

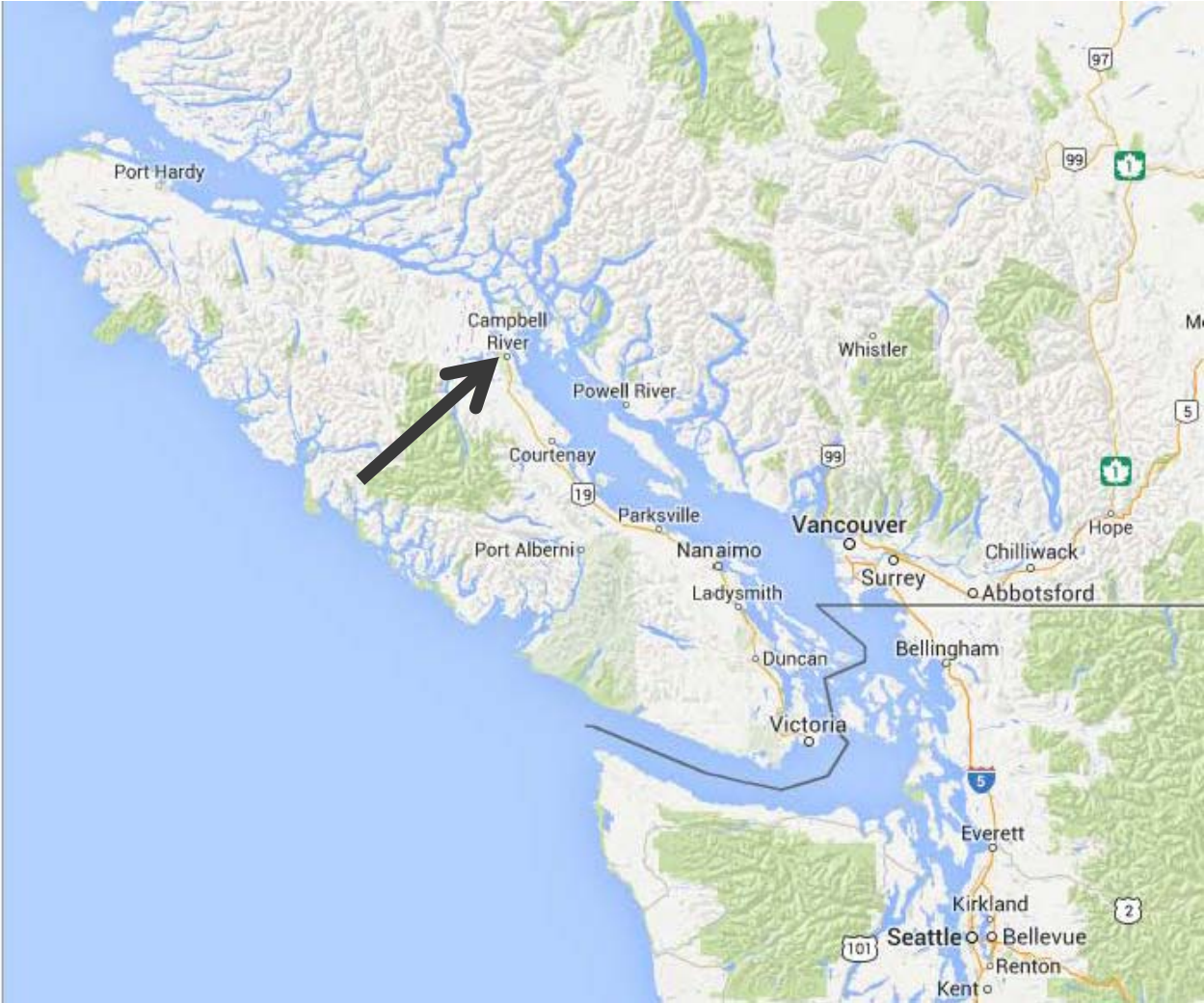
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Micro-Hydro Application at Quinsam Hatchery



