



THE TOWN OF DISCOVERY BAY COMMUNITY SERVICES DISTRICT

WWTP OPERATIONS AND MAINTENANCE MANUAL





Agenda

1. O&M Manual Purpose
2. Options
 - Basic O&M Manual
 - Interactive O&M Option
3. IOM Features
4. Optional Items
 - Local Hosting
 - SCADA Programming Links



O&M Manual, Purpose

The **purpose** of the **O&M manual** is to provide information to the plant staff responsible for the operations and maintenance of the facilities to ensure that the facilities are adequately maintained to function as designed.

Compliance with NPDES Permit.

Transfer knowledge to existing and future staff:

- Essential for planned maintenance
- Necessary during emergency operations
- Useful for specific process questions
- Train new plant staff

Option 1 - Basic O&M Manual

Wastewater Treatment Plant – 23 Chapters & Appendices

Sewer Conveyance Pump Stations – 16 Chapters

Each Chapter – 8 Detailed Sections:

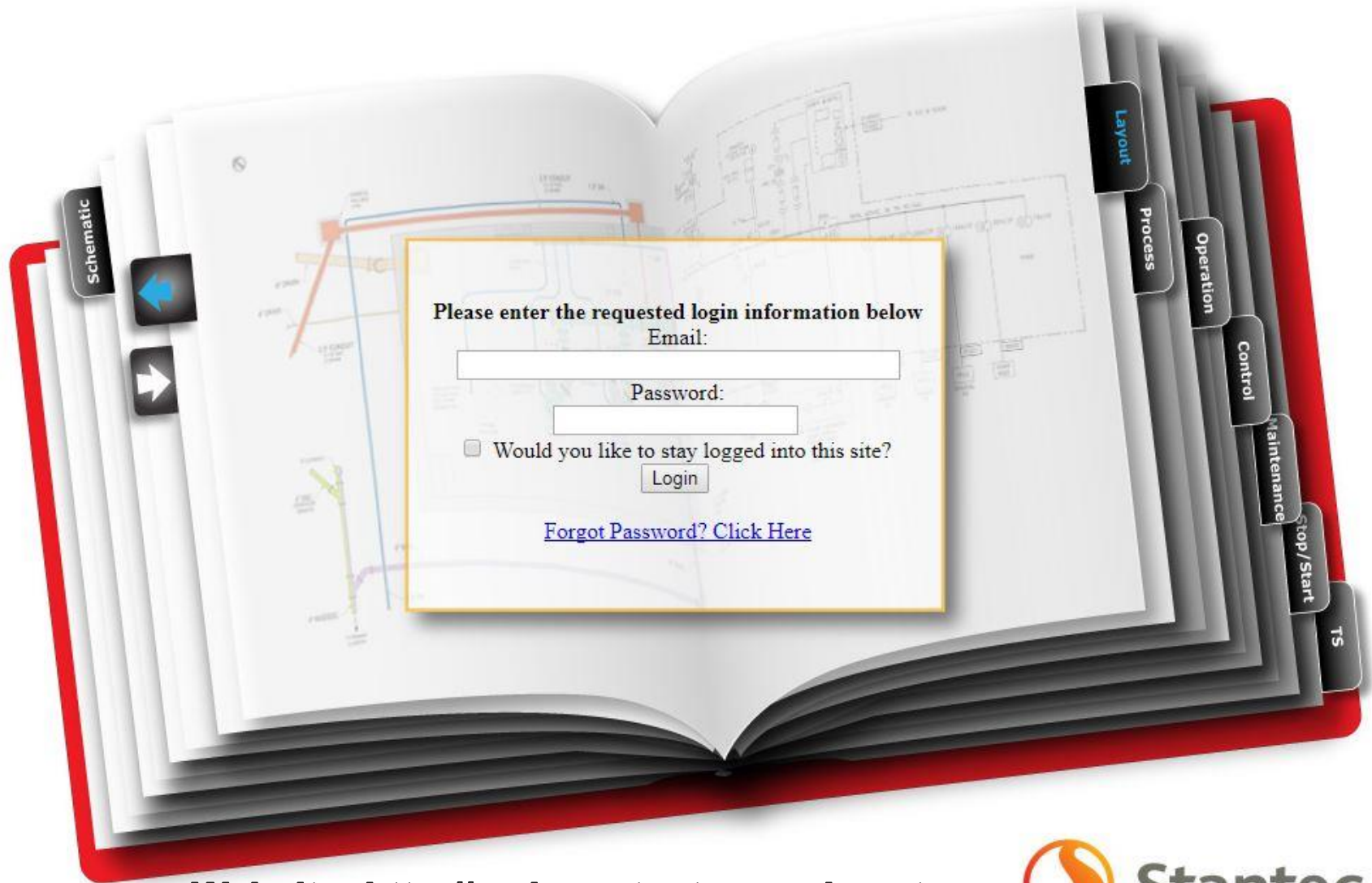
- Purpose
- Process Description
- Relationship with Other Equipment
- Operation and Description
- Controls and Instrumentation
- Monitoring and Maintenance
- Shutdown/Start-up Procedures
- Potential Problems and Troubleshooting Guide

