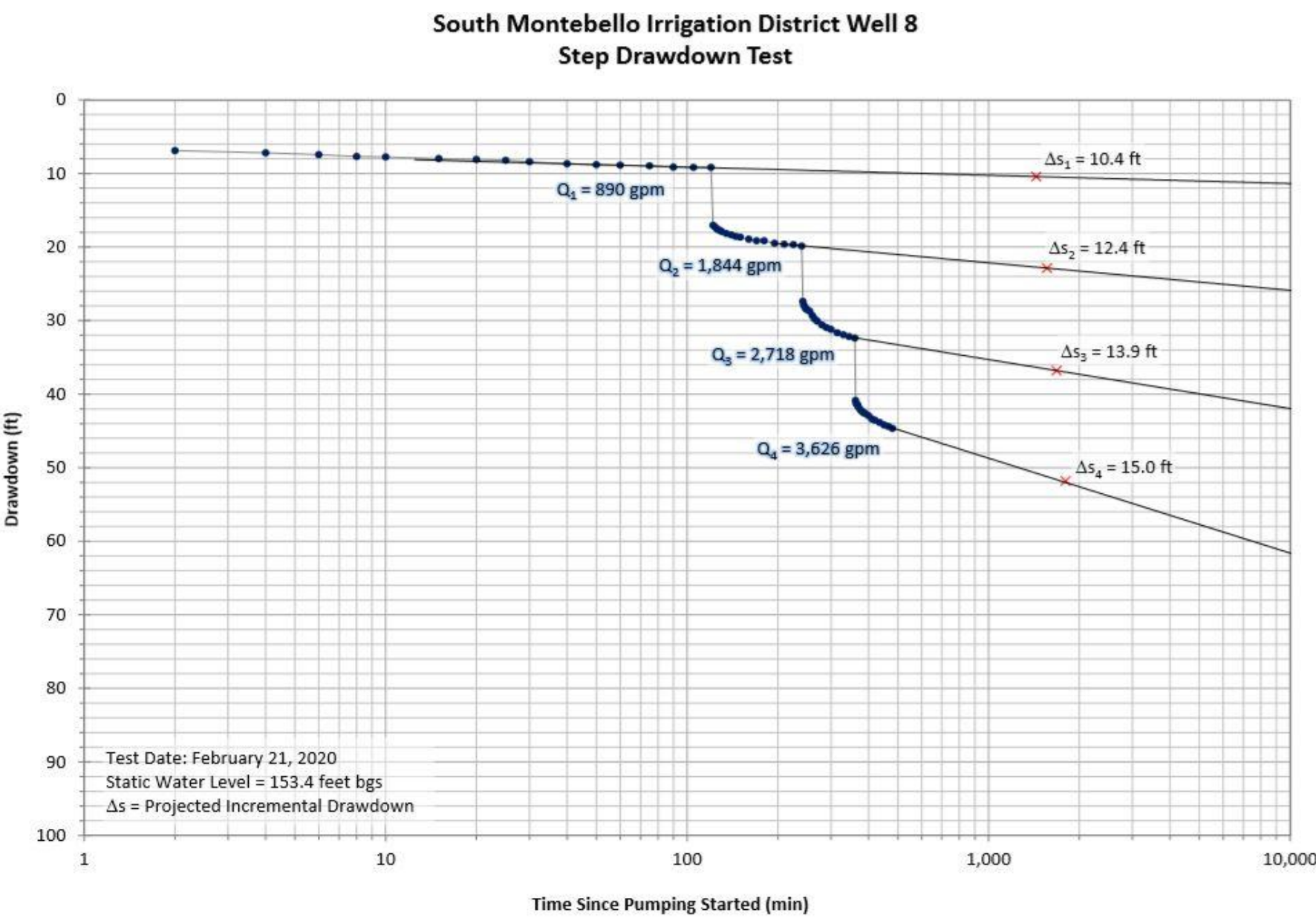


PROJECT DESCRIPTION

We are working in collaboration with AKM Consulting Engineers to create a groundwater well and treatment facility in South Montebello Irrigation District to reduce perfluorooctanesulfonic acid (PFAS) levels to below CA Reporting Limits with a targeted flow of 3000 GPM.