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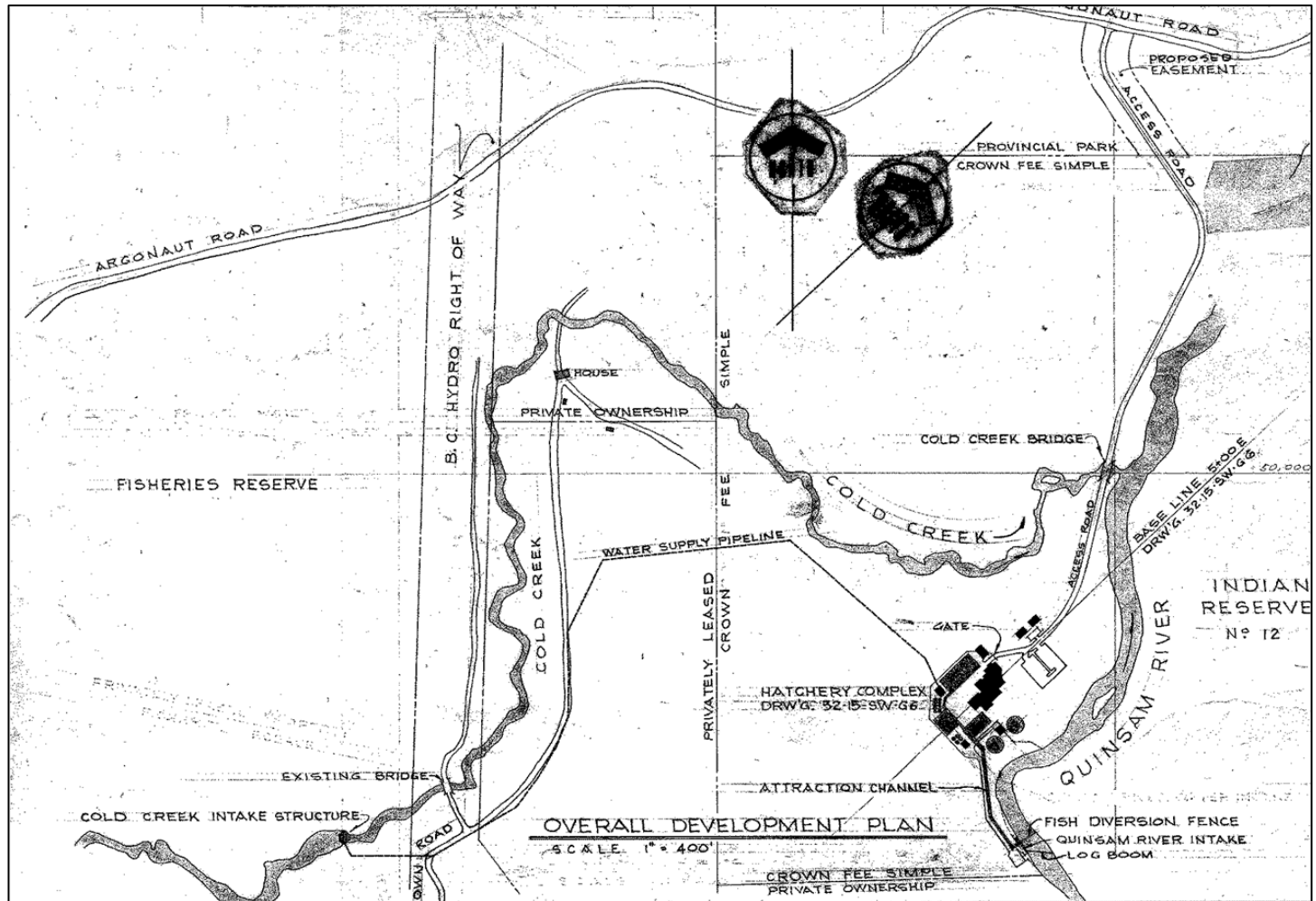
Quinsam River Hatchery



