LIFT STATION DESIGN

Hesperia, California

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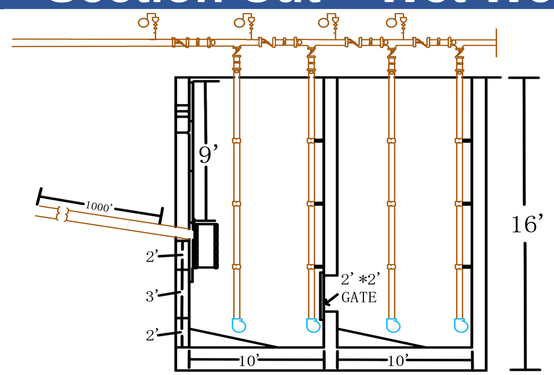
Project Overview

The purpose of the project is to design a lift station in the city of Hesperia to accommodate a new local neighborhood's wastewater demand. This includes the design of a gravity pipe, lift station, pumps, odor control system, and force main that leads to the regional wastewater treatment plant.

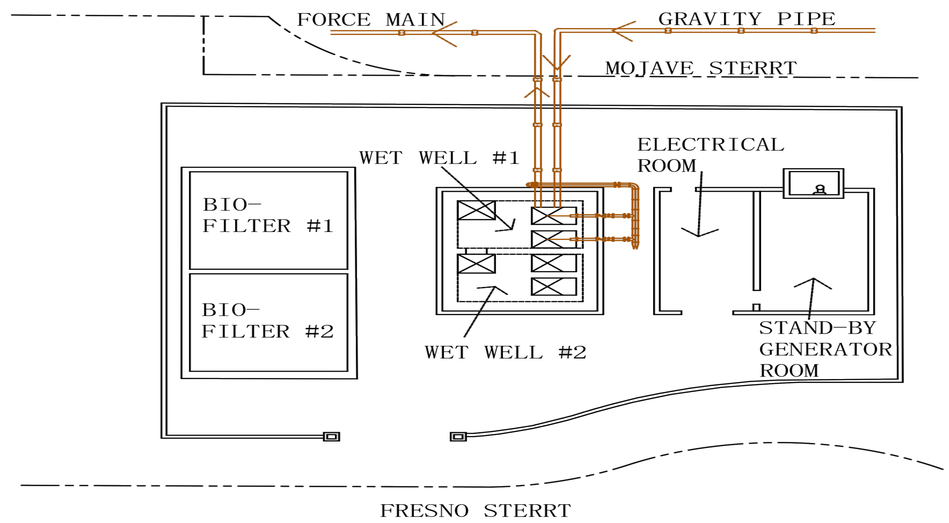
Design Criteria

Wastewater Demand by Phase		
Phase 1	Average Flow	1.0 MGD
	Peak Flow	1.5 MGD
Phase 2	Average Flow	2.0 MGD
	Peak Flow	3.0 MGD
Design Summary		
Gravity Pipe Selection		24" PVC Pipe
Wet Well Selection (H x W x L)		15.9' x 8' x 10'
Force Main Size		8" PVC Pipe
Type of Pump		4xD 4"
Number of Pumps		2 (1 in Redundancy)
Pump Power		25.54 hp
Client Data		
Hydrogen Sulfide Concentration [H_2S]		30 ppm
Gravity Pipe Length to Wet Well		1000 ft

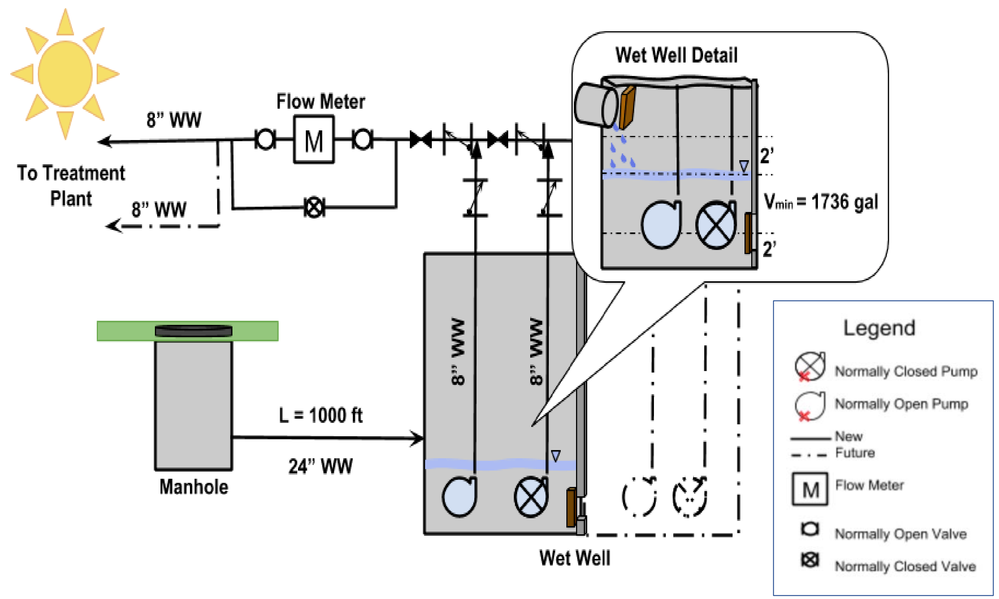
Section Cut – Wet Well



Site Plan



Process Flow Diagram



Alternative Analysis

Odor Control		
Methods	**Advantages**	**Disadvantages**
Bio-filters	❖High Efficiency ❖No harmful by-product ❖Cost effective ❖Cost of filter is low	❖Large area for treatment required ❖Not suitable for all kinds of organisms
Carbon Absorber	❖No chemicals ❖No Biology	❖Short service life ❖Needs a large amount of time and AC ❖Poor working environment
Chemical Scrubbers	❖Versatile ❖Applicable to all kinds of situations	❖Chemical cost and delivery ❖Maintenance is relatively high and undesirable ❖Chemical smell

Bio-filter is the recommended alternative.

Schedule

Action Items in Progress

- Mechanical Plans
- Civil Plans
- Outline of Final Progress Report
- Probable Cost Estimate
- Construction Schedule

Action Items Completed

- Gravity Pipe Calculations
- Sizing and Quantity of Pumps
- Process Flow Diagram
- Wet Well Design
- Alternative Analysis
- Wet Well Sizing
- Sizing of Force Main

Acknowledgement

The Henry Samueli School of Engineering, Civil Engineering Department and Pure Vision Engineering would like to acknowledge HDR, Professor Stephen Bucknam, Professor Joel Lanning, and Professor Kristen Davis.