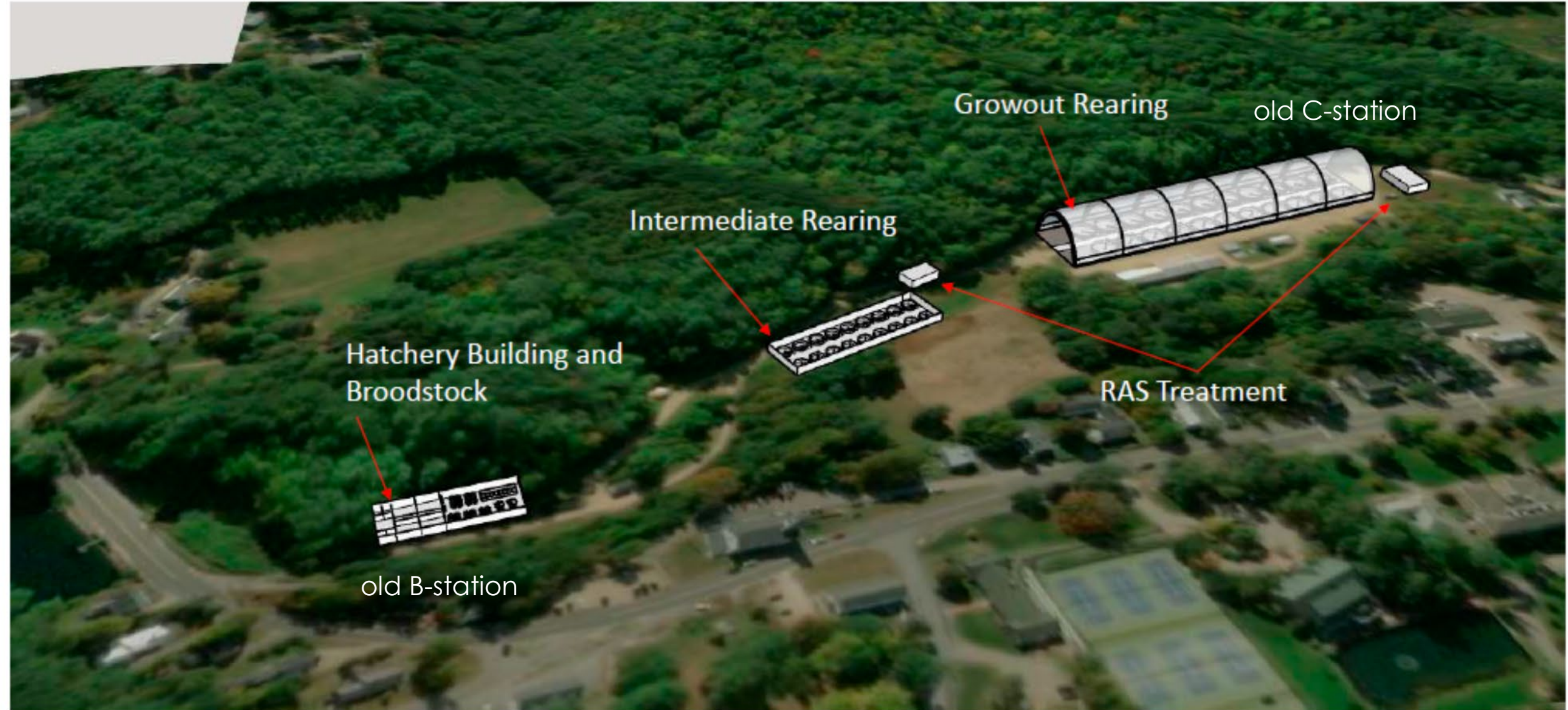


New Hampton Hatchery Modernization Concept



New Hampton 150,000 lb Concept

NOT TO SCALE



Proposed Summary of Production (lbs) by Facility

Hatchery	Existing	Proposed
Powder Mill	124,097	30,000
Berlin	74,336	64,336
New Hampton	71,792	150,000
Milford	68,124	68,124
Twin	20,698	23,000
Warren	26,742	26,742
Total	358,789	362,202

