



# FACILITIES CONDITION ASSESSMENT FOR SEWER COLLECTION SYSTEM LIFT STATIONS AND WASTEWATER TREATMENT PLANT MAJOR EQUIPMENT



April 28, 2020

Royce W. Cunningham, P.E.  
Contract Community Services Director  
City of Willows  
201 N. Lassen Street  
Willows, CA 95988

**Subject: Proposal for Facilities Condition Assessment for Sewer Collection System Lift Stations and Wastewater Treatment Plant Major Equipment**

Dear Mr. Cunningham:

HydroScience Engineers, and specifically the members of this project team, specialize in performing condition assessments for sewer pump stations and wastewater treatment plants. This team has directly relevant experience performing similar projects for the cities of Foster City, Gridley, Davis, Belmont, San Jose, and clients throughout Northern California. Some of our advantages include:

**The Right Experience.** Our team offers an extensive amount of sewer pump station and wastewater treatment plant experience. Our proposed project manager, Eric Petrel, has 37 years of experience and has recently managed the design and rehabilitation of dozens of pump stations throughout California. Bill Slenter, our wastewater treatment lead, has played key roles on several major wastewater treatment plant projects, including the City of Gridley WWTP expansion design, City of St. Helena, Thunder Valley, Stockton, and City of Davis. Our team will be supplemented by our in-house EIC department, who also provide specialized expertise in Arc Flash and NEC code compliance.

**Local and Responsive.** All our project team members are locally based and will be committed to executing the project. We will be there when you need us, you will communicate directly with us for all project work, and we will deliver a careful and accurate prioritization and characterization of your sewer infrastructure needs to include in your Capital Improvement Program.

**Collaborative and Client-Focused.** We listen to our clients and will provide creative solutions tailored to your long-term objectives. Our success is measured by your success. We encourage you to contact our references and ask them how we did, and how their projects have held up over the years. We're proud of our record and hope to add the City of Willows to our growing list of satisfied clients.

As president of HydroScience, I will personally oversee this project and ensure that we exceed your expectations. Please feel free to contact me anytime at (510) 403-4636 or clam@hydroscience.com.

Sincerely yours,

**HYDROSCIENCE ENGINEERS**



Curtis Lam, PE  
Principal

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SECTION B

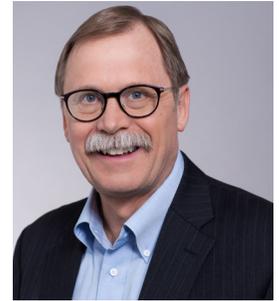
# PROPOSED TEAM AND STAFFING

As a firm focused exclusively on water and wastewater infrastructure projects, HydroScience has performed condition assessments and designed improvements for dozens of sewer pump stations and wastewater treatment facilities across California. We have assembled an experienced team of experts who will bring the knowledge and lessons learned from our previous projects to the City.

Our team will be managed by **Eric Petrel, P.E.**, a senior project manager with 36 years of experience, primarily in sewer collection system design. Eric has personally managed the rehabilitation of lift stations all over California, including dozens in Foster City, Pittsburg, and El Cerrito. Eric has a comprehensive understanding of the issues involved in creating a well conceived, prioritized, and implementable Capital Improvement Program (CIP) based on the needs of the City’s wastewater collection and treatment system. He is the right person to lead our practical and client-focused team. Eric will act as your day-to-day contact and will personally lead the lift station

condition assessment and manage the treatment plant condition assessment.

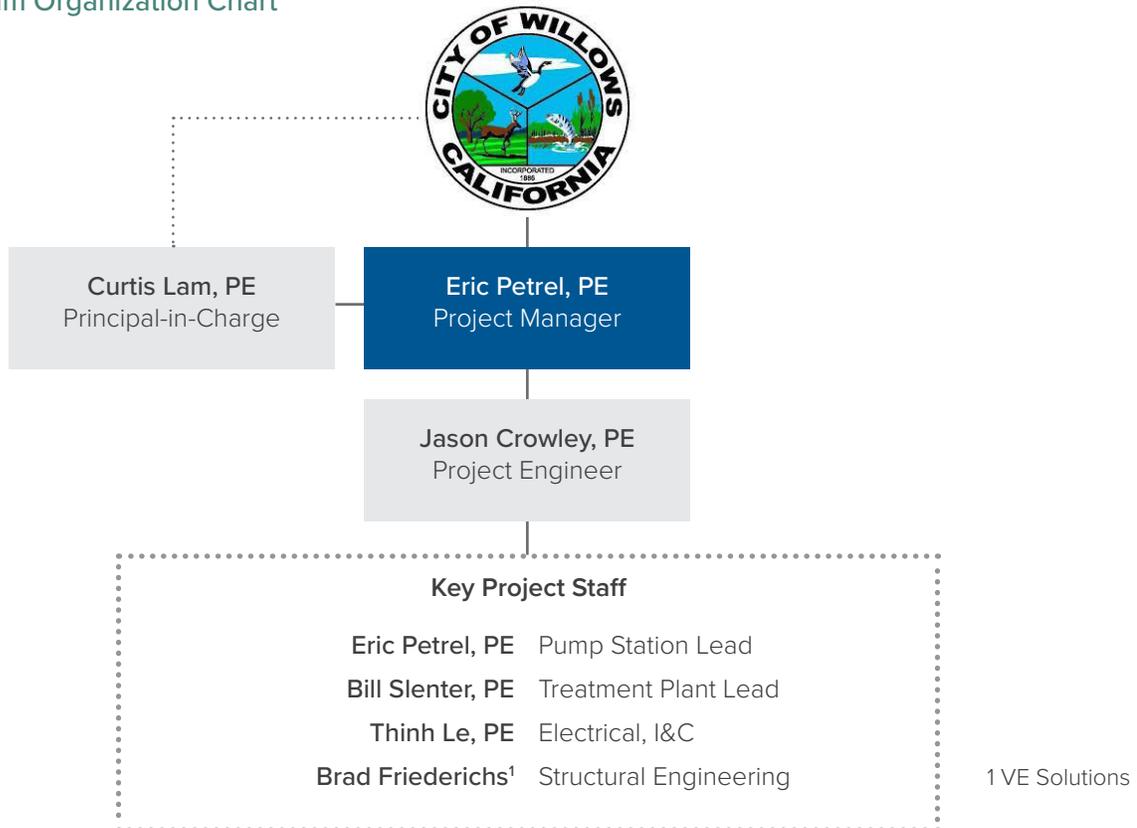
Eric will be supported by a team of engineers with the right qualifications and experience to deliver a comprehensive CIP, allowing the City to extend the remaining useful life of its sewer system well into the future. The benefits of our proposed project team include:



*Eric Petrel, PE  
Project Manager*

**Key Subject Matter Lead Expertise.** We have identified expert subject matter leads for the pump station assessment, treatment plant assessment, EIC, and structural project elements. These subject matter leads have all collaborated on many other similar projects, and bring a wealth of similar experience to assess the condition of these City assets. Our Project Engineer,

## Project Team Organization Chart



Jason Crowley, also served as the Project Engineer for the recent upgrades to the City of St. Helena WWTRP Upgrades project, served as Project Engineer for three new lift stations in Placer County, and has firsthand experience in the constructibility aspects of the project from his prior tenure working for GSE Construction on the City of Modesto BNR/Tertiary Treatment Plant Project.

**Highly coordinated work products.** Our in-house team includes a deep bench of mechanical, civil, process, electrical, and controls engineers who have worked together on many projects and are located nearby. Our previous work together gives us the ability to anticipate each other's needs and address issues as they arise, resulting in a high degree of cross-discipline coordination and comprehensive solutions.

**Collaborative, client-focused mindset.** Listening to our clients, understanding their needs, and reflecting those needs in every planning and design decision are core to our work culture. Our team members communicate effectively and provide creative solutions tailored to our clients' long-term objectives. We measure our success by how our clients feel about our work years after construction is complete.

**Deep understanding of operations, maintenance and construction issues.** Our team members are highly familiar with operations, maintenance, and constructability issues for pump stations and wastewater treatment plants. We have collaborated with contract operators, such as Inframark, to analyze the condition and performance of existing assets, determine how these upgrades should be sequenced, and minimize the impact of the upgrades on plant performance.

### Team Member Qualifications and Role Descriptions

Below are brief qualifications statements for each of the team members shown on the organization chart, along with descriptions of their planned roles on your project. Focused resumes follow, which show licensing information and a few recent, relevant projects.

**Curtis Lam, PE,** is the President of HydroScience and will serve as Principal-in-Charge. In this role, Curtis will oversee the work activities of the team, ensure they remain committed to the City for the project duration, and that we meet or exceed your quality and performance expectations. He will also serve as an alternate point of contact for the City. Curtis recently served as project manager for the WWTRP Upgrades for the City of St. Helena, and provided QA/QC services for the WWTP Expansion Design for the City of Gridley.

**Eric Petrel, PE,** will serve as both your Project Manager and Pump Station Lead. He will be responsible for overall project delivery, scope, and project management. Eric will direct day-to-day project activities, providing the vision the project requires, coordinating with the City, and working with the team to ensure the project's overall success. Eric will serve as your primary contact.

**Bill Slenter, PE,** is a Principal with HydroScience and has 28 years of experience and is a wastewater treatment expert. He will serve as Treatment Plant Lead for the team, supervising the condition assessment of the City's WWTP. Bill served as project manager of the WWTP Expansion Project for the City of Gridley, provided QA/QC for the WWTRP Upgrades Project for the City of St. Helena, and served as principal-in-charge for the Silicon Valley Clean Water WWTP Reliability Improvements and the San José-Santa Clara Wastewater Facility Master Agreement.

**Jason Crowley, PE,** will serve as Project Engineer, working closely with Eric on project deliverables and execute Eric's overall technical direction. Jason will lead the technical evaluations, coordinate with our structural subconsultant, and supervise the creation of the final CIP documents. Jason has eight years of experience and has served as project engineer for the recent WWTRP Upgrade for the City of St. Helena, the Solaire Sanitary Sewer Lift Station and Creekview Sewer Lift Station in Roseville, and the Phase II BNR/Tertiary Treatment Plant Project in Modesto.

**Thinh Le, PE,** will provide electrical engineering, instrumentation and controls services, responsible for the electrical portions of the condition assessments. With 17 years of experience, Thinh has served as electrical engineer on a variety of wastewater treatment and pump station projects, including the WWTRP Upgrade Project for the City of St. Helena, Four Lift Stations Upgrades Project for the El Dorado Irrigation District, the Creekview Sewer Lift Station in Roseville, and the Regional Wastewater Control Facilities for the City of Stockton.

**Brad Friederichs, SE,** of VE Solutions, is a structural subconsultant who regularly works on HydroScience projects and acts as an extension of our team. Brad has worked with our team on numerous pump station and wastewater treatment improvement projects, including the Citywide Lift Station Assessments for both the City of Davis and the City of Belmont. His structural experience for WWTP projects includes WWTP Reliability Improvements for Silicon Valley Clean Water and Rehabilitation of the Regional Wastewater Control Facilities in the City of Stockton.

## Curtis Lam, PE

### Principal-in-Charge



#### EDUCATION

M.S., Civil and Environmental Engineering, University of California, Berkeley

B.S., Civil Engineering, University of California, Berkeley

#### REGISTRATION

Civil Engineer, California, Registration No. 59049

#### AFFILIATIONS

WaterReuse Association, Representative to the Board of Trustees, 2017 - Present

WaterReuse Association, President, 2015 - 2016

WaterReuse Association, Vice-President, 2013 - 2014

WaterReuse Association, Program Chair, 2011 - 2013

WaterReuse, Chair, 2013 California Annual Conference

California Water Environment Association

Water Environment Federation

Curtis Lam has 26 years of experience in the design of recycled water and potable water distribution system infrastructure, wastewater treatment and collection system design, and the master planning of water, wastewater, and recycled water infrastructure. A Principal with HydroScience, Curtis has served as Principal-in-Charge, Project Manager and Project Engineer on a wide range of water, wastewater, and recycled water projects.

#### SELECT PROJECT EXPERIENCE

##### St. Helena WWTRP Upgrades Project

City of St. Helena, California

Project Manager. The City of St. Helena was issued a CDO containing effluent limitations the City could not reliably obtain with their existing pond treatment plant. The City commissioned HydroScience Engineers to develop a Conceptual Design Report (CDR) to analyze treatment alternatives that would comply with the new NPDES effluent discharge limitations, while also modernizing the facility's treatment process. HydroScience identified a packaged MBR treatment system as the preferred WWTRP upgrade alternative. The WWTRP will maintain its permitted capacity of 0.5 MGD with the flexibility to operate the plant at a peak day hydraulic capacity of 1.33 MGD. This new system will result in tens of millions of dollars in cost savings when combined with repurposing four of the existing WWTRP ponds for use as flow equalization. The design is modular so that the City can cost-effectively expand the new system to meet anticipated buildout flows, if necessary. The RWQCB accepted the CDR findings without comment.

##### Gridley Wastewater Treatment Plant Expansion Design and Permitting

City of Gridley, California

QA/QC. HydroScience performed permitting and design services for this project, a \$2.5 million upgrade that doubled the capacity of Gridley's existing aerated pond treatment system to 1.7 MGD ADWF and 6.0 MGD PWWF. The upgrade provided the additional capacity needed to approve new residential, commercial, and industrial developments in the city; included a new headworks facility, aerators, hydraulics improvements, and electrical systems; and improved the quality of treated effluent. Permitting services included preparation of a ROWD and completion of a

detailed water balance which included field permeability testing. The RWQCB deemed the ROWD complete and issued a revised permit to Gridley allowing the expansion to proceed. HydroScience completed a groundwater monitoring program and characterization for the City in fulfillment of one of the requirements of the revised permit.

##### Lift Station Improvements, Phase 5

City of Foster City, California

Principal-in-Charge. HydroScience provide predesign, design, and construction support for the rehabilitation or replacement of nine lift stations throughout the city, in order to bring them to state-of-the-art-facilities. Upgrades included electrical, mechanical, structural, and civil upgrades. Typical improvements included replacement of the control panel, pumps and associated piping inside the lift station, generator and automatic transfer switch, SCADA components, and relocation of PG&E meters.

##### WWTP Gravity Thickener Rehabilitation

City of San Mateo, California

Principal-in-Charge. HydroScience performed a condition assessment on the existing gravity thickener system at the City of San Mateo's 12 MGD WWTP. HydroScience coordinated the confined space entry into the drained tank to examine the exposed thickener mechanism, and prepared recommendations to rehabilitate the entire gravity thickener system. The design includes replacement of the thickener mechanism; replacing the existing sludge withdrawal line; modifications to the existing pump room layout; modifications to change the configuration of the tanks from square to circular; piping and splitter box modifications; recoating the effluent well; miscellaneous repairs to concrete and grating; and electrical improvements.

## Curtis Lam, PE



### Fire Related Repairs to Water and Sewer Facilities

City of Santa Rosa, California

Principal-in-Charge. The City of Santa Rosa (City) selected HydroScience to prepare detailed plans and specifications to implement repairs and modifications to each of their ten potable water facilities and five of their sewer lift stations damaged in the Tubbs Fire. HydroScience visited each facility and verified the required repairs. The project scope and contract documents were developed in compliance with FEMA and CAL OES requirements under the Public Assistance Grant program. The repaired facilities included pump stations, reservoirs, and a well. Design for repairs included recoating a fire-damaged reservoir, replacing damaged generator, site equipment, fencing, irrigation, paving, and some building rehabilitation. HydroScience prepared plans, specifications, estimates, and contract documents for the projects.

### Copeland Pump Station Rehabilitation

City of Petaluma, California

Principal-in-Charge. HydroScience was retained to assess and rehabilitate the Copeland Sewer Pump Station for the City of Petaluma. This facility is adjacent to the Petaluma River and provides pumping for the downtown area of the City. The facility was last upgraded in 1997, and required a number of operational, structural, mechanical, and electrical improvements. Improvements include installing new pumps, SCADA connection to the City's wastewater treatment facility, MCC, PG&E service, addition of flow metering and bypass pumping, HVAC in the control building, and modifications to the onsite building. HydroScience evaluated the existing standby generator and recommended replacement of the old generator as part of the project. The design of this project was completed in 2015, and construction was completed in 12 months.

### Chrysanthy Pump Station

Sacramento Area Sewer District, California

Principal-in-Charge. HydroScience is planning and designing the sewer pump station that will serve the Bradshaw East Rancho Cordova sewer shed, SASD requires upgrades of the existing S132 pump station to increase pumping capacity from 5.5 mgd to 8.5 mgd. Improvements include installation of two 250 HP pumps in the existing pre-cast wet well, VFDs for each large pump, electrical upgrades, replacement of the existing standby generator, and a canopy to protect the electrical equipment. Design elements include updating the design report to reflect updated design criteria, evaluation of the pump station and forcemain hydraulics, development of final design documents for bidding by Fall 2021. All work performed in accordance with SASD Design Standards and with close coordination with SASD and the City of Rancho Cordova.

### Creekview Specific Plan Sewer Lift Station

City of Roseville, California

Principal-in-Charge. HydroScience was retained to design and provide construction services for the implementation of a new 1 MGD submersible pump station. Major project features include an 8-foot diameter precast concrete wet well constructed 38 feet below grade, submersible ultrasonic level control with backup float level switch controls, state of the art local control panels, fiberoptic communication for remote monitoring with City Scada, below grade mechanical assemblies for forcemain/pump isolation, bypass pumping provisions, pigging stations, Standby electric generation, Proto II CMU structural wall, and approximately 12,000 gallons of onsite emergency storage within a below grade precast concrete box culvert storage basin. This station is currently in construction and is expected to be fully operational for Phase 1 sanitary sewer flows by March 2020.

### Happy Camp Community Wastewater System Rehabilitation and Expansion

Happy Camp CSD, Siskiyou County, California

Principal-in-Charge. HydroScience designed flow monitoring and headworks upgrades at the wastewater treatment plant to meet the California Regional Water Quality Control Board Discharge Permit conditions. The wastewater collection system included six lift stations and two river crossings. The collection system was modeled using SewerCAD to identify and prioritize areas needing repair or replacement. The model was also used to plan for system upgrades and future expansion needs. The collection system project included lift station upgrades, provisions for standby power, and SCADA improvements for remote monitoring.

### Tule River Wastewater Treatment Plant and Effluent Disposal

Indian Health Service, Tulare County, California

Principal-in-Charge. HydroScience was retained by the Indian Health Service to plan, permit, design, and provide the environmental documentation for a new influent pump station, influent force main, WWTP, and effluent disposal facilities to serve the Tule River Indian Tribe near Porterville, California. The project includes the construction of approximately fourteen miles of sewer collection system pipeline, collection system lift stations, a plant influent pump station, membrane bioreactor treatment plant, and effluent disposal facilities. The WWTP was designed to utilize a membrane bioreactor to produce tertiary effluent suitable for unrestricted use with disinfection. Approximately eight miles of the collection system has been constructed, and the plant influent pump station, influent force main, WWTP and effluent disposal facilities are currently under construction.

## Eric Petrel, PE

Project Manager / Pump Station Lead



Eric has 36 years of experience in civil engineering and the planning, design, analysis and rehabilitation of water and wastewater facilities. His background includes a variety of projects involving water, wastewater and recycled water transmission systems; treatment facilities; and site improvements and hydrology, with emphasis on the design and rehabilitation of conveyance systems.

### SELECT PROJECT EXPERIENCE

#### Lift Station Improvements, Phase 5

City of Foster City, California

Project Manager. HydroScience is providing design and construction support for the rehabilitation or replacement of nine lift stations throughout the city, in order to upgrade them to state-of-the-art-facilities. Upgrades include electrical, mechanical, structural, and civil improvements. Typical improvements include replacement of the control panel, pumps and associated piping inside the lift station, generator and Automatic Transfer Switch, reuse SCADA components as possible, and relocation of PG&E meter as necessary.

#### Lift Station Improvements, Phases 1-4

City of Foster City, California

Project Manager. This project included reconnaissance, planning, design and construction management for wastewater lift station wet well rehabilitation, pump and piping replacement, construction of nearby and off-site buried force main, and other improvements for 23 lift stations in four design and construction phases. Failing wet well coatings were removed and replaced with new polyurethane two-part coating to protect concrete surfaces from sulfide attack. Pumps and corroded piping were replaced with corrosion-resistant materials. The project included detailed development of flow control, bypass and linestopping requirements to prevent spillage and ensure that sewers in the work area operated continuously. Later design and construction phases included developing and installing standardized pump control panels, and replacing aging standby generators and the SCADA system.

#### Citywide Lift Station Assessments

City of Belmont, California

QA/QC. HydroScience is providing on-call general engineering services for sanitary

sewer, water, and storm drain improvements. This project under the on-call agreement consisted of an assessment and inventory of the structural, mechanical and electrical components of the City's eleven sewage lift stations. Results from inventory and assessment have been tabularized in a report and then used as the basis of proposed recommended improvements. These recommendations included planning-level cost estimates for development by the City Staff into a Capital Improvement Program (CIP). HydroScience then reviewed all existing as-builts and then conducted extensive field investigations, which included on-site interviews with O&M Staff regarding the equipment and condition, structural evaluation of each lift station, and electrical evaluation of each station. The final report will provide site by site assessments and recommendations regarding the pump condition and access, piping, valves, wet well / dry pit condition and access, electrical equipment condition, instrumentation, safety, security, and lighting, as well as recommendations for each station improvements, replacement and standardization. A priority list of improvements was prepared to assist the City in expediting projects for the most critical needs.

#### Wastewater Pump Stations Evaluation

Stege Sanitary District, City of El Cerrito, California

Project Manager. Eric performed a field inspection and records evaluation of the District's two wastewater pump stations. He prepared a report that recommended minor improvements to extend the life of one of the pump stations and presented a conceptual design for replacing the other pump station, which could not be economically rehabilitated.

### EDUCATION

M.S., Civil Engineering  
(Environmental), San Jose State University

B.S., Engineering Science,  
University of California,  
Berkeley

### REGISTRATION

Civil Engineer, California,  
Registration No. 46794

### AFFILIATIONS

Bay Area Water Works  
Association

California Water Environment  
Association

## Eric Petrel, PE



### Lift Station 28 Relocation

City of Foster City, California

Project Manager. HydroScience reviewed the design of the Lift Station 28 improvements and the wastewater master plan prepared by Gilead Sciences for the expansion of their corporate headquarters. HydroScience also provided construction inspection services and engineering services during construction.

### CVSan Aerial Pipeline and Pump Station Rehab

Castro Valley Sanitation District (CVSan), California

QA/QC. This project includes designing cured-in-place pipe (CIPP) rehabilitations to four sewer pipelines, ranging in sizes of 8-inch to 24-inch diameters, where the pipelines cross over creeks. CIPP is the recommended method of rehabilitation as it would result in less site impacts within the riparian habitats, than would occur with complete pipeline replacement, while furnishing structural and hydraulic improvements to the decaying pipes. HydroScience also designed rehabilitations and improvements to seven pump stations. The rehabilitation measures include recoating structures and equipment, plus replacement of outdated electrical and instrumentation devices. Facility improvements consist of new bypass piping, new vault lid hatches for ease of lifting, plus adding enhanced safety features, like fall protection anchors and ladder extensions. HydroScience worked closely with the District's O&M staff to assure that the desired upgrades will be implemented to meet their needs. Construction started in December 2020, for which engineering services during construction are being provided.

### Ralston Avenue Sewer Rehabilitation

City of Belmont, California

QA/QC and Manhole Inspection Engineer. To address surcharging in several sewer manholes in Ralston Avenue, the City of Belmont retained HydroScience to provide capacity studies and sewer modeling services, slate segments and facilities for improvement, prepare contract documents, and provide bid and engineering services during construction. HydroScience verified the City's flow model and assessed the condition of the City sewers and manholes, updated and adjusted the model for accurate future flow scenarios and a better representation of actual conditions in the Ralston Avenue sewers. The project included preparing recommendations for repair, replacement, or rehabilitation, with consideration for trenchless options where possible. This project won the 2019 American Public Works Association Silicon Valley Chapter's Honor Award.

### Foster Square Sewer Capacity Study

City of Foster City, California

Project Manager. As part of HydroScience's On-Call contract with the City, HydroScience is providing support for the Foster Square development, a mix of mixed commercial and

residential developments. In order to meet the City's Condition of Approval Memorandum, HydroScience is preparing a sewer flow projection study and a hydraulic capacity study, and will review CCTV inspections of City sewers. HydroScience is working with the City to identify the capacity potentially available in the sewer shed. Sewage generation projections for the development will also be reviewed and approved and compared to the available capacity identified in the sewer. HydroScience will document to the City a letter report summarizing the available capacity, flow projections, and necessary improvements to facilitate the project.

### Lift Station 59 Effluent Line Improvement

City of Foster City, California

Project Manager. HydroScience prepared bid set plans to replace and improve the effluent line connecting to the City's Lift Station 59. This includes replacing the existing 24-inch seismic expansion joint assembly, and converting the existing ball valve and linestop fitting into a bypass vault on the line adjacent to the lift station. The cathodic protection system was also replaced. A 20-inch temporary sludge bypass, required for construction, was included in the design. HydroScience provided engineering services during construction.

### Sanitary Sewer Inspection and Citywide Sewer Rehabilitation

City of Pittsburg, California

Project Management. The City of Pittsburg owns and operates about 100 miles of sanitary sewer, most of which is reaching the end of its design life. HydroScience is providing design services for the replacement and upgrades of approximately 8,500 LF of sewer lines, rehabilitation of aging manholes, and installation of new manholes to improve maintenance access. Design includes relocation of shallow, flat sewers to improve sewer flow velocities and to permit the abandonment of backyard sewer easements. Challenges include a BNSF railway crossing, using pilot tube guided auger boring to install a 24-inch steel casing under the railway. HydroScience also designed replacements for 2,700 LF of undersized 10-inch water main with a new 16-inch main to improve system performance. HydroScience is providing permitting assistance for the new railway crossing as well as an Underground Classification from the CalOSHA Mining and Tunneling unit for installation of the steel casing, and prepared the engineer's cost estimate and provided bid period assistance.

### Interceptor Structure Design

Central Contra Costa Sanitary District, California

Design Engineer. Eric designed hydraulic structures for the Pleasant Hill Relief Interceptor project in northern Contra Costa County. The structures included diversions, overflows and bypasses for sewers up to 102-inches in diameter.

## Bill Slenter, PE

Treatment Plant Lead



### EDUCATION

B.S., Civil Engineering, San Francisco State University

### REGISTRATION

Civil Engineer, California, Registration No. 57640

### AFFILIATIONS

California Water Environment Association (CWEA)

Central Valley Clean Water Association – Outreach Committee Chairperson

Former Chairperson, CWEA San Francisco Bay Section Communications Committee

CWEA Sacramento Area Section

Bill Slenter is a civil engineer with 28 years of experience. His areas of expertise include permitting, funding, planning, design, and construction support of wastewater, water, and recycled water systems. A principal with HydroScience, he has served as principal, project manager and project engineer on a wide range of water-related projects.

### SELECT PROJECT EXPERIENCE

#### Wastewater Treatment Plant Reliability Improvements

Silicon Valley Clean Water, Redwood City, California

Principal-in-Charge and QA/QC. HydroScience is the engineer-of-record for this design-build project to provide plant reliability improvements for Silicon Valley Clean Water's 24 MGD WWTP in Redwood Shores, California. Work includes upgrading the aeration basin blower system to high speed turbo blowers with all new distribution piping and control valves, correcting basin flow split issues, installing a fan press solids dewatering system and conveyors, and replacing their granular media filter backwash pumps.

#### Facility Master Agreement, San José-Santa Clara Regional Wastewater Facility

City of San José, California

Principal-in-Charge. HydroScience is providing on-call planning, evaluation, detailed design, and construction support services under a multi-year Master Services Agreement (MSA) with the City of San José. The Regional Wastewater Facility (RWF) is a 167 MGD secondary and tertiary wastewater treatment plant. HydroScience is working directly with the RWF's engineering, operations, and maintenance staff to implement studies and designs on an on-call basis throughout the facility. HydroScience has completed condition assessments and evaluations for the outfall bridge, major pond gates, and HVAC systems. HydroScience also completed designs of nitrification clarifier exterior lighting to improve safety during night-time operations, and designed the replacement of the existing process water (3W) pumps which deliver up to 14,000 gpm to unit processes throughout the plant.

#### Wastewater Treatment Plant Rehabilitation and Replacement

City of Davis, California

Principal-in-Charge. HydroScience provided design and construction support services for the City's WWTP Rehabilitation and Replacement Project. The project included significant upgrades to the existing dry pit influent pumps, which were oversized for current flows and had significant O&M challenges. The improvements included revised suction piping, new pumps, and a revised discharge piping arrangement. The improved facility operates at a higher efficiency with flow turndown and reduced incidence of clogging. Headworks improvements include new bar screens and washer/compactors, as well as modifications to existing influent channels to improve scour velocity to reduce maintenance and corrosion. Primary clarifier improvements include new chain and flight scrapers equipment.

#### Gridley Wastewater Treatment Plant Expansion Design and Permitting

City of Gridley, California

Project Manager. HydroScience performed permitting and design services for this project, a \$2.5 million upgrade that doubled the capacity of Gridley's existing aerated pond treatment system to 1.7 MGD ADWF and 6.0 MGD PWWF. The upgrade provided the additional capacity needed to approve new residential, commercial, and industrial developments in the city; included a new headworks facility, aerators, hydraulics improvements, and electrical systems; and improved the quality of treated effluent. Permitting services included preparation of a ROWD and completion of a detailed water balance which included field permeability testing. The RWQCB deemed the ROWD complete and issued a revised permit to Gridley allowing the expansion to proceed. HydroScience

## Bill Slenter, PE



completed a groundwater monitoring program and characterization for the City in fulfillment of one of the requirements of the revised permit.

### St. Helena WWTRP Upgrades Project

City of St. Helena, California

QA/QC. The City of St. Helena was issued a CDO containing effluent limitations the City could not reliably obtain with their existing pond treatment plant. The City commissioned HydroScience Engineers to develop a Conceptual Design Report (CDR) to analyze treatment alternatives that would comply with the new NPDES effluent discharge limitations, while also modernizing the facility's treatment process. HydroScience identified a packaged MBR treatment system as the preferred WWTRP upgrade alternative. The WWTRP maintained permitted capacity of 0.5 MGD with the flexibility to operate the plant at a peak day hydraulic capacity of 1.33 MGD. This new system will result in tens of millions of dollars in cost savings when combined with repurposing four of the existing WWTRP ponds for use as flow equalization. The design is modular so that the City can cost-effectively expand the new system to meet anticipated buildout flows, if necessary. The RWQCB accepted the CDR findings without comment.

### Davis Citywide Lift Station Assessments

City of Davis, California

Principal-in-Charge. HydroScience provided on-call general engineering services for sanitary sewer, water, and storm drain improvements. The project included an assessment and inventory of the structural, mechanical and electrical components of the City's 14 lift stations, and HydroScience prepared a report, proposed recommended improvements, and provided planning-level cost estimates for development into a Capital Improvement Program (CIP). HydroScience reviewed existing as-builts, conducted field visits, and talked to O&M staff regarding the equipment and conditions, structural evaluations of select lift stations, and electrical evaluations of all lift stations. The report included assessments and recommendations regarding the pump conditions and accesses, piping, valves, wet well / dry pit condition and access, electrical equipment condition, instrumentation, safety, security, and lighting.

### EID Four Lift Stations Upgrades

El Dorado Irrigation District, California

Principal-in-Charge. HydroScience provided facility evaluations, predesigns, and designs for the rehabilitation/replacement of four sewer lift stations for EID. Each project involved significant rehabilitation and replacement elements on space-restricted properties with sensitive neighbors. All lift stations receive new submersible pumps ranging up to 70 hp, and will include upgraded standby generators in sound enclosures. All facilities

needed to be kept in reliable operation while improvements are completed. The project built on the foundation HydroScience established with the District on previous lift station designs. The design approach targeted long term reliability and safety, including such features as permanent vector truck pipes, safety grates, lanyard anchors, guard rail sockets and Arc Flash requirements for electrical equipment. HydroScience provided bidding and construction phase support for these facilities.

### Sunnyvale Five Sewer Lift Station Upgrades

City of Sunnyvale, California

Principal-in-Charge. HydroScience provided planning, condition assessment, and design for the rehabilitation of five aging sewer lift stations within the City. A comprehensive condition assessment of each lift station and recommendations for improvements at each station were developed. Recommendations varied depending upon their existing physical condition and the cost-effectiveness of modifications to the existing facilities. Upgrades included spring assisted wet well and valve vault lids with safety grates, flow meters, sewer force main bypass connections, epoxy lining of the wet wells, replacement of submersible pumps, installation of flush valves, and relocation and replacement of the electrical controls. SCADA systems at each of the five sewer lift stations were also upgraded to provide more efficient remote monitoring and control to optimize operation.

### Davis WWTP Secondary and Tertiary Improvements

City of Davis, California

Principal-in-Charge. HydroScience provided process design, coordination, and commissioning assistance as part of a design-build team for the construction of secondary and tertiary improvements at the City's WWTP. The peak treatment capacity is 18 MGD. This \$70M upgrade modernized the facility and brought it into compliance with current discharge regulations. The project included design and construction of activated sludge secondary treatment facilities (aeration and clarification), tertiary disc filters, chlorine disinfection, post-aeration, effluent pumping, flood control facilities, and a new administration building. HydroScience's core areas of responsibility on this project included the chlorine contact basin, chemical mixers, chlorine residual monitors, utility water systems, effluent reaeration system, field instrumentation, leading roles on commissioning and process transitioning, and support for plant tie-ins and owner coordination.

## Jason Crowley, PE

Project Engineer



### EDUCATION

B.S., Environmental Resources Engineering, Humboldt State University

### REGISTRATION

Civil Engineer, California  
Registration No. 88975

Jason has eight years of experience and has served as project engineer, inspector, and construction manager for a wide range of engineering projects for HydroScience. Jason has had key roles in the planning and design of new civil site design projects, collection system infrastructure projects, and the planning of new water supply and distribution system infrastructure. Jason's aptitude and experience in construction services benefit any effort to which he is assigned and any team to which he leads or supports.

### SELECT PROJECT EXPERIENCE

#### St. Helena WWTRP Upgrades Project

City of St. Helena, California

Project Engineer. The City of St. Helena was issued a CDO containing effluent limitations the City could not reliably obtain with their existing pond treatment plant. The City commissioned HydroScience Engineers to develop a Conceptual Design Report (CDR) to analyze treatment alternatives that would comply with the new NPDES effluent discharge limitations, while also modernizing the facility's treatment process. HydroScience identified a packaged MBR treatment system as the preferred WWTRP upgrade alternative. The WWTRP maintained its permitted capacity of 0.5 MGD with the flexibility to operate the plant at a peak day hydraulic capacity of 1.33 MGD. This new system will result in tens of millions of dollars in cost savings when combined with repurposing four of the existing WWTRP ponds for use as flow equalization. The design is modular so that the City can cost-effectively expand the new system to meet anticipated buildout flows, if necessary.

#### Solaire Sanitary Sewer Lift Station

MacKay & Somps, City of Roseville, California

Project Engineer. HydroScience provided design and construction services for the implementation of a new 0.93 MGD sanitary sewer lift station located within the Westbrook Development of Roseville California. HydroScience developed construction ready PS&E documents in conformance to the City of Roseville's design standards for sanitary sewer remote facilities. The design package includes a state of the art submersible pumping and control system designed for automatic and redundant operation, precast concrete structures, concrete and asphalt paving, site grading, yard piping, and a structural

perimeter wall. Challenges of the design include developing a buildable and cost effective solution to a 99,000-gallon emergency storage basin which will supplement the gravity sewer system.

#### Lift Station 28 Relocation Project

City of Foster City, California

Construction Manager / Inspector. HydroScience provided construction management, engineering, and inspection services during construction to the City of Foster City during the Lift Station 28 Relocation Project for the expansion of Gilead Science's corporate headquarters. HydroScience acted as the City's field representative for the duration of this project. This project included complete demolition of the existing lift station facility and installation of 2,000 linear feet of deep gravity sewer, two new precast structures, submersible pumping system and forcemain piping, new electrical service and site electrical distribution, concrete and AC paving, and the implementation of a new standby generator.

#### WWTP Gravity Thickener Rehabilitation

City of San Mateo, California

Project Engineer. HydroScience performed a condition assessment on the existing Gravity Thickener system at the City of San Mateo WWTP. The assessment included examining the mechanical and structural components of the thickener tank, mechanism, and exposed piping; developing options for replacing the existing sludge withdrawal lines; modifications to the existing pump room layout; modifications to change the configuration of the tanks from square to circular; piping modifications, and various other minor items related to the thickener system.

# Think Le, PE

Electrical Engineering, Instrumentation and Controls



Think Le has over 17 years of experience serving as Project Manager, Lead E&IC Engineer on a variety of water, wastewater, and recycled water projects. He has knowledge of ISA, IEEE, NEC, NFPA, and codes applicable to electrical and I&C system design and construction. He has worked in both electrical and I&C roles on design and construction management projects and has an extensive working knowledge of electrical project development from analysis, SCADA systems, network & communication security, industrial automation controls, emergency and standby power, and electrical power systems including low and medium voltage electrical systems.

## SELECT PROJECT EXPERIENCE

### St. Helena WWTRP Upgrades Project

City of St. Helena, California

Electrical Engineer. The City of St. Helena was issued a CDO containing effluent limitations the City could not reliably obtain with their existing pond treatment plant. The City commissioned HydroScience Engineers to develop a Conceptual Design Report (CDR) to analyze treatment alternatives that would comply with the new NPDES effluent discharge limitations, while also modernizing the facility's treatment process. HydroScience identified a packaged MBR treatment system as the preferred WWTRP upgrade alternative. The WWTRP will maintain its permitted capacity of 0.5 MGD with the flexibility to operate the plant at a peak day hydraulic capacity of 1.33 MGD. This new system will result in tens of millions of dollars in cost savings when combined with repurposing four of the existing WWTRP ponds for use as flow equalization. The design is modular so that the City can cost-effectively expand the new system to meet anticipated buildout flows, if necessary.

### EID Four Lift Stations Upgrades

El Dorado Irrigation District, El Dorado County, California

Electrical Engineer. HydroScience provided facility evaluations, predesigns, and designs for the rehabilitation/replacement of four sewer lift stations for EID. Each project involved significant rehabilitation and replacement elements on space-restricted properties with sensitive neighbors. All lift stations received new submersible pumps ranging up to 70 hp, and included upgraded standby generators in sound enclosures. All facilities needed to be kept in reliable operation while improvements were completed. The design

approach targeted long term reliability and safety.

### EID Carson Creek 2 Lift Station

El Dorado Irrigation District, El Dorado County, California

Electrical Engineer. HydroScience designed the new Carson Creek 2 lift station to expand the District's collection system to serve the new Carson Creek Unit 2 development. The new station includes two 940 gpm, variable speed, 34 hp submersible pumps in a precast concrete wetwell. Additional features include three large pre-cast emergency storage manholes, influent/bypass manhole, Zabocs odor control system, associated piping, an electrical building, new electrical power service, a new motor control center, a 100 kW standby generator, and above ground discharge headers for easy maintenance.

### Regional Wastewater Control Facilities

Stockton, San Joaquin County, California

Lead EI&C. HydroScience is taking a lead role on the rehabilitation of the primary clarifiers and sludge and scum pumping systems as part of this Progressive Design-Build project. The clarifiers consist of three discrete banks constructed at different times and configured differently. HydroScience performed a mechanical condition assessment, utilized a facility mass balance to determine anticipated future sludge removal rates and flows for pumping, developed proposed rehabilitation approaches for the clarifiers, worked with the contractor to refine construction approach and develop cost estimates for the improvements, and presented our findings in a workshop to City staff.

## EDUCATION

M.S., Electrical Engineering,  
California State University,  
Sacramento

B.S., Electrical Engineering,  
California State University,  
Sacramento

## REGISTRATION

Electrical Engineer, California,  
Registration No. E18362

## Brad Friederichs, SE

Structural Engineer



Brad Friederichs has 38 years of experience as a structural engineer for wastewater, water treatment, commercial, industrial, agricultural, retail and residential structures. His expertise is in cast-in-place concrete, prestressed concrete, steel, wood and masonry construction. His specialty is in producing completely detailed, contractor friendly, value-oriented construction documents resulting in projects that bid well with few change orders.

## VE Solutions

### EDUCATION

B.S., Civil Engineering with honors, California State University, Sacramento

### REGISTRATION

Structural Engineer, California, Registration No. S2780

### AFFILIATIONS

Structural Engineers Association of Central California, president 1989-90

American Society of Civil Engineers

American Concrete Institute

American Institute of Steel Construction

### PROJECTS AS SUBCONSULTANT TO HYDROSCIENCE

#### Citywide Lift Station Assessments

City of Davis, California

Structural Engineer. HydroScience provided an assessment and inventory of the structural, mechanical and electrical components of the City's 14 lift stations, and prepared a report, proposed recommended improvements, and provided planning-level cost estimates for development into a Capital Improvement Program (CIP). HydroScience reviewed existing as-builts, conducted field visits, and talked to O&M staff regarding the equipment and conditions, structural evaluations and electrical evaluations of all lift stations. The report included assessments and recommendations regarding the pump conditions and accesses, piping, valves, wet well / dry pit condition and access, electrical equipment condition, instrumentation, safety, security, and lighting.

#### Citywide Lift Station Assessments

City of Belmont, California

Structural Engineer. HydroScience provided assessment and inventory of the structural, mechanical and electrical components of the City's 11 sewage lift stations. Results from inventory and assessment were tabularized in a report and then used as the basis of proposed recommended improvements. These recommendations included planning-level cost estimates for development by the City Staff into a CIP. HydroScience then reviewed all existing as-builts and then conducted extensive field investigations, which included on-site interviews with O&M Staff regarding the equipment and condition, structural evaluation and electrical evaluation of each station. The final report provided site by site assessments and recommendations regarding the pump condition and access, piping, valves, wet well / dry pit condition and access, electrical equipment condition, instrumentation, safety,

security, and lighting, as well as recommendations for each station improvements, replacement and standardization. A priority list of improvements was prepared to assist the City to expedite the most critical needs.

#### Wastewater Treatment Plant Reliability Improvements Project

Silicon Valley Clean Water, California

Structural Engineer. HydroScience is the engineer-of-record for the Overaa/HydroScience design-build team for this design-build project to provide plant reliability improvements for Silicon Valley Clean Water's 24 MGD WWTP in Redwood Shores, California. Work includes upgrading the aeration basin blower system to high speed turbo blowers with all new distribution piping, correcting basin flow split issues starting with a hydraulic profile study, installing a fan press solids dewatering system and conveyors, adding backup water for generators, and replacing their granular media filter backwash pumps.

#### Regional Wastewater Control Facilities

City of Stockton, California

Structural Engineer. HydroScience is taking a lead role on the rehabilitation of the primary clarifiers and sludge and scum pumping systems as part of this Progressive Design-Build project. The clarifiers consist of three discrete banks constructed at different times and configured differently. HydroScience performed a mechanical condition assessment, determined anticipated future sludge removal rates and flows for pumping, developed proposed rehabilitation approaches for the clarifiers, worked with the contractor to refine construction approach and develop cost estimates for the improvements, and presented our findings in a workshop to City staff.

## SECTION C

# PROJECT UNDERSTANDING AND APPROACH

## Project Understanding

Performing a comprehensive condition assessment of the City's five lift stations and the wastewater treatment plant (WWTP) will allow the City to identify and prioritize projects to include in a long-term Capital Improvement Plan (CIP), and develop a basis for establishing wastewater rates. Projects would be organized by cost, remaining useful life, and criticality to identify the recommended timing for each project.

Five collection system lift stations will be assessed as part of this scope. Four of the lift stations provide service to the City, while a fifth provides service to a special district. Many of the pump stations share similar characteristics, including:

- Construction during late 80s/early 90s
- Duplex submersible ~3 hp pumps
- Valves are in vertical position inside the wet wells instead of in separate valve vaults
- Wet wells are normal depth but lack fall protection
- On-site standby generator for backup power supply
- No SCADA control
- Record drawings are generally unavailable or incomplete

In 2007, the City WWTP underwent a major upgrade and now includes clarification, extended aeration, filtration, chlorination, and dechlorination. In general, the City has complied with the effluent limitations promulgated in its waste discharge requirements (WDRs). Visual observation of the WWTP showed that the plant appeared to be in good condition and operating as would be expected for a 1.2 MGD tertiary treatment plant.

In 2020, the City entered into a 10-year agreement with Inframark to provide O&M for the WWTP. As part of this agreement, Inframark is providing contract WWTP operations and preventative maintenance services. Inframark has a staff of three typically assigned to Willows, with additional resources potentially available to perform non routine repair and/or replacement of major equipment or specialized services.

## Approach

Tasks I through III of the Scope of Services outlined in the RFP will be executed by the Project Team identified in Pages 3-13 of this proposal. HydroScience and its key Project Staff will visit all of the subject facilities with Public Works and Inframark staff who are responsible for day-to-day operation of the facilities. It is expected that site visits will be performed over two days for Task I and a third day for Task II.

*HydroScience staff performing field assessment will include:*

*Eric Petrel, Project Manager  
Jason Crowley, Project Engineer  
Thinh Le, EIC*

For Task I, HydroScience will perform the following tasks:

- Create a written inventory of all major mechanical, electrical, and instrumentation equipment.
- Visually inspect structures, access ways, equipment, piping, appurtenances, electrical panels, control equipment, lighting, safety measures, and other assets.
- Take photographs of all assets and components that are visually inspected. It was noted that HydroScience will not enter any confined spaces as part of this scope. No destructive testing or disassembly is assumed.
- Collect recent maintenance information, pump run time records, and available information about the operations and maintenance history of each asset. It is understood that SCADA data is unavailable for the collection system lift stations.
- Watch the stations operate through a complete fill and drain cycle.
- Compare pump run-time records to determine if pumps are properly sized, and to identify any failing pumps.
- Document any apparent safety risks observed during the visits.
- Discuss the pump station operation and condition with City staff. It is expected that this will include an understanding of the operational needs, repair history, and concerns or limitations.

Following the field visits, HydroScience will perform a desktop review and evaluation of all of the information gathered. Items to be detailed by HydroScience will include:

- Review of visual data, notes, and documentation.
- Consideration of current facility configuration and equipment type(s) in comparison to current industry standards and City needs. HydroScience will evaluate opportunities to improve reliability, efficiency, operations, and maintenance.
- Estimate available capacity based on equipment name plates, available information provided by the City, and field observations.
- Determine operating patterns (levels, starts per hour) during dry and wet weather conditions.
- Determine level of equipment redundancy compared to industry standard.
- Consider availability of spare parts and vendor support for major installed equipment (mechanical, electrical, controls).
- Consider normal and emergency power sources, capacity, and reliability.
- Determine appropriate fall protection requirements for each pump station. No fall protection exists at any of the wet wells.
- Determine feasibility of installing valve vaults or bypass connections at each station.
- Determine feasibility of installing SCADA controls. Existing operational controls for each pump station will be reviewed to determine if floats are optimally located.
- Where applicable, photos, standard details, or AutoCAD drawings of suggested improvements will be documented and annotated by HydroScience to document asset inventory, projects, and condition.

With four of the five pump stations located within public streets, considerations to relocate the pump stations out of public streets will not be evaluated for cost and land use considerations. Options to add infrastructure in the public right-of-way will consider the location of existing utilities. Suggested traffic control measures to enhance the safety of required lift station O&M will be suggested based on MUTCD traffic control standards.

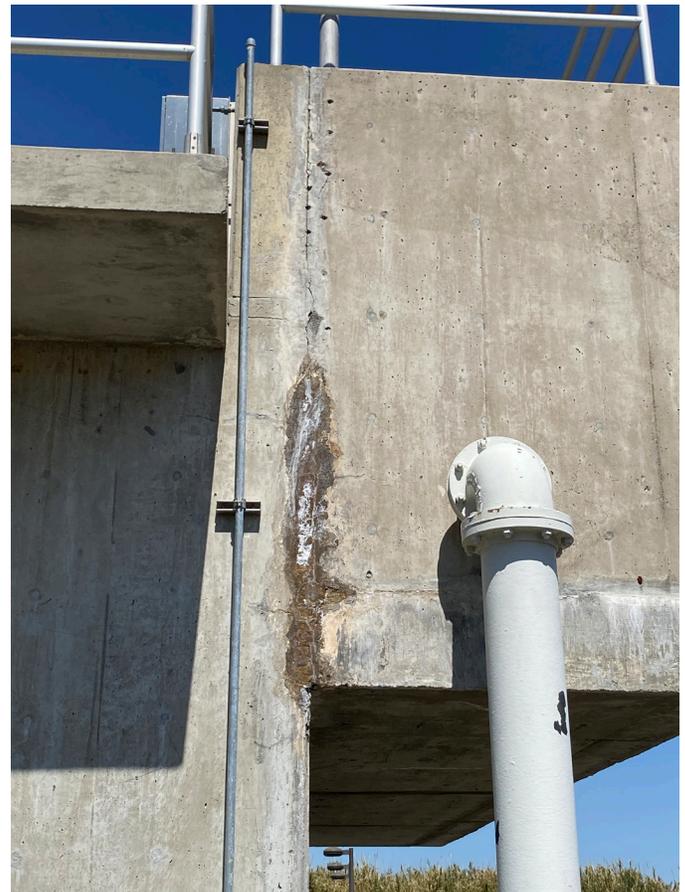
For Task II, a similar level of analysis will be performed on the WWTP assets. The analysis at the WWTP will be expanded to include structural integrity, and evaluation of the control systems, and a more detailed analysis of available data in order to evaluate process performance,

control strategies, and evaluation of the structural integrity of existing structures, and a review of the City's WDR permit in relation to process performance.

HydroScience will prepare a Condition Assessment Report for the Lift Station and Treatment Plant assets. This report will provide a summary of our findings, identify any known construction, operational, maintenance, or risk deficiencies, and identify the recommended improvements, priority, and their estimated cost. Each improvement will also be prioritized and sequenced into a logical grouping of projects to develop projects that can go into a CIP.



*Bill Slenter will be the lead for the Treatment Plant and work closely with Eric and our Project team to perform this condition assessment.*



*The Willows WWTP appears to generally be in good condition. However, selected unit processes may have structural concerns that will be inspected by our structural engineer to develop long-term repair recommendations.*

It is expected that projects will be sequenced based both the likelihood and consequence of failure. Potential rating criteria will be developed in concert with the City during one of our coordination meetings.

The contents of the Condition Assessment Reports will include:

- **Asset Inventory:** Summary of the assets at each pump station and at the WWTP.
- **Condition Assessment:** This assessment will be based primarily on field assessment performed by our staff, a review of available information provided by the City, and comparison of the civil, mechanical, structural, electrical, and I&C systems in relation to industry standards.
- **Risk Assessment:** The likelihood of failure and consequence of failure will be identified for each asset based on rating criteria recommended by HydroScience and developed in concert with the City. The rating criteria will be used to prioritize projects and identify what location(s) may require immediate attention (if any).
- **Recommended Improvements:** For each asset, projects will be grouped as applicable into Capital Improvement Projects. Each project will have a budgetary cost estimate based on recent similar projects, our experience and expectation, and the current bidding climate. The relative priority of each project will be sequenced to help develop a Capital Improvement Plan. The timing of each City project will depend on available funding and the success of procuring funds for each project. HydroScience will develop a recommended implementation schedule based on an evaluation of current budgets and City input.

It is expected that both TMs will be submitted separately but completed in parallel. HydroScience will submit first drafts of both TM No. I and No. II to the City and meet with the City to discuss the City's comments on each document. A workshop will be held with the City approximately three weeks after submittal of each document to review and coordinate responses to each comment and have a collaborative discussion on next steps. A second draft of each TM will then be submitted that will incorporate the results of comments on the first draft. Each comment received on the first draft will be responded to in the second draft, and a response to comments sheet will be prepared in Excel and included with the submittal of the second draft. Comments on the

second draft will be incorporated into the final, stamped submittal.

At the City's direction, HydroScience will be available to attend a council meeting to discuss the condition assessment TMs. It is expected that this council meeting will be scheduled after either the second or final draft submittals of each document. HydroScience's Project Manager will be available to attend or provide information, slides, or collateral material in support of the meeting. Additionally, HydroScience has included level of effort for up to three progress meetings with the City. These progress meetings will focus on technical issues associated with the lift stations and treatment plant and to have an interactive discussion on applicable topics. Monthly check-in meetings will also be performed to keep the City informed on the project status.

We expect that three days of field visits will be completed during the first 2-3 weeks after receipt of Notice to Proceed. An evaluation of the data collected will be completed approximately 6 weeks after the site visits. During this six week evaluation period, it is expected one of the meeting(s) with the City will be held for TMs No. I and II to discuss any technical questions or issues HydroScience may have. It is expected that the second and final drafts can be submitted within 2-3 weeks of receipt of comments on each draft. The overall work associated with the project schedule will be completed within 3-4 months, as outlined in the RFP. The scheduling of the council meeting will be coordinated with the City and can occur at the timing of the City's preference.

## SECTION D

# RELEVANT QUALIFICATIONS AND EXPERIENCE

## About HydroScience

HydroScience Engineers is a civil and environmental engineering firm that plans, designs, and manages the construction of water, wastewater, and recycled water projects. With offices in Sacramento, Berkeley, Concord, and San Jose, we understand and address the complex water needs of Northern California.

Founded in 1997 in Sacramento, HydroScience is a California corporation and certified Small Business Enterprise (SBE) managed by five principals. Our staff of 39 professionals includes licensed civil, mechanical, environmental, and electrical and instrumentation engineers, funding and permitting specialists, hydraulic modelers, drafters, construction managers, LEED accredited professionals, and marketing and administrative personnel. Together, the HydroScience team combines diverse skills to accomplish one focused task: *providing strategic water and wastewater solutions*.

## Capacity and Resources

HydroScience offers clients a breadth of capabilities typical of a large engineering firm while still delivering the distinct advantages of a smaller, more local firm: close proximity, responsiveness, direct project involvement from senior staff, low overhead, and project team stability.

Each of our four offices are fully equipped to provide all types of engineering services performed by HydroScience. We operate as one company with shared resources, which means that the full resources of the company are available to our project managers in each office. This increases our capacity to perform, increases available bandwidth, and ensures that the most qualified individuals are able to support projects regardless of their location.

HydroScience has a suite of additional specialized services that we can provide in-house on an as-needed basis. Where we need to supplement our team with outside resources, we maintain strong relationships with local subconsultants, which we can utilize for a specific discipline or to fill a specific project requirement.

**Condition Assessments.** Our experience allows for a comprehensive understanding of the performance of sewer pump stations and other wastewater infrastructure over time, including the lifecycles of mechanical equipment, building materials, structural integrity, corrosion, and settlement. We have in-depth knowledge of the right coatings, pipe materials, valving configurations, control strategies, and operational needs to effectively complete condition assessments. These assessments are completed in enough detail to use for a CIP and to serve the City with the confidence to rely on good and solid information for years to come. Our work will detail the remaining useful life, the risks and consequences of failure, and the various options for rehabilitation or replacement.



## HYDROSCIENCE OFFICES

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**Berkeley Office**  
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Berkeley, CA 94710  
(510) 540-7100

**San Jose Office**  
1922 The Alameda, Suite 212  
San Jose, CA 95126  
(408) 363-3884

**Client, Subconsultant, and Stakeholder Coordination.**

Several of HydroScience’s staff were once public agency and special district employees, and reinforce the importance and value in client corroboration and stakeholder coordination in executing any given project. We provide our clients with the tools and expertise needed to find and implement streamlined and trustworthy solutions. Our previous clients, listed in the References section, can attest to our accountability and commitment to exceeding their goals and objectives, adhering to budgets and schedules, and presenting deliverables with the highest quality.

**Subconsultants**

We have included one subconsultant for Structural Engineering. **VE Solutions** is a full-service structural engineering firm located in Sacramento. The firm designs cost-effective engineering solutions for steel, concrete, prestressed concrete, masonry and wood buildings and structures, as well as rehabilitation of existing damaged structures. During its over 20 years in business, VE Solutions has completed more than 300 projects for a wide variety of local and statewide clients. VE and HydroScience have worked together on dozens of pump station and wastewater treatment improvement projects.

**Recent, Relevant Project Experience**

Our team’s qualifications and experience on similar projects are highlighted in the following pages. We describe five pump station assessment and rehabilitation projects, and four WWTP assessment and rehabilitation projects. Each of these projects includes multiple technical aspects that will be important for the City’s facilities condition assessment project, as shown in the matrix below.

Client references who can attest to our performance on their projects are listed in the following section. We encourage you to contact them and enquire about our services and professionalism, both during the project and after completion.

**Summary of Project Components**

PROJECT / CLIENT	Sewage pump mechanical and hydraulic systems	Concrete corrosion and methods of protection	Electrical and control systems	Wastewater treatment plant system processes and technologies	Wastewater treatment plant mechanical systems	Structural engineering of wastewater system components
<b>Citywide Lift Station Assessments</b> City of Davis	•	•	•			•
<b>Citywide Lift Station Assessments</b> City of Belmont	•	•	•			•
<b>Sanitary Sewer Lift Station Improvements Phase 5</b> City of Foster City / Estero Municipal Utility District	•		•			•
<b>Five Sewer Lift Station Upgrades</b> City of Sunnyvale	•	•	•			
<b>Four Sewer Lift Station Upgrades</b> El Dorado Irrigation District	•		•			•
<b>Wastewater Treatment Plant Reliability Improvements</b> Silicon Valley Clean Water, Redwood City, California			•	•	•	•
<b>San Jose-Santa Clara (SJ/SC) RWF Master Agreement for Engineering Services</b> City of San Jose, California	•	•	•	•	•	•
<b>Wastewater Treatment Plant Expansion Design</b> City of Gridley			•	•	•	•
<b>WWTRP Upgrades Project</b> City of St. Helena	•		•	•	•	•

## Citywide Lift Station Assessments

City of Davis, California



HydroScience provided an assessment and inventory of the structural, mechanical and electrical components of the City's six sewage lift stations and eight storm water drainage stations. Results from the inventory and assessment were tabularized in a report and then used as the basis of proposed recommended improvements. These recommendations included planning-level cost estimates for incorporation into a Capital Improvement Program (CIP).

HydroScience began by providing standardized historical performance review forms to the City's staff to document existing and past conditions at the sites from a staff prospective. HydroScience then reviewed all existing as-builts before proceeding to the field visits, which included on-site interviews with O&M staff regarding the equipment and condition, structural evaluation of select lift stations, and electrical evaluation of each station.

The report provided site by site assessments and recommendations regarding the pump condition and access, piping, valves, wet well / dry pit condition and access, electrical equipment condition, instrumentation, safety, security, and lighting, as well as system wide recommendations for station replacement and standardization.

**Team Members:** Bill Slenter, Principal-in-Charge; Brad Friederichs, Structural

## Citywide Lift Station Assessments

City of Belmont, California



HydroScience provided an assessment and inventory of the structural, mechanical and electrical components of the City's eleven sewage lift stations. Based on the outcome of the assessment, HydroScience then proposed capital improvements for each lift station and estimated project costs. HydroScience also prepared pump curves and system curves for each pump to help evaluate pump performance.

Results from the inventory and assessment were documented in the Pump Station Assessment and Inventory Report, which formed the basis of proposed recommended improvements. These recommendations included planning-level cost estimates for development by the City Staff into a CIP.

To prepare the CIP and assessments, HydroScience reviewed all existing as-builts and conducted extensive field investigations, which included on-site interviews with O&M Staff regarding the equipment and condition, structural evaluation of each lift station, and electrical evaluation of each station. The final report provided site by site assessments and recommendations regarding the pump condition and access, piping, valves, wet well / dry pit condition and access, electrical equipment condition, instrumentation, safety, security, and lighting, as well as recommendations for improvement and standardization.

A priority list of improvements was prepared to assist the City in expediting projects for the most critical needs. Four lift stations with a construction estimate of approximately \$7M were identified as requiring critical improvements. The remaining lift stations with approximately \$4M in capital improvements were identified as next phase improvements.

**Team Members:** Eric Petrel, QA/QC; Brad Friederichs, Structural

## Sanitary Sewer Lift Station Improvements Phase 5

City of Foster City / Estero Municipal Utility District, California



Eric Petrel has managed the design of upgrades to 23 sewer lift stations in the City of Foster City since 1998. HydroScience was selected for the Phase 5 project, which involved the rehabilitation of nine wastewater lift stations and the relocation of a tenth. Each lift station improvement project included the replacement of the control panel, pumps, associated piping in the lift station, addition or replacement of the standby generator and automatic transfer switch, and relocation of PG&E meters. Eric worked with the City to develop standard lift station design features, which he has implemented on each of the subsequent projects. Typical lift station improvements include:

- Removing failing wet well coating and replacing with a new polyurethane two part coating to protect concrete against hydrogen sulfide attack
- Developing flow control options, bypass, and line stopping requirements to prevent overflows
- Developing and installing standardized pump control panels and standby generators

In some cases, lift stations were relocated from easements to the roadway, and sewers realigned as required. Special shoring requirements were stipulated to minimize settlement risk in challenging Bay Mud conditions.

**Team Members:** Eric Petrel, Project Manager; Curtis Lam, Principal-in-Charge; Tinh Le, Electrical, I&C; Brad Friederichs, Structural

## Five Sewer Lift Station Upgrades

City of Sunnyvale, California



HydroScience provided condition assessment, planning, and design for the rehabilitation of five aging sewer lift stations within the City of Sunnyvale. This project was part of the City's ongoing sanitary sewer maintenance program to improve energy efficiency and reliability of the various facilities and reduce spill risk.

HydroScience worked with City maintenance and engineering staff to develop a standard design for the upgrades. Steps included a comprehensive condition assessment of each lift station, preparation of a Preliminary Design Report in collaboration with City staff, and detailing of the designs. Condition assessments targeted compliance with current electrical codes, OSHA standards, SCADA compatibility, and industry design standards for efficiency and cost-effective operation. Recommendations for improvements at each station were subsequently developed to target identified deficiencies. Recommended upgrades varied from station to station depending upon their exiting physical condition and the cost-effectiveness of modifications to the existing facilities.

HydroScience reviewed the recommendations with the City and proceeded with the design of the project. The rehabilitation of the sewer lift stations included spring assisted valve vault lids with safety grates, flow meters, sewer force main bypass connections, epoxy lining of the wet wells, replacement of submersible pumps to conform to the standard pump manufacturer, installation of flush valves, and relocation and replacement of the electrical controls. SCADA systems at each of the five sewer lift stations were also upgraded to provide more efficient remote monitoring and control to optimize operation of the City's lift stations.

**Team Members:** Bill Slenter, Principal-in-Charge

**Reference:** Mansour Nasser, Water & Sewer Division Manager, (408) 730-7578, mnasser@sunnyvale.ca.gov

## Four Sewer Lift Station Upgrades

El Dorado Irrigation District, El Dorado County, California



HydroScience prepared four separate facility evaluations, predesigns, and designs for the rehabilitation/replacement of four sewer lift stations for EID, and supported both the bidding and construction phases. Each project involved significant rehabilitation and replacement elements on space-restricted properties with sensitive neighbors. The projects utilized standard design features, which HydroScience developed for the District on prior projects. Complex and often competing objectives were balanced through creative approaches developed in close collaboration with EID engineering, operations and maintenance staff.

All lift stations include new submersible pumps ranging up to 70 hp, new wet well or existing wet well refurbishment, standby generators up to 175 kW in sound attenuation enclosures, new electrical power and control systems, PLC and SCADA improvements, odor control systems, security and access gates, visual screening from neighbors, new utility buildings or refurbishment of existing ones, and a suite of design provisions to provide simplified and safer O&M and improved flexibility. Bid packages included carefully sequenced bypassing plans and outage requirements to ensure that bidding contractors included the appropriate costs for managing spill and unplanned outage risk during construction.

**Team Members:** Bill Slenter, Principal-in-Charge; Brad Friederichs, Structural

## Wastewater Treatment Plant Reliability Improvements

Silicon Valley Clean Water, Redwood City, California



HydroScience served as engineer-of-record on a design-build team for this project which provided plant reliability improvements for Silicon Valley Clean Water's 24 MGD WWTP in Redwood Shores, California. Work included upgrading the aeration basin blower system to high-speed turbo blowers with all new distribution piping and control valves, correcting basin flow split issues starting with a hydraulic profile study, installing a fan press solids dewatering system and conveyors, adding backup water for generators, and replacing their granular media filter backwash pumps.

Replacement of the backwash pumps was particularly challenging given the large size of the pumps (8,000 gpm), limited shutdown window available, their location in a below-grade gallery, and the custom large-diameter discharge manifold that needed to be replaced to accommodate new pumps. HydroScience worked with a high-precision LIDAR point cloud scan of the existing mechanical components and developed improvements design using 3D drafting techniques, coordinated with the steel pipe fabricator, and refined a design approach that facilitated accurate field fit-up and minimized downtime required for construction.

The D/B project included a highly collaborative process with plant staff. One of the key features of our approach was the partnering atmosphere, which we established at the project kickoff. We front-loaded project planning and communication to confirm design details and capture operations and maintenance preferences early on to help streamline implementation during the construction phase. Client collaboration included a series of all-hands workshops to review findings, select preferred design alternatives, gather feedback on design deliverables, and coordinate construction activities. Installation and testing of improvements were performed in close coordination with plant operations and maintenance staff to sequence the work around ongoing operations while facilitating completion of the contract requirements.

**Team Members:** Bill Slenter, Principal-in-Charge; Brad Friederichs, Structural

## San Jose-Santa Clara (SJ/SC) RWF Master Agreement for Engineering Services

City of San Jose, California



HydroScience provided on-call planning, evaluation, detailed design, and construction support services under a multi-year Master Services Agreement (MSA) with the City of San Jose. The Regional Wastewater Facility (RWF) is a 167 MGD secondary and tertiary wastewater treatment plant serving 1.4 million residents and businesses across eight cities in Santa Clara County. The RWF discharges over 100 MGD of tertiary effluent to the South San Francisco Bay while also delivering over 15,000 AFY of recycled water to over 900 customers in Santa Clara County.

**3W Upgrades.** HydroScience designed the replacement of the existing No. 3 Water (3W) pumps. This upgrade to an existing aging facility provides critical plant utility water to the entire facility. The pumps are in a below-grade equipment gallery with challenging access and space issues. The most suitable replacement pumps have a vertical discharge as opposed to the existing horizontal discharge pumps, necessitating reconfiguration of the 20-30 inch discharge piping in a tight space. An energy saving assessment conducted by HydroScience identified an opportunity to improve the turndown of this 700 – 14,000 gpm (35 psi) facility through the addition of a third low flow pump, and HydroScience designed provisions for this third pump into the system.

**Pond A18 South Gate Levee Repair Project.** HydroScience performed a condition assessment, provided planning-level recommendations, and provided a detailed design for the repair and reinforcement of levee embankments and an inlet gate structure owned by the RWF which is located adjacent to their RWF effluent outfall channel to the Bay. The South Gate Structure is one of two gate structures providing flow control between the adjacent Pond A18 and the Artesian Slough and San Francisco Bay and is located on the levee forming the southwest side of the pond. Tidal action and weather had caused erosion to the levee embankments, scouring of the Bay floor in front of the structure which was undermining the structure supports, and damage to the access road on top of the levee. The condition assessment included a geotechnical investigation, structural evaluation of the structure, mechanical evaluation of the gates, recommendations, and cost estimates. Then HydroScience prepared detailed plans and specifications and provided engineering services during construction for the repairs, which included steel sheet piles at the levee toes, whalers, tie rods, and roadway repair.

**South Bay Water Recycling (SBWR) Pump Station HVAC Project.** SBWR is a division of the City of San Jose that is responsible for engineering related to the distribution of recycled water throughout the City's service area. HydroScience provided evaluation and design to improve ventilation in two existing remote recycled water booster pump stations, known as Pump Station 5 and Pump Station 8/11, and to reduce the occurrence of variable frequency drive (VFD) failures associated with the large booster pumps. HydroScience performed an evaluation which included recommendations and planning-level costs, and then prepared detailed bid plans and specification for construction of the improvements.

The following summarizes other projects that HydroScience has completed under this MSA:

- Condition assessment and evaluation of an outfall channel bridge that includes critical effluent monitoring instrumentation, and nearby gates and outlet structures
- Condition assessment of walkway bridges over a primary clarifier effluent channel
- Design of thermal mass flow meters for three points of demand in the treatment plant
- Condition assessment of deteriorating earthen berms and a concrete inlet structure at a large emergency overflow basin
- Design of a replacement outdoor lighting system for the nitrification clarifiers facility which improved operator safety

**Team Members:** Bill Slenter, Principal-in-Charge

**Reference:** Lorenzo King, Senior Engineer, City of San Jose, (408) 635-2014, [lorenzo.king@sanjoseca.gov](mailto:lorenzo.king@sanjoseca.gov)

## Davis Wastewater Treatment Plant Upgrade Projects

City of Davis, California



HydroScience served as lead engineer for design of improvements to the existing WWTP. The goal of this project was to improve plant performance and reliability. Our project team worked closely with City staff through a series of site visits and detailed workshops to prioritize and optimize the scope of improvements, balancing project cost with long-term performance objectives. Improvements subsequently designed and constructed include:

**Influent Pumping.** Replaced aged and oversized 4,800 gpm dry pit solids-handling influent pumps in a gallery with modern, efficient immersible screw impeller pumps. Reconfigure suction piping and valves to reduce dry pit flood risk. Replace obsolete VFDs in existing MCC with new units while minimizing facility interruption. The upgraded facility operates at increased efficiencies throughout an improved flow turndown range while also minimizing the incidence of clogging.

**Influent Channel Hydraulics and Bar Screen Improvements.** Reconfigure existing oversized influent channels to improve scour velocities, reduce odors and corrosion, repair existing degraded concrete, and facilitate installation of two new parallel bar screens.

**Grit and Primary Clarifier Improvements.** Completely rebuild the grit dewatering facility to address significant corrosion, modify influent gates, scum collectors, and clarifier mechanisms to address corrosion and performance issues, and replace coatings.

Innovative approaches were developed to maintain treatment capacity while minimizing costly bypass facilities. Drawing upon staff experience and knowledge, HydroScience clearly defined contractor limitations and operational responsibilities to minimize risk to permit compliance while providing adequate contractor flexibility to propose innovative and cost-effective means and methods.

**Team Members:** Bill Slenter, Project Manager; Curtis Lam, Principal-in-Charge

## Wastewater Treatment Plant Expansion Design

City of Gridley, California



HydroScience provided design and permitting services for the City of Gridley WWTP Expansion Project. The \$2.5M upgrade project doubled the capacity of Gridley's existing aerated pond treatment system to 1.7 million gallons per day (MGD) average flow and 5.7 MGD peak wet weather flow. Because construction funds were limited, HydroScience selected an approach that increased the treatment rate without constructing new ponds. The upgrade provided the additional treatment capacity needed to approve new residential, commercial and industrial developments in the City. The upgrade also improved effluent quality in anticipation of a stricter permit.

HydroScience's upgrade design consisted of a new headworks structure utilizing a spiral self-cleaning fine screen, aeration system upgrades consisting of new surface aerators and solar-powered circulators, upgraded yard piping to accommodate the higher flows, and upgrades to power and control systems. In order to control project costs, all upgrades were performed on the existing single-train treatment process. These upgrades were designed so that they could be constructed while the plant continued to operate. HydroScience also helped lead the permitting process.

**Team Members:** Bill Slenter, Project Manager; Curtis Lam, QA/QC

## WWTRP Upgrades Project

City of St. Helena, California



The City of St. Helena was issued a CDO containing effluent limitations the City could not reliably obtain with their existing pond treatment plant. This resulted in the RWQCB issuing the City with a Time Schedule Order requiring the City to complete a number of steps with the overall intent of upgrading the WWTRP process to a level that would result in the WWTRP reliably meeting its effluent discharge limitations.

In April 2019, the City commissioned HydroScience Engineers to develop a Conceptual Design Report (CDR) to analyze treatment alternatives that would comply with the new NPDES effluent discharge limitations, while also modernizing the facility's treatment process. The CDR examined City provided flow and loading

data as well as current operations at the City's WWTRP in order to characterize the existing plant's conditions and identify treatment plant design criteria.

The recommendations in the CDR identified that the preferred WWTRP upgrade alternative is a packaged MBR treatment system. The WWTRP will maintain its permitted capacity of 0.5 MGD with the flexibility to operate the plant at a peak day hydraulic capacity of 1.33 MGD (reduced from 6 MGD). This reduction in flow will result in tens of millions of dollars in cost savings when combined with repurposing four of the existing WWTRP ponds for use as flow equalization. The new treatment plant improvement is modular in its design so that the City can cost-effectively expand the new system to meet anticipated buildout flows, if necessary. The RWQCB accepted the CDR findings without comment.

Project elements included:

- Addition of coarse and fine screening
- New influent pump station
- New 1.3 MGD MBR wastewater treatment plant
- Repurposing of four of the existing ponds for use as flow equalization and pretreatment
- Upgrades to the effluent discharge and disinfection system
- Electrical and SCADA upgrades to accommodate the project
- Site and grading improvements
- Sound attenuation

HydroScience also prepared the environmental documentation and supplemental project report for the City to obtain external funding from the USDA. HydroScience also coordinated with the RWQCB to help prepare a new NPDES permit for the proposed facility. The new NPDES permit will help the City get out of its existing Cease and Desist Order, and reflects the plant upgrades that are underway.

Additionally, the City is initiating a recycled water project that will reuse effluent generated by the WWTRP project. This project will allow recycled water to be used at local parks, schools, and selected other properties for approved Title 22 uses. The use of recycled water will also offset potable water use and free up potable water for other purposes.

The WWTRP project will be advertised later this year. Construction is expected to be completed by end of 2022. The total project cost estimate is approximately \$16M.

**Team Members:** Curtis Lam, Project Manager; Jason Crowley, Project Engineer; Bill Slenter, QA/QC; Tinh Le, Electrical Engineer; Brad Friederichs, Structural

**Reference:** Erica Ahmann Smithies, Former Director of Public Works and now Director of Public Works for the City of American Canyon, (707) 647-4366, [esmithies@cityofamericancanyon.org](mailto:esmithies@cityofamericancanyon.org)

## SECTION E

# E. REFERENCES

One of HydroScience's strengths is our solid, long-term relationships with our clients, which often result in continued project opportunities. We are proud of these relationships and encourage the City to speak with the references included here about their experiences with HydroScience during and after completion of their projects.

We have included references for three of the projects described in Section D. They are listed by title here, along with the page number of the description in the previous section.

**WWTRP Upgrades Project** (see page 24)

City of St. Helena, California

Erica Ahmann Smithies

Former Director of Public Works and now Director of Public Works for the City of American Canyon

(707) 647-4366

esmithies@cityofamericancanyon.org

**San Jose-Santa Clara (SJSC) RWF Master Agreement for Engineering Services** (see page 22)

City of San Jose, California

Lorenzo King

Senior Engineer

City of San Jose

(408) 635-2014

lorenzo.king@sanjoseca.gov

**Sunnyvale Five Sewer Lift Station Upgrades** (see page 20)

City of Sunnyvale, California

Mansour Nasser

Water & Sewer Division Manager

(408) 730-7578

mnasser@sunnyvale.ca.gov

SECTION F

# PROPOSED BUDGET

April 28, 2021

**City of Willows  
Fee Proposal for the Facilities Condition Assessment for Sewer Collection System Lift Stations and Wastewater Treatment Plant Major Equipment  
HydroScience Engineers**

Task Description	Curtis Lam Principal-in-Charge		Eric Petrel Project Manager		Bill Stenter Treatment Lead		Jason Crowley Project Engineer		Thin Le EIC	Hours	Fee	VE Solutions	Travel	Expense Subtotal with markup	Total Fee
	Prin	E-IX	Prin	E-IV	E-VI	E-VI									
	Hourly Rate	\$245	\$255	\$195	\$215										
<b>I Sewer Lift Station Condition Assessments</b>	<b>6</b>	<b>66</b>	<b>0</b>	<b>100</b>	<b>46</b>	<b>218</b>	<b>\$47,090</b>	<b>\$0</b>	<b>\$1,500</b>	<b>\$1,650</b>	<b>\$48,740</b>				
Kickoff Meeting/Field Visits (2 days, total)	2	16		16	8	42	\$9,270		\$1,500	\$1,650	\$10,920				
Desktop Review and Evaluation		20		40	20	80	\$17,000				\$17,000				
First Draft TM	2	24		24	12	62	\$13,650				\$13,650				
Second Draft TM	1	4		12	4	21	\$4,435				\$4,435				
Final TM	1	2		8	2	13	\$2,735				\$2,735				
<b>II Wastewater Treatment Plant Condition Assessment</b>	<b>5</b>	<b>30</b>	<b>52</b>	<b>80</b>	<b>50</b>	<b>217</b>	<b>\$48,235</b>	<b>\$8,500</b>	<b>\$1,000</b>	<b>\$10,450</b>	<b>\$58,685</b>				
Field Visit (1 Day)		8	8	8	8	32	\$7,280	\$1,500	\$1,000	\$2,750	\$10,030				
Desktop Review and Evaluation		8	12	20	20	60	\$13,220	\$5,000		\$5,500	\$18,720				
First Draft TM	2	8	20	24	16	70	\$15,690	\$2,000		\$2,200	\$17,890				
Second Draft TM	2	4	8	16	4	34	\$7,510				\$7,510				
Final TM	1	2	4	12	2	21	\$4,535				\$4,535				
<b>III Project Management and Meetings</b>	<b>0</b>	<b>20</b>	<b>6</b>	<b>12</b>	<b>12</b>	<b>50</b>	<b>\$11,350</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$11,350</b>				
Project Management (4 mos @ 2 hrs/mo)		8				8	\$1,960				\$1,960				
First Task I - Draft TM Virtual Review Meeting		3		3	3	9	\$1,965				\$1,965				
Second Task I - Draft TM Virtual Review Meeting		3		3	3	9	\$1,965				\$1,965				
First Task II - Draft TM Virtual Review Meeting		3	3	3	3	12	\$2,730				\$2,730				
Second Task II - Draft TM Virtual Review Meeting		3	3	3	3	12	\$2,730				\$2,730				
<b>TOTAL</b>	<b>11</b>	<b>116</b>	<b>58</b>	<b>192</b>	<b>108</b>	<b>485</b>	<b>\$106,675</b>	<b>\$8,500</b>	<b>\$2,500</b>	<b>\$12,100</b>	<b>\$118,776</b>				

Notes:  
All charges will be based on HydroScience's 2021 Standard Billing Rate Schedule.  
All expenses will be billed at cost plus 10%.

**HYDROSCIENCE ENGINEERS, INC.**

## 2021 Rate Schedule

Rates are subject to increase 3% annually

LABOR CLASSIFICATION	HOURLY RATE
Principal	\$255
Engineer IX	\$245
Engineer VIII	\$235
Engineer VII	\$225
Engineer VI	\$215
Engineer V	\$205
Engineer IV	\$195
Engineer III	\$185
Engineer II	\$175
Engineer I	\$160
Engineering Aide	\$95
Construction Professional VI	\$175
Construction Professional V	\$165
Construction Professional IV	\$155
Construction Professional III	\$145
Construction Professional II	\$135
Construction Professional I	\$125
Cross Connection Control Specialist	\$115
CAD Manager	\$135
CAD Designer I	\$115
Marketing Professional	\$105
Administrative II	\$95
Administrative	\$80

**Note:** Hourly billing rates include postage and telephone charges that are normal to the work authorized. Other direct costs for travel, reproduction, mail service, outside services, etc. will be invoiced at 110 percent of the actual cost. Rates are subject to increase 3% annually.

HydroScience is a civil engineering firm that plans, designs, and manages the construction of water, wastewater, and recycled water projects. With offices in Berkeley, Sacramento, Concord, and San Jose, we understand and address the complex water and wastewater needs of Northern California.



**HydroScience** 

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