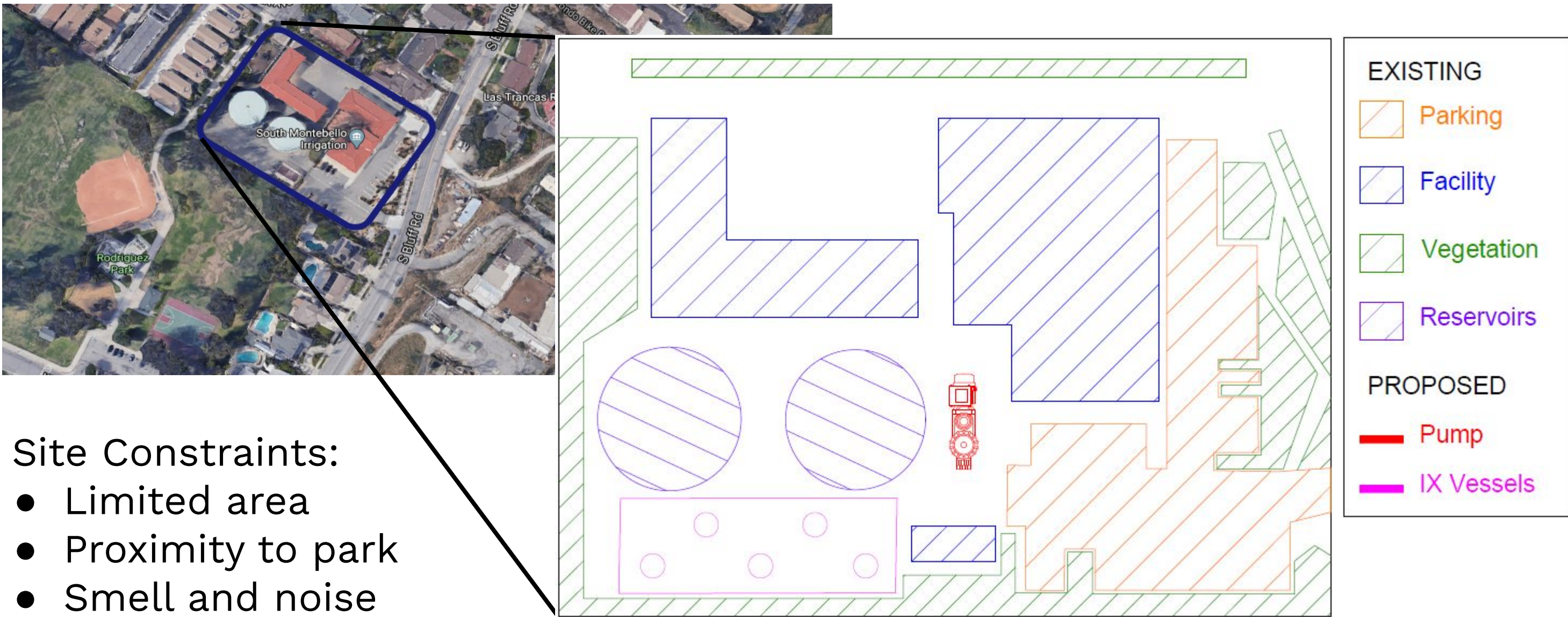
DESIGN PARAMETERS

	Short-Term (1-day)	Long-Term (1-year)
Pumping Rate	3000 GPM	3000 GPM
Static Water Level	152 feet BGS	152 feet BGS
Drawdown	41 feet	60 feet
Well Efficiency	79%	-
Pump Setting	290 feet BGS	290 feet BGS
Total Lift to Ground Surface	193 feet	213 feet