Long-Term Plan

- Phase 1 - 2025:
 - Powder Mill – Reduction in annual production from 118,000 lbs to 30,000 lbs (75% reduction) to meet effluent TP limits.
- Phase 2 - 2026:
 - New Hampton – New RAS facility to accommodate 150,000 lbs in production plus house Brook and Brown Trout broodstock.
- Phase 3 - 2027:
 - Twin Mountain – Reduction in production to less than 15,000 lbs, focus on Rainbow Trout broodstock.
- Phase 4 - 2028:
 - New Hampton Phase 2A -- With additional funding, this facility could produce up to 250,000 lbs with minimal rearing improvements, and effluent discharge relocation to the Pemigewasset River.
- Phase 5 - 2029:
 - Reevaluation of the statewide system will likely be necessary at this time to determine the best way to meet production goals. A combination of the options below will likely be required. These improvements have not yet been estimated given it is unknown which options will be required.
 - Berlin – Reduction in annual production from 74,000 lbs to roughly 64,000 lbs (13.5% reduction). If further reduction is deemed necessary after receiving the final EPA discharge permit this facility will shift its focus to Brook Trout broodstock only as a viable alternative to meet new effluent TP limits.
 - Milford – Continue operation with investment in rehabilitation of existing infrastructure if required to meet production goals.
 - Warren – Continue operation with investment in rehabilitation of existing infrastructure if required to meet production goals.

