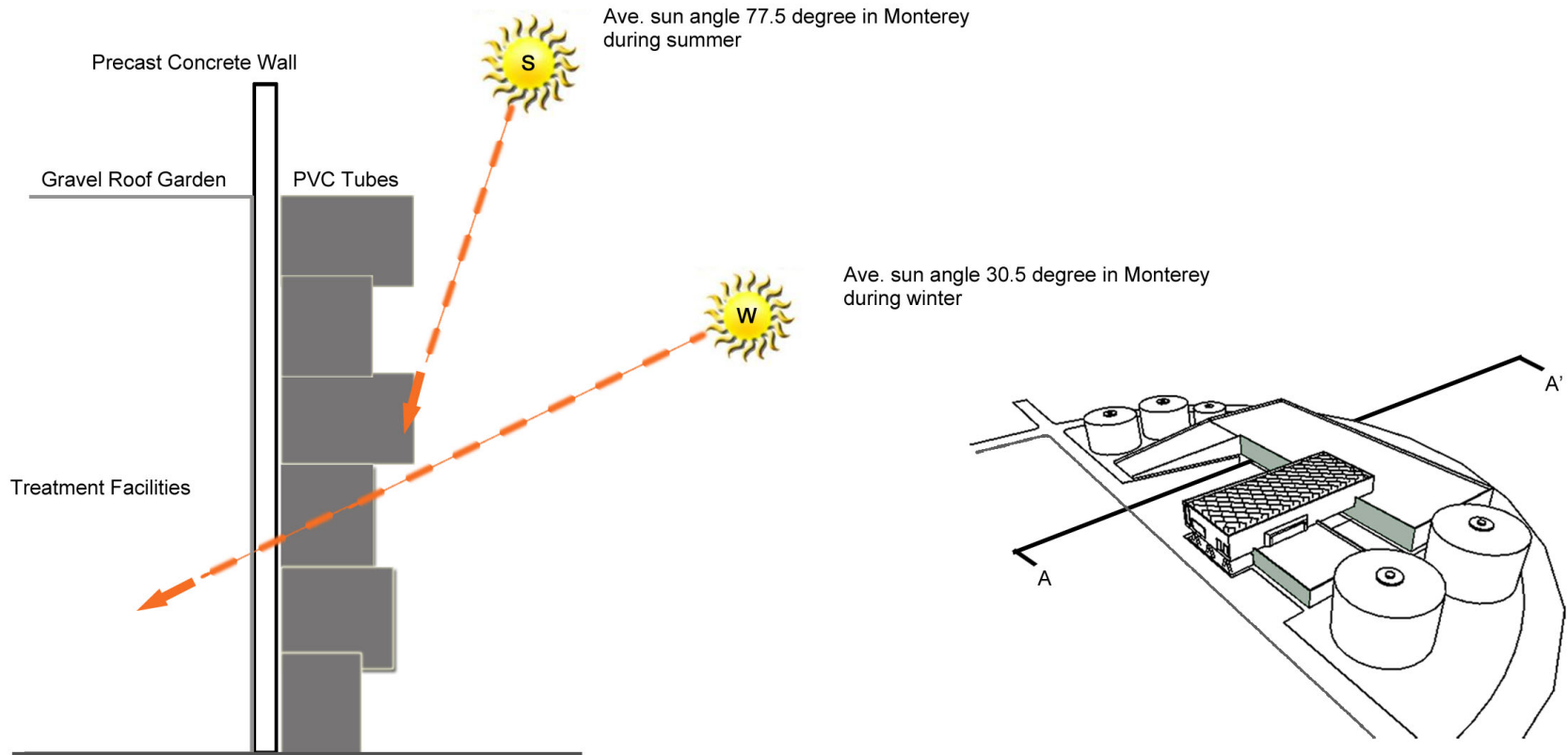
Art Display Tubes



Structural Design

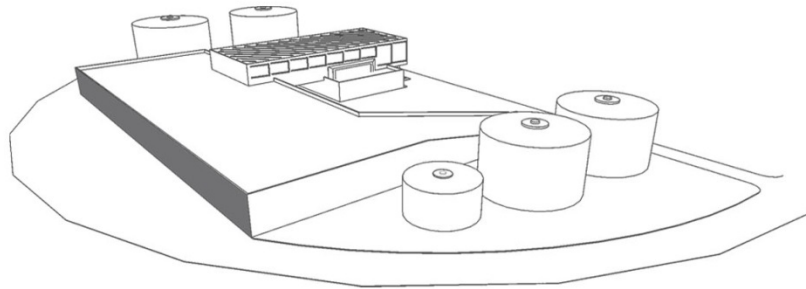


PVC Drain Tubes-Passive Design



See-through Garage Door

- *Provides a panoramic view
- *Creates bright and lively indoor space





MPWSP Desalination Plant



MPWSP Desalination Plant



MPWSP Desalination Plant