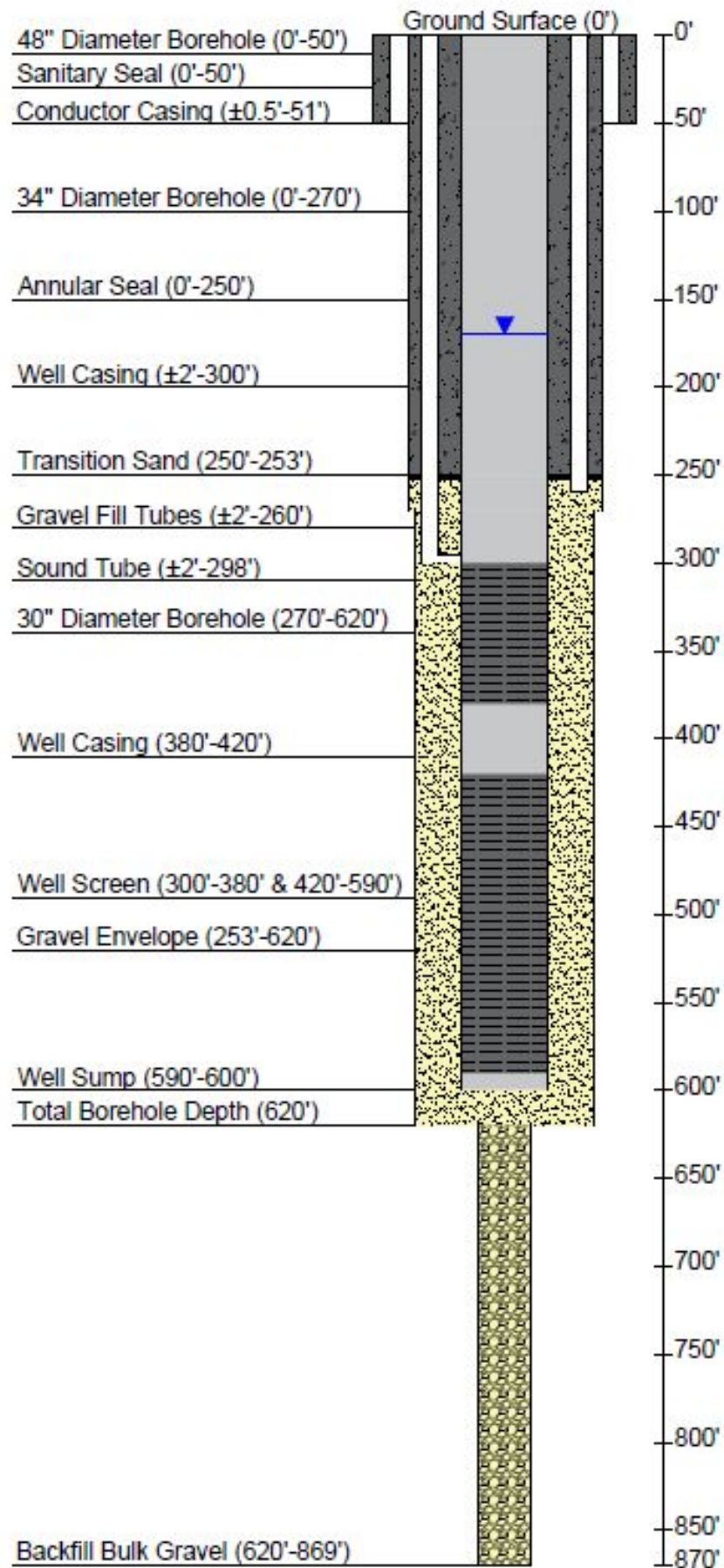


Pump tests, including the Step Drawdown test shown above, and the constant rate test are used to calculate aquifer characteristics such as transmissivity, specific capacity, short and long term drawdown.