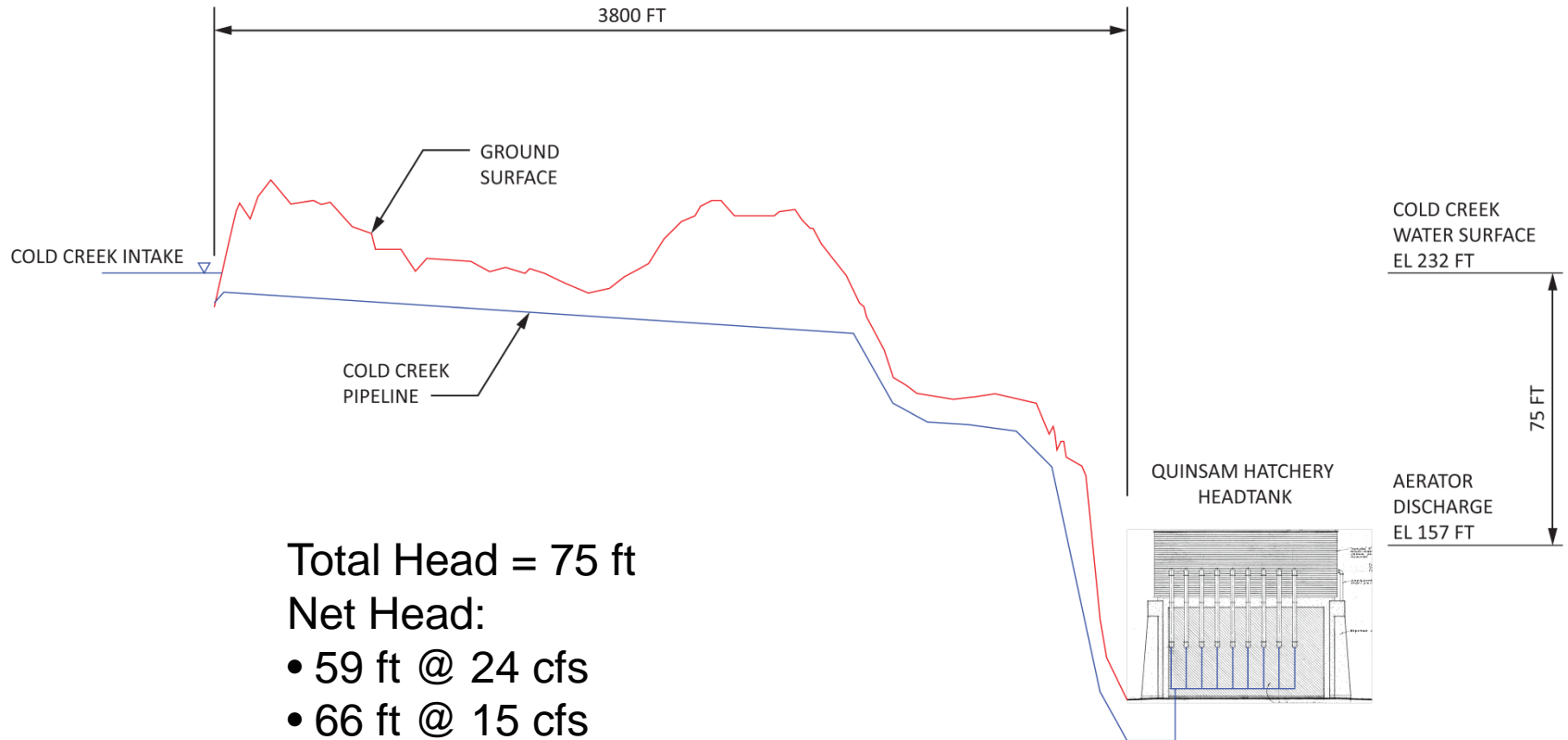
Quinsam River Hatchery



Hatchery Water Supply



Cold Creek Pipeline



River Water Pumps



Turbine and Induction Generator