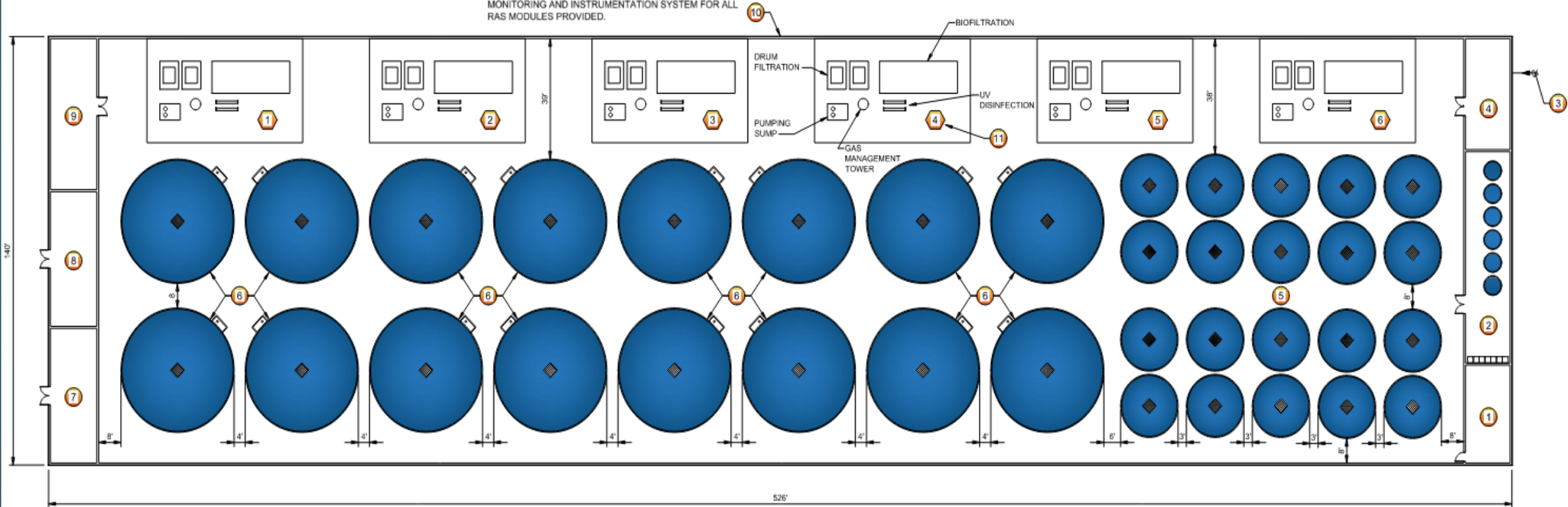
Recirculating Aquaculture System 101

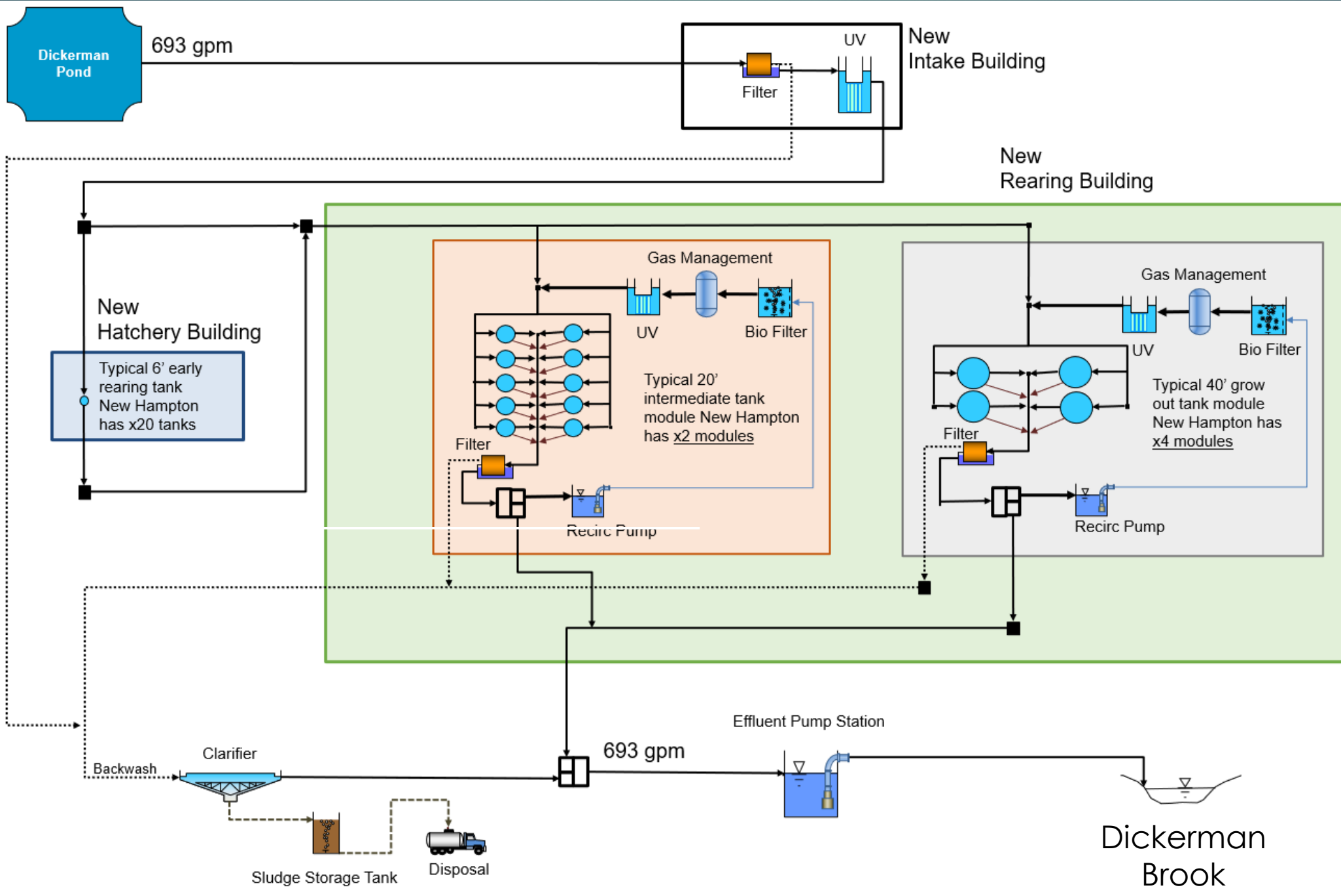
- ❖ Extensively used in fish hatcheries
- ❖ More efficient operation, saves costs
- ❖ Enclosed environment, reuses most of the water
- ❖ Less water treatment per gallon (effluent discharge)
- ❖ Controlled environment and improved water quality
- ❖ Increase production and remain compliant with EPA (NPDES permit)
- ❖ Individualized filtration and on/off valves
- ❖ Monitoring and control of water quality parameters
- ❖ Management practices to deal with disease or any other emergency situation

Example of RAS Facility

KEYED NOTES:

- ① OFFICES AND STAFF SUPPORT SPACES IN INSULATED PRE-ENGINEERED BUILDING.
- ② EGG INCUBATION ROOM INCLUDING BIOSECURITY EGG WASH AREA, VERTICAL FLOW EGG INCUBATORS AND CIRCULAR FEED TRAINING TANKS. THIS ROOM ON FLOW THROUGH WATER USE ONLY (NOT RAS.)
- ③ WATER SUPPLY LINE FOR MAKEUP WATER TO THE RAS SYSTEM
- ④ PROCESS MECHANICAL ROOM.
- ⑤ 20 FT DIAMETER INTERMEDIATE REARING TANKS WITH MODULAR RAS TREATMENT COMPONENTS. TWO (2) RAS MODULES WITH 10 TANKS PER MODULE. TANKS ARE DUAL DRAIN DESIGN.
- ⑥ 40 FT DIAMETER FINAL GROW-OUT TANKS WITH MODULAR RAS TREATMENT COMPONENTS. FOUR (4) RAS MODULES WITH 4 TANKS PER MODULE. TANKS ARE DUAL DRAIN DESIGN.
- ⑦ GENERAL EQUIPMENT STORAGE SPACE.
- ⑧ FEED STORAGE SPACE (AIR CONDITIONED).
- ⑨ ELECTRICAL EQUIPMENT ROOM. ELECTRICAL PANELS AND EMERGENCY ELECTRICAL GENERATOR. PROCESS MONITORING AND INSTRUMENTATION SYSTEM FOR ALL RAS MODULES PROVIDED.
- ⑩ PRE-ENGINEERED INSULATED METAL BUILDING WITH HVAC SYSTEMS. BUILDING SIZE IS APPROXIMATELY 65,745 SQUARE FEET.
- ⑪ RAS MODULES 6 PROVIDED. EACH MODULE INCLUDES: DUAL DRAIN CULTURE TANKS, MICROSCREEN, CIRCULATION PUMPS, BIOFILTRATION TOWER, GAS MANAGEMENT TOWER WITH CO₂ & DO GAS MANAGEMENT, UV DISINFECTION, OZONE AND SYSTEM PIPING. SYSTEM IS 95% RECIRCULATION / 5% MAKE-UP BY RATE OF FLOW RAS DESIGN. RAS MODULES CAN OPERATE AS STAND-ALONE INDEPENDENT SYSTEMS.

