GOLDEN STATE WATER COMPANY

Fairhaven Well #3
Well Drilling and Development

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Orange County General Manager

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GSWC’S ORANGE COUNTY DISTRICT

Part of GSWC Region III

- 43,300 customers
- 2 customer service areas
- 4 water systems

Facilities include:

- 30 wells
- 17 reservoirs
- 6 MWD connections

Water supply = 26,000 AF/year

- 75% groundwater
- 25% purchased water from MWD
COWAN HEIGHTS SYSTEM

Serves a portion of the City of Orange, as well as the unincorporated areas of Cowan Heights and Lemon Heights

- 2 wells provide 50% of total water supply
- 2,750 service connections
COWAN HEIGHTS SYSTEM IMPROVEMENTS

Service Improvement Projects

• SCADA upgrades
• Pipeline replacements
• Large reservoir roof replacement
• Re-coating 2 reservoirs
• Replacement well
• Electrical system upgrades
COWAN HEIGHTS SYSTEM IMPROVEMENTS

Benefits to Customers and the Community

• Distribution improvements
  • Improved fire flows
  • System pressure
  • Water quality
• Increased reliability
  • Electrical upgrades
  • SCADA control
Fairhaven Well #3
Benefits to Customers and the Community

- Replacement well
- Less expensive water source
- Reduced reliability on imported supplies
- Increased use of local resources
FAIRHAVEN WELL #3

Located on south side of Fairhaven Avenue:

- West of 55 Freeway
- East of Ponderosa Drive
- North of Calvo Drive
Well Drilling & Development Process
Site Preparation

- Crews, trucks, cranes, and drilling equipment will mobilize to the site and set up
- Construction access from Fairhaven Avenue
- Sound abatement equipment will be erected

Normal working hours:
7 am-5 pm, Monday through Friday

Construction Schedule:
Normal working hours for 10-15 days
SITE PREPARATION

Installation of sound curtains

- Sound attenuation curtains will be erected to mitigate sound disturbance and reduce inconvenience to customers

Normal working hours:
7 am-5 pm, Monday through Friday

Construction Schedule:
Normal working hours for 2-3 days
Drilling Operations
WELL DRILLING PROCESS

Drilling Pilot Hole

• 24-hour drilling operations will begin
• Initial drilling of well to approximately 1,000 feet
• Large compressor, 50-foot drilling rig, lighting with shield on top of rig
• Formations will be excavated and stored in settling tank
• Disposal of material using backhoe and trucks
• **Construction Schedule:** 24-hour drilling operations for 5 to 7 days
WELL DRILLING PROCESS

Analysis of Formation Cuttings and Geophysical Logging

• Offsite analysis of formation cuttings
• Various types of downhole electrical and geophysical logging will be conducted to determine quality and productivity of water bearing formations

• **Construction Schedule:** Dependent on completion of pilot hole
WELL DRILLING PROCESS

Specific Zone Sampling

• Drilling rig used to set submersible pump
• Water is then pumped from each water bearing zone to analyze water quality

• Construction Schedule:
  24-hour operation for 7-9 days
WELL DRILLING PROCESS

Reaming Pilot Hole

• 24-hour drilling operations will continue to widen initial pilot hole to final depth
• Disposal of material using backhoe and trucks will continue
• Construction Schedule: 24-hour drilling operations for several days
Installation of Steel Well Casing and Gravel Pack

- Several truckloads of steel pipe and gravel will be delivered to site
- Pipe will be lowered into well and welded together to reach final depths
- Gravel will be introduced into the well surrounding the well casing
- Cement slurry will be placed above the gravel pack to ground surface

**Construction Schedule:** 24-hour operation for 4-6 days (end of 24-hour drilling)
Mechanical Well Development

- Drilling rig will remove fine materials from well and consolidate the gravel pack
- Water and materials removed from well will be treated and disposed per discharge requirements
- **Construction Schedule:**
  Normal working hours for 5-7 days
Final Development with Test Pumping

- Vertical test pump operated by diesel engine will be installed on site
- System of temporary surface pipe will be installed to transport pumped liquids into proper receiving system per discharge requirements
- **Construction Schedule:** Normal working hours for 10-14 days
DRILLING OPERATIONS - DEMOBILIZATION

Site Cleanup and Final Demobilization

- Drilling and development phases completed
- Large storage tanks emptied, cleaned and removed
- Sound abatement equipment disassembled and removed
- Well disinfected and capped
- Site cleanup and restoration
- **Construction Schedule:** Normal working hours for 3-5 days
EQUIPPING THE WELL
WELL EQUIPMENT INSTALLATION

Equipping the Well

• Vertical turbine pump, electrical motor installed
• On-site piping and buildings constructed
• **Construction Schedule:** Normal working hours for 6-8 weeks
ON-SITE BUILDINGS AND PIPING
Post-Construction
POST-CONSTRUCTION OPERATIONS

Normal Operations

- Electric motor and discharge piping housed in roll-away insulated building
- Liquid sodium hypochlorite vessel with self containment tank, alarms and disinfection equipment in separate building
- Water supply technicians visit site once a day for 15-30 minutes
- Routine maintenance may require pump rig with 20 foot mast to pull pump and treat well
- Well treatments once per year for 2-3 weeks
POST-CONSTRUCTION

Daily Operations
Additional Information
Community Outreach Plan

- Direct mailers to surrounding residents
- Description of project
- Construction schedule
- Company contacts
- Status Reports Posted on GSWC web site
ADDITIONAL INFORMATION

Project Schedule

• Phase 1 - Drill & Develop Well  90 days  October-December 2018
• Phase 2 - Equip Well  TBD  Stay Tuned, 2019-2020
CONTACT INFORMATION

Contacts

• 24-Hour Customer Service 800-999-4033
• David Eikamp, Water Supply Superintendent 714-528-8010 x306
• Del Webb, Placentia CSA Superintendent 714-528-1463 x101
• Stan Yarbrough, OC District Engineer 714-535-8010 x320
• Ken Vecchiarelli, OC District GM 714-535-8010 x300

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