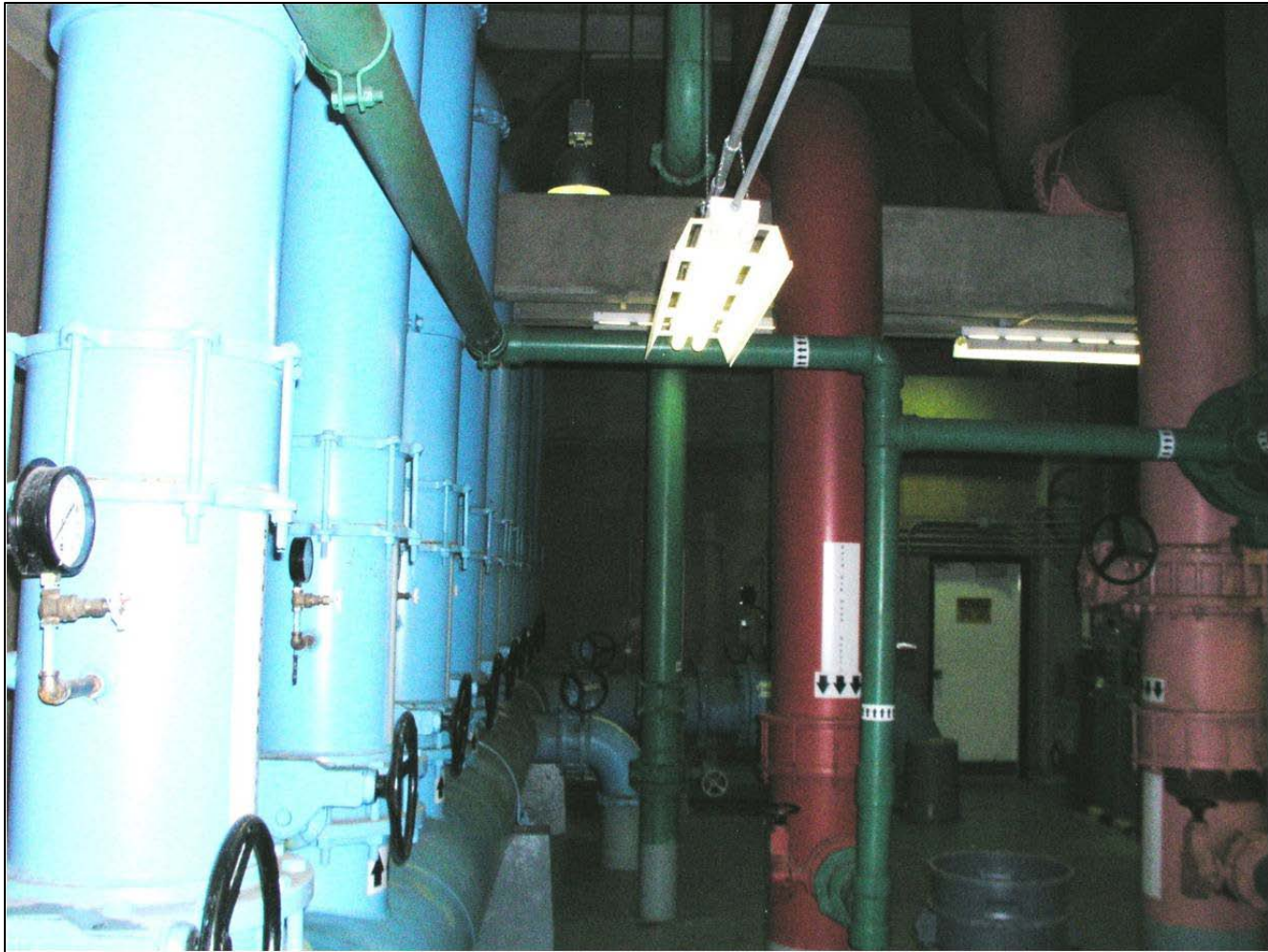


Turbine/Generator



River Water Pumps

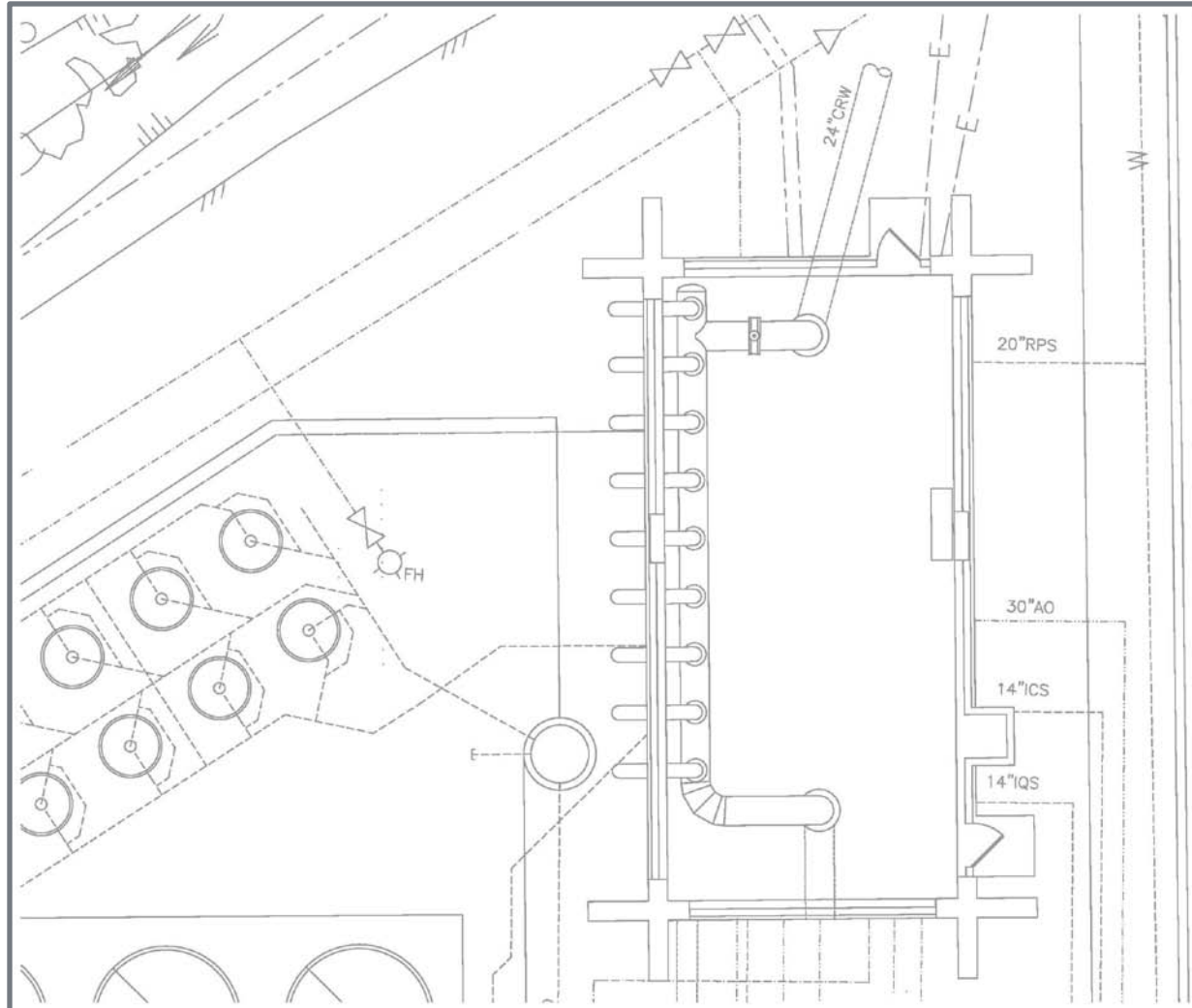
Existing Headtank Piping



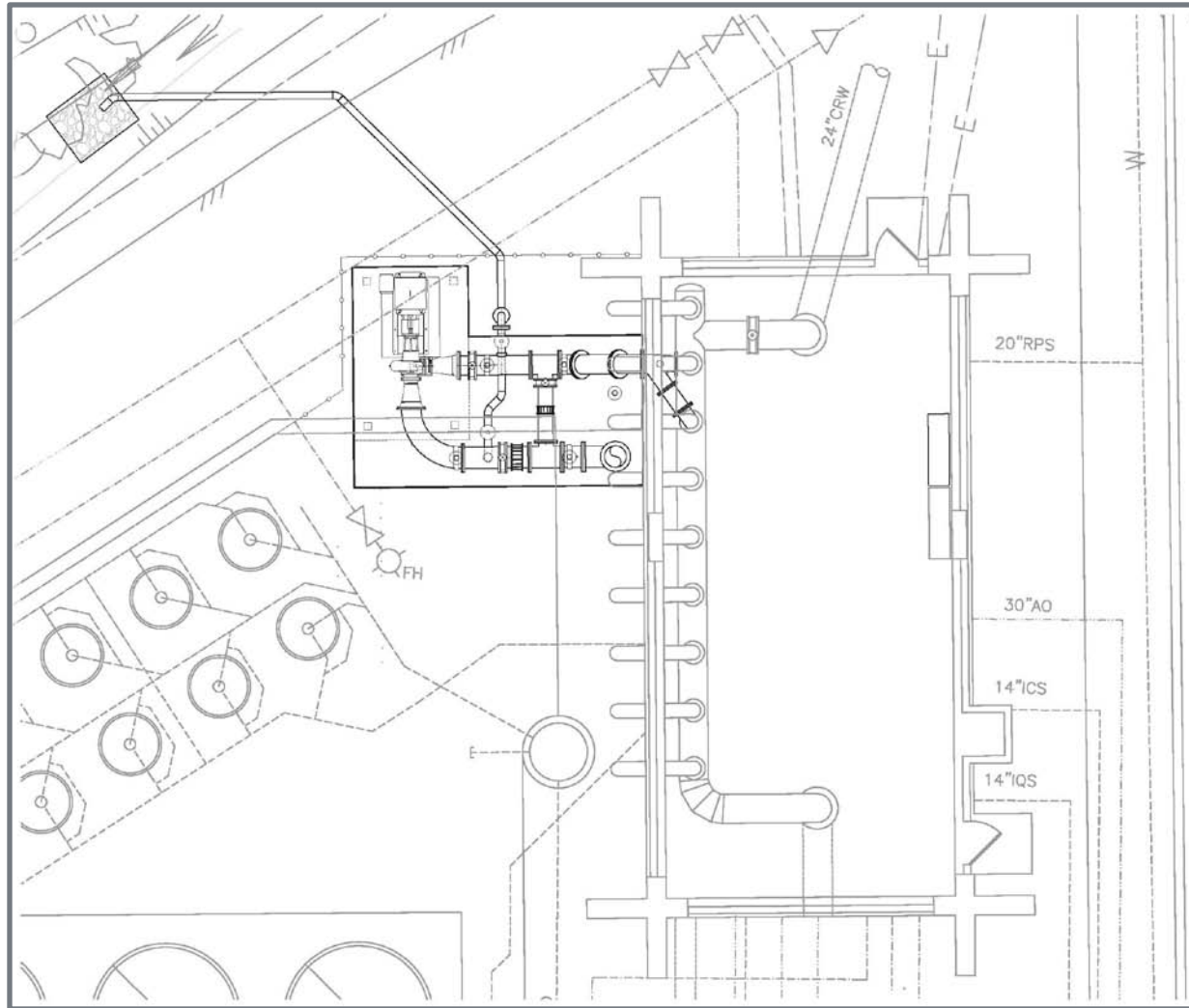