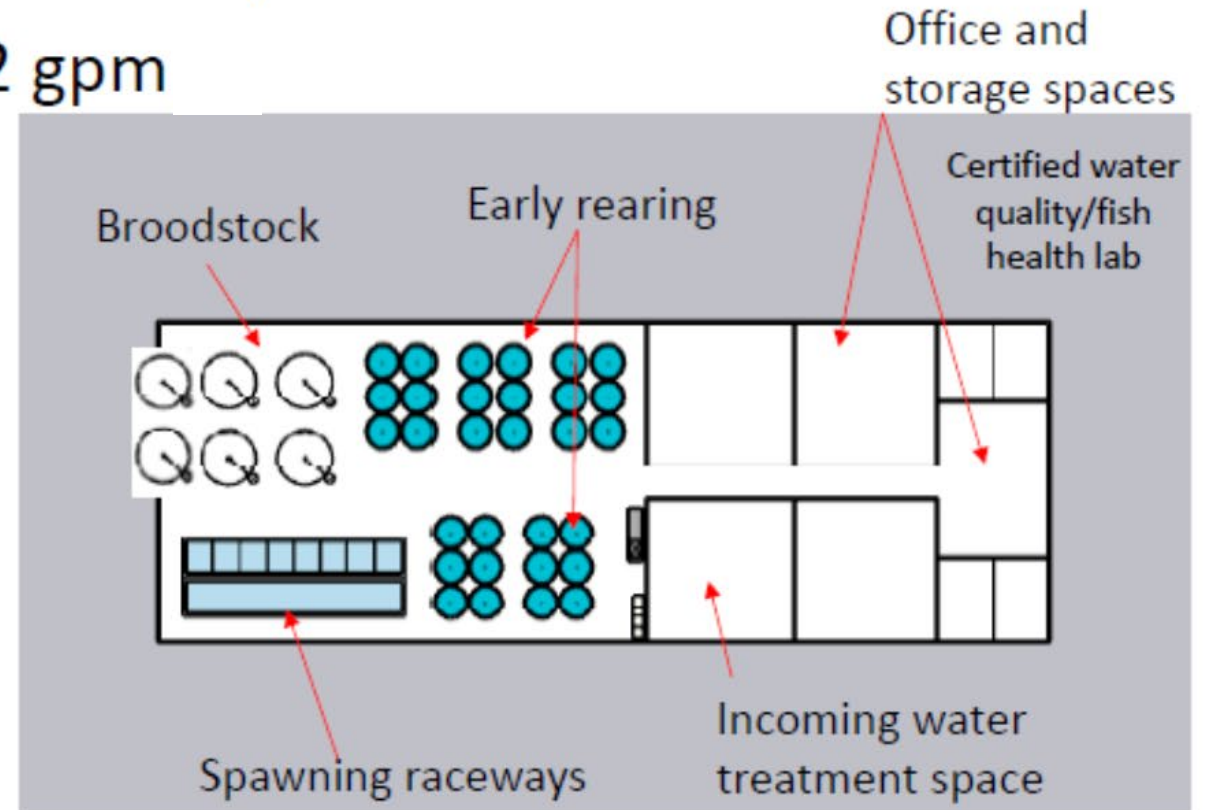




Example of Flow Regime in RAS Facility

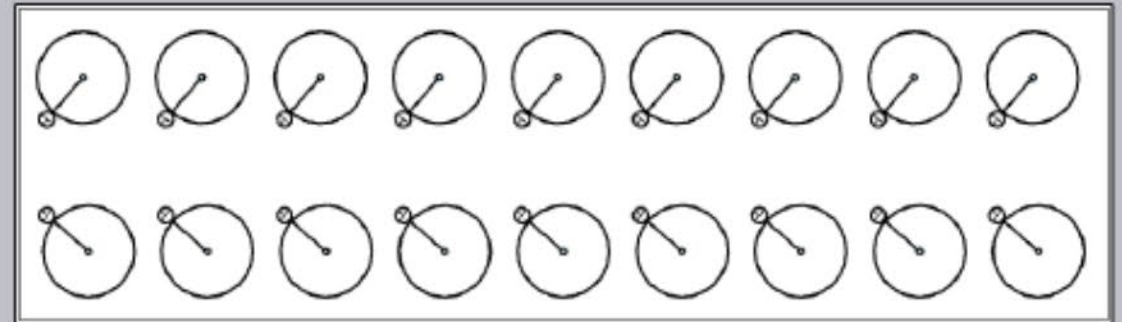
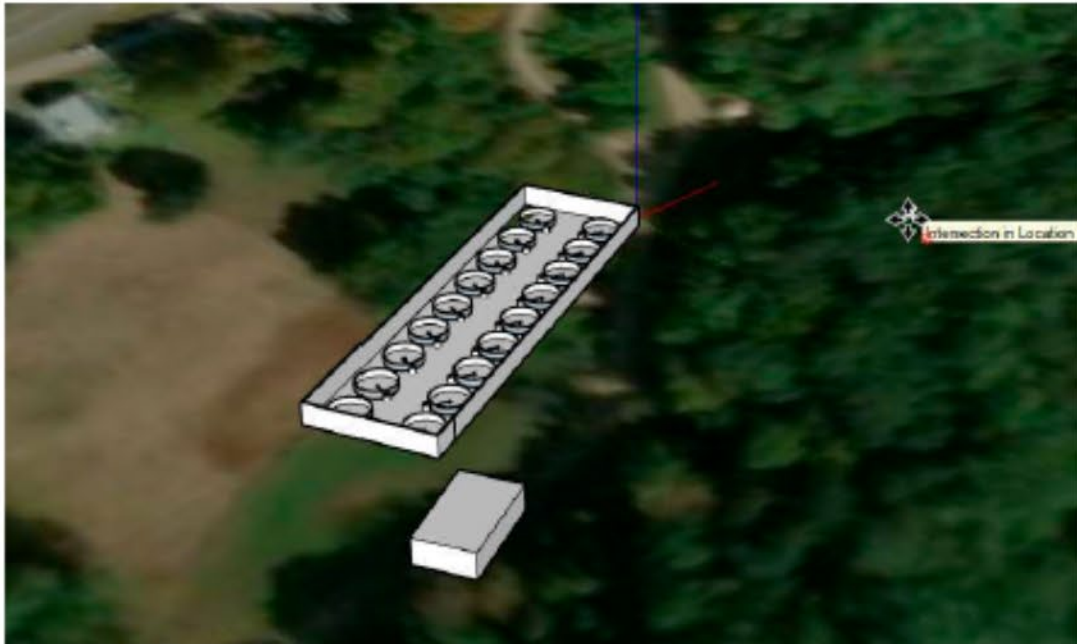
Hatchery Building Conceptual Layout