*See example binders

Option 2 - Interactive O&M Manual

IOM Adds to Basic O&M Manual

- **portable, searchable electronic copy;**
- **living document (notes, updates, training videos, etc.);**
- **real-time collaboration (instantly shared with District staff);**
- **captures institutional knowledge**



Website: <http://myiom.stantecscada.net>

Username: demo@myiom.stantecscada.net

Password: password

Other Files

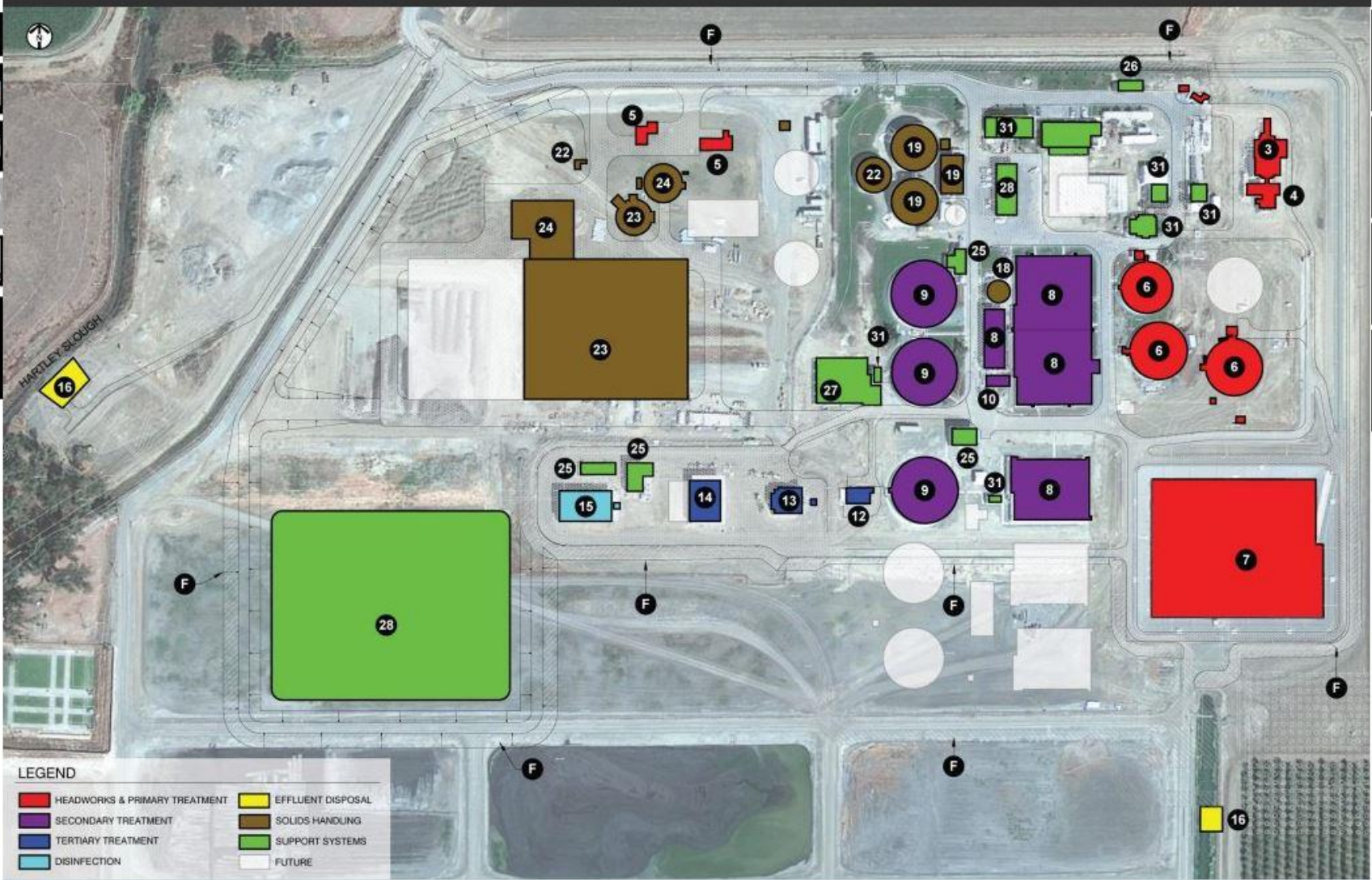
NOTES

Schematic

Layout

Overview

Process



LEGEND

| | |
|--|---|
| ■ HEADWORKS & PRIMARY TREATMENT | ■ EFFLUENT DISPOSAL |
| ■ SECONDARY TREATMENT | ■ SOLIDS HANDLING |
| ■ TERTIARY TREATMENT | ■ SUPPORT SYSTEMS |
| ■ DISINFECTION | ■ FUTURE |

Notes +

| | Posted | Actions |
|---|----------|---|
| (D. Gregory) New Phase-V drawings and text are now uploaded and linked. Please QC and advise any issues. Thank you! - Dennis 916-773-8100 | 03-20-14 | ✍ ✖ |

Other Files