SITE MAP

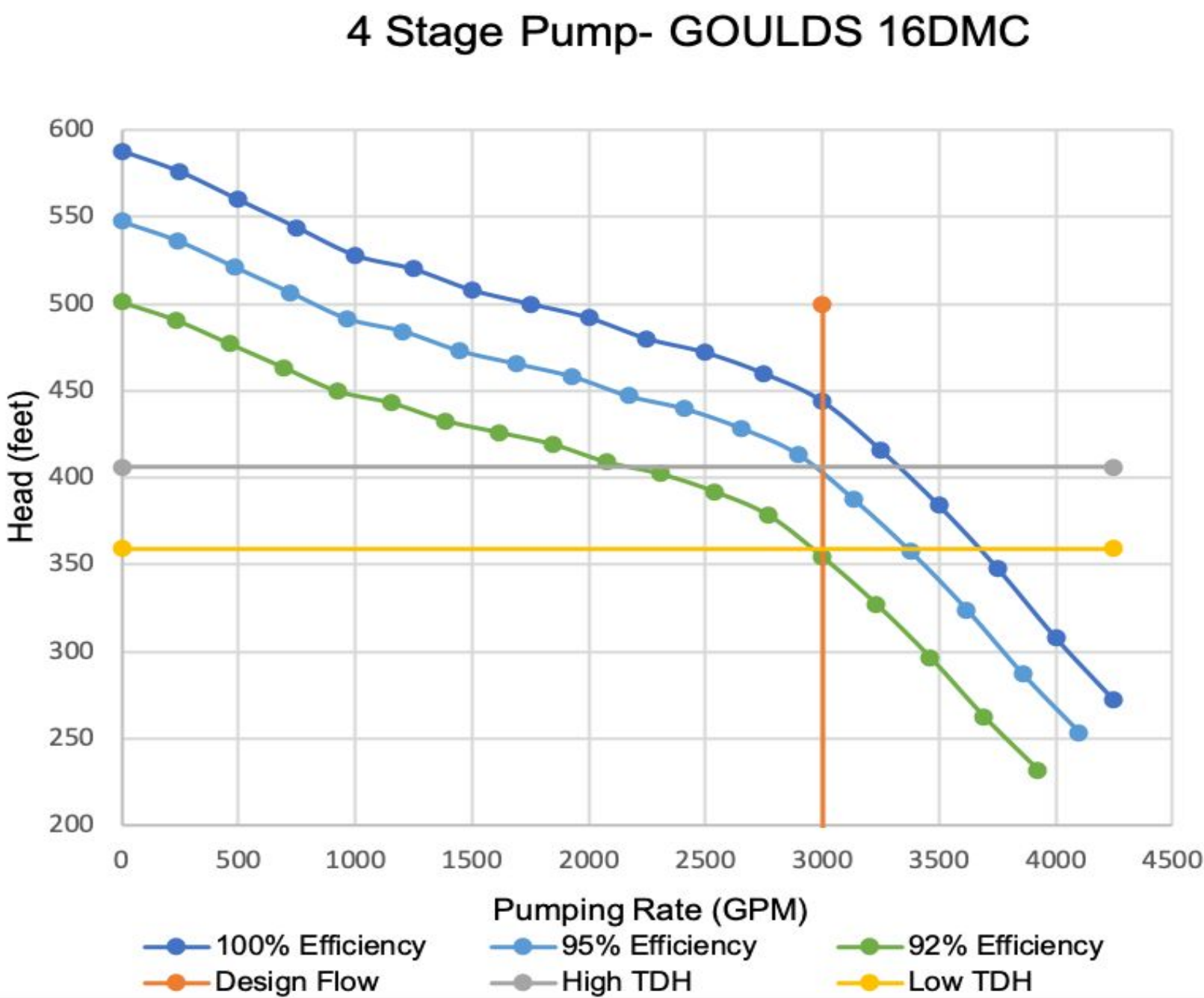


WELL CROSS-SECTION



PUMP CURVE

Pump Selection Criteria				
Pumping Rate (GPM)	Discharge Pressure (psi)	System Pressure (psi)	Total Dynamic Head (ft)	
3000	70	60-65	(High) 406	(Low) 359



PFAS

Exposure to PFAS/PFOS substances can come from everyday consumer products such as non stick cookware, paints, shampoos, pesticides, firefighting foam and fast food packaging. PFAS substances have a half-life of up to 4 years in the human body. Health effects in humans include increase risks for thyroid disease, increase blood cholesterol levels, decrease response to vaccines, decrease fertility in women, lower infant birth rate, and more.

CA State Requirements

CA Notification levels: PFOA = 5.1 ng/L
PFOS = 6.5 ng/L

CA Response levels: PFOA =10 ppt ;PFOS = 40 ppt

**no MCLs set by EPA yet

PFAS Treatment Options

	GAC	IX Resins
Empty Bed Contact Time	7-20 minutes	2-3 minutes
Typical Bed Life	50,000 - 120,000 bed volumes	250,000- 300,000 bed volumes
PFAS Chain effectiveness	Less effective for short chain	Effective for wider range of PFAS
Backwash	Available	Not recommended
Cost comparison	Less expensive	More expensive

Reverse osmosis is another treatment option but is not being considered due to high energy and operational costs.



Carbon Adsorption:
granular activated carbon (GAC)



Ion Exchange
(IX) resin



Reverse Osmosis or Nanofiltration
(RO or NF)

Source: Megan Plumlee, OCWD