- 9,600+ SF Building with conditioned office areas
- 30 Early Rearing tanks @ 6' dia – allows for fish to 3"
- 6 Broodstock Tanks @ 10' dia
- 2 Linear Spawning raceways (interment use)
- First use Dickerman Pond water 652 gpm



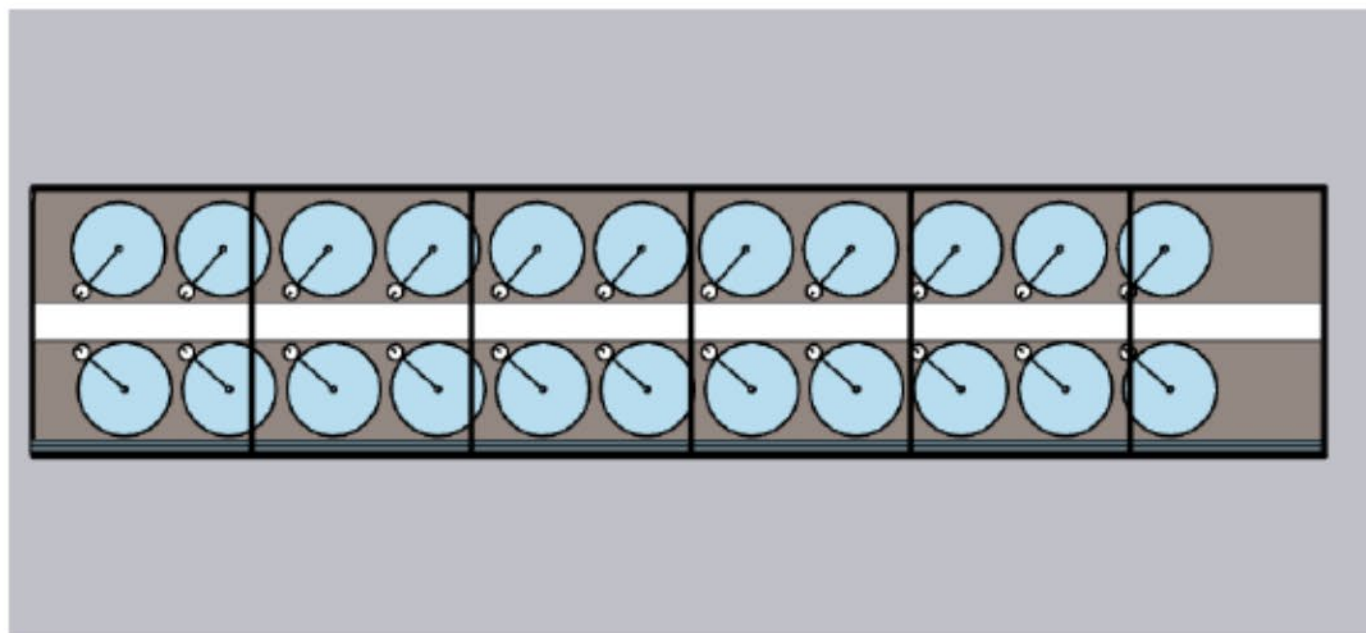
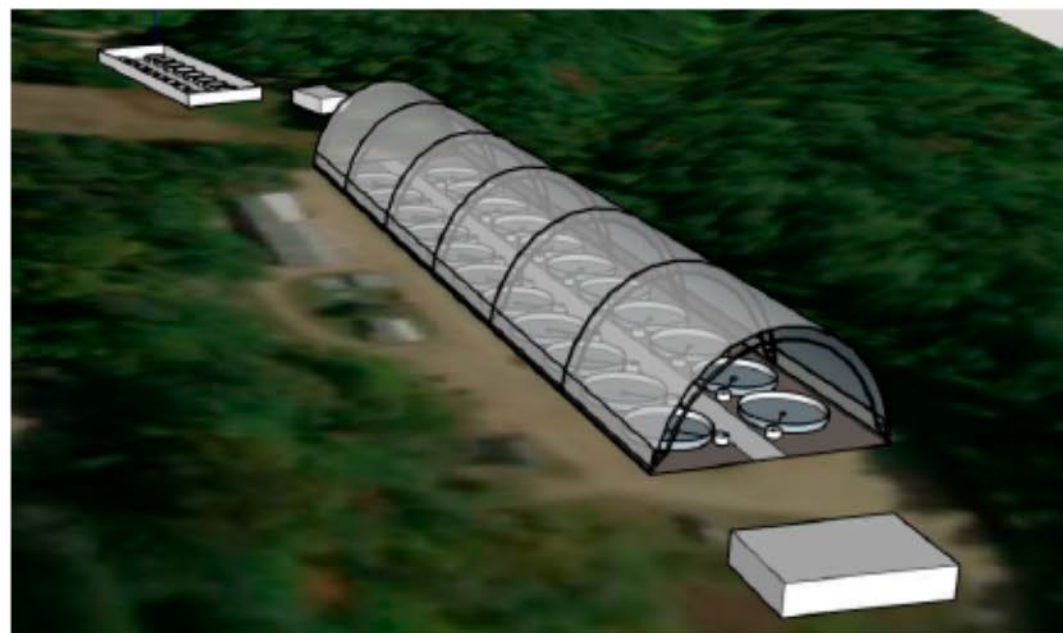
Intermediate Building Conceptual Layout

- Pavilion style cover – 16,000 sf building
- 18 Rearing tanks @ 20' dia – 3" to 6" Fish
- Dual drain tanks
- 95% RAS treatment building
- Flow rate 3,172 gpm Total (3,014 gpm RAS with 159 gpm makeup)



Growout Building Conceptual Layout

- Tension fabric structure building or pavilion style building (60,000 sf)
- 20 Rearing tanks @ 40' dia – 6" fish to target
- Dual drain tanks
- 95% RAS
- Flow 12,533 gpm (11,906 gpm RAS with 627 gpm makeup)



Updated Estimate

11/2023

New 95% RAS Facility at New Hampton

150,000lbs

ESTIMATED EXPENSE:

HDR Design contract	\$ 7,253,000.00
DPW Oversight	\$ 500,000.00
Construction	\$47,700,000.00
<u>Construction Mgr at Risk</u>	<u>TBD* may be in costs</u>
	\$55,453,000.000

Opinion of Probable Construction Cost Summary		
	Alternative 1A - Phase 2B	EXTENSION
A. Aquaculture Water Supply		
A1	Hatchery Supply	\$176,900
B. Buildings and Rearing Units		
B1	Intake Building	\$1,138,100
B2	Hatchery Building	\$3,029,600
B3	Rearing Building	\$14,177,300
B4	Rehabilitation/Demo of other buildings on site	\$283,800
C. Site		
C1	Site Work	\$598,400.00
C2	Domestic Water	\$35,600.00
C3	Domestic Wastewater	\$71,200.00
C4	Disinfection Station	\$16,200.00
C5	Paved Access to State or Local Highways	\$270,600.00
D. Aquaculture Wastewater		
D1	Effluent Treatment	\$1,472,600
D2	Effluent Monitoring	\$46,400.00
E. Electrical and HVAC		
E1	Electrical Service	\$215,000.00
E2	Emergency Power	\$326,200.00
E3	Instrumentation and Alarm System	\$284,800.00
F. Visitor Education/Interpretation		
F1	Visitor Center Repairs	\$429,900.00

		Subtotal	\$22,572,600
Contractor's Field General Conditions	10%	\$	2,257,000
Contractor's Mobilization	2%	\$	497,000
Contractor's Overhead and Profit	10%	\$	2,533,000
Bonds and Insurance	2%	\$	557,000
Subtotal - Contractor Costs		\$	28,416,600
Contingency	44%	\$	12,390,000
Subtotal		\$	40,806,600
Escalation to Midpoint of Const. (2026)	11%	\$	4,666,000
Market Volatility Adjustment Factor	5%	\$	2,274,000
Grand Total		\$	47,700,000

DESIGN & CONSTRUCTION TIMELINE

DPW Timeline for Project

Step	Date	Task
1.	AUG 2023	Proposal from HDR for design and construction
2.	DEC 2023	G&C approval of HDR agreement
3.	JAN 2024	Issue RFP for Construction Manager (CM)
4.	MAR 2024	30% design submission for review by NHFG, DPW & CM
5.	APR 2024	Shortlist Construction Manager
6.	MAY 2024	Construction Manager provide Guaranteed Maximum Price
7.	AUG 2024	G&C approval for Construction Manager
8.	SEP 2024	60% design submission for review by NHFG, DPW & CM
9.	DEC 2024	90% design submission for review by NHFG, DPW & CM
10.	JAN 2025	100% design and bid documents
11.	FEB 2025	Begin construction
12.	DEC 2026	Contracts completed