Existing Headtank Piping



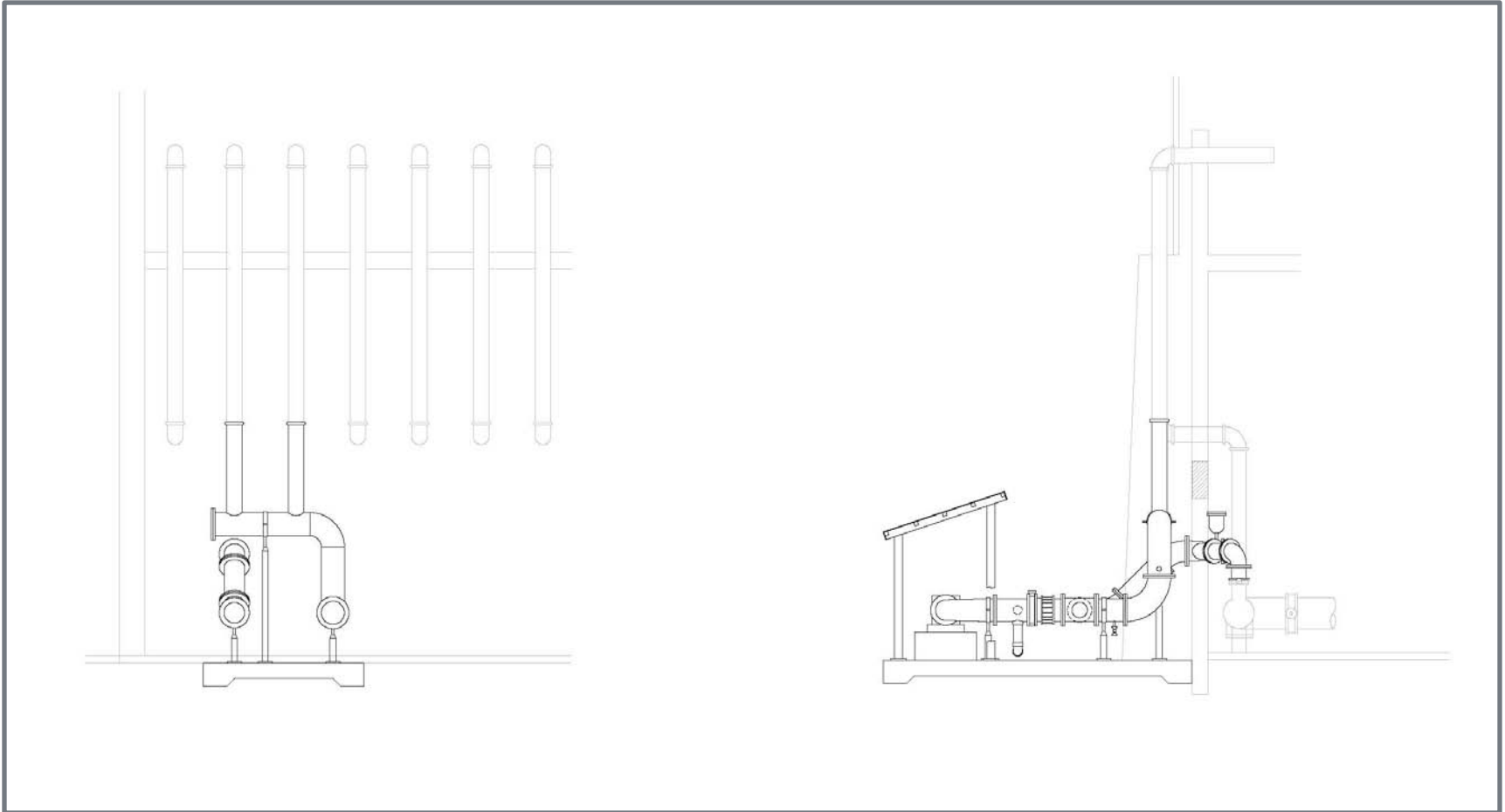
Existing Headtank Piping



Headtank Piping Modifications



Headtank Piping Modifications



New Riser Connections



Turbine Piping



Turbine Piping



Bypass Piping



Estimated Benefit

- Facility was using around 480,000 kWh per year
- Microhydro system will produce about 268,000 kWh per year
- At \$0.05/kWh, system reduces bill by \$13,400 per year
- Projected power cost savings approximately offset the cost of the project over an assumed 40 year operating period

Questions?