

Bay Area Mass Transit Construction Saves Thousands With Efficient Dewatering



Dewatering Filter Train at Piper Ct., Milpitas CA.

PROJECT SCOPE

Ground dewatering and filtration

CLIENT

Bay Area Rapid Transit

INDUSTRY SEGMENT

Construction

EQUIPMENT

- 12 Weir Tanks
 - Open Top
 - Open Top Coated Steel
 - Flip Top
- 22 Ground Water Tanks
 - 21,000 Gallon
- 280 Submersible Pumps
 - Pump Saver Panel
- 7 48-4 Sand Filters
- 5 BF100 Bag Filters
- 8 Carbon Filters
- 4 Clay Filters
- 2" & 4" Rigid Cam
- Gate Valves
- 1000' Hose

LOCATION

Milpitas, CA



Liquid Ingenuity

BACKGROUND

Construction on the Bay Area Rapid Transit (BART) station in Milpitas, CA is expanding service 10 miles and is projected to serve 20,000 daily passengers by 2030. The BART system extension began in 2012 and has had to overcome several hurdles including minimizing traffic closures as it prepares for the 2018 completion date. The excavation for the tracks that travel under surface streets and major thoroughfares required significant groundwater dewatering as the water table was very high. Prior to discharging the water, it also needed to be filtered to meet specified discharge requirements.



Filter Train at Montague for suspended solids.

OUTCOME

Based on the contractor's prior experience working with Rain for Rent, they knew the company had the experience to manage this dewatering project.

Rain for Rent provided seven systems, each capable of flows up to 650 GPM, which included submersible pumps and header pipe to dewater the excavations, weir tanks, and filtration to treat the water prior to discharge. A total of 220 dewatering wells, which varied in depth from 20 to 55-feet were necessary to keep the excavation dry. Each site had between eight and 55 wells. A combination of sand media and bag filters were put in place to reduce the turbidity of the water. In some areas of the project, the contractor also had to remediate groundwater with carbon and clay filtration to remove high concentrations of VOCs (Volatile Organic Compounds) from old industrial sites and broken pipelines that occurred decades ago. A third party vendor routinely tested the water to document compliance in accordance with discharge permits.

PUMPS • TANKS • FILTRATION • PIPE • SPILLGUARDS

800 742 7246 rainforrent.com



10K# carbon vessels filter for 160,000 ppB VOC C5 thru C12, Sierra at Lunde.

HIGHLIGHTS

- The project had high concentrations of colloidal clay mixed in with the groundwater, which blinded off the carbon and clay vessels, preventing proper treatment. Rain for Rent resolved the colloidal clay issue by partnering with HaloSource to provide a two part flocculent (Chitosan/LBP) pretreatment to remove the sediment more quickly and easily, allowing the carbon and clay systems to work properly. The flocculent was dosed into the system via LMI pumps and injected into the header pipe before traveling to the weir tanks where the flocculent treatment took effect. From there, the filtration train could work properly, preparing the groundwater for proper disposal.
- Because Rain for Rent employs a full-time staff of engineers, the company was able to provide the contractor with PE stamped submittal packages for discharge permit approval. The system included seven dewatering and filtration systems and on-site supervision of customer labor.
- Due to Rain for Rent's experience with dewatering and filtration projects, the company was able to preemptively anticipate the contractor's needs and have the right equipment and supplies available, eliminating any disruption to the project.
- Rain for Rent provided proprietary Smart Panel controllers for all of the dewatering pumps. These panels saved the contractor time and money, eliminating the need to manually observe and adjust each well's valve as site conditions changed over the multi-year project. Because the pumps needed to be available 24/7/365, the controllers also were needed to prevent run-dry condition, yet be able to auto start in the presence of water in the well. The controllers increased the overall efficiency of the dewatering system, giving the contractor lower haul-off costs due to drier, lighter soils, requiring fewer trucks. The pumps had to run constantly for two years.
- The variable turbidity levels of the extracted groundwater required more frequent changes to the filter media, additional flocculent and cleaning of the tanks to comply with SFBWQCB (San Francisco Bay Area Water Quality Control Board) permit standards.



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BART Project Facts

Rain for Rent provided seven systems made up of pumps, tanks and filtration.

- **Each system is capable of flows up to 650 GPM.**
- **220 dewatering wells.**
- **VOCs (Volatile Organic Compounds) removal from old industrial sites and broken pipelines.**

- **Ongoing project since June 2013.**

- **Engineered design lead to cost savings from waste disposal.**

All systems are running continuously 24 hours a day, 365 days a year.

- **Colloidal clay removal from ground water using flocculents.**

CUSTOMER FEEDBACK

The contractor was able to work more quickly because the Rain for Rent filtration system was more efficient than anticipated. Hauling costs to remove soil were also lower than expected because the dewatering efforts were more efficient, causing the soil to be drier and weigh less.

Multiple management personnel for the contractor repeatedly complimented Rain for Rent on the level of service and quality of personnel. They look forward to working with Rain for Rent for any future jobs dealing with water so they can focus on their core business and leave liquid management to the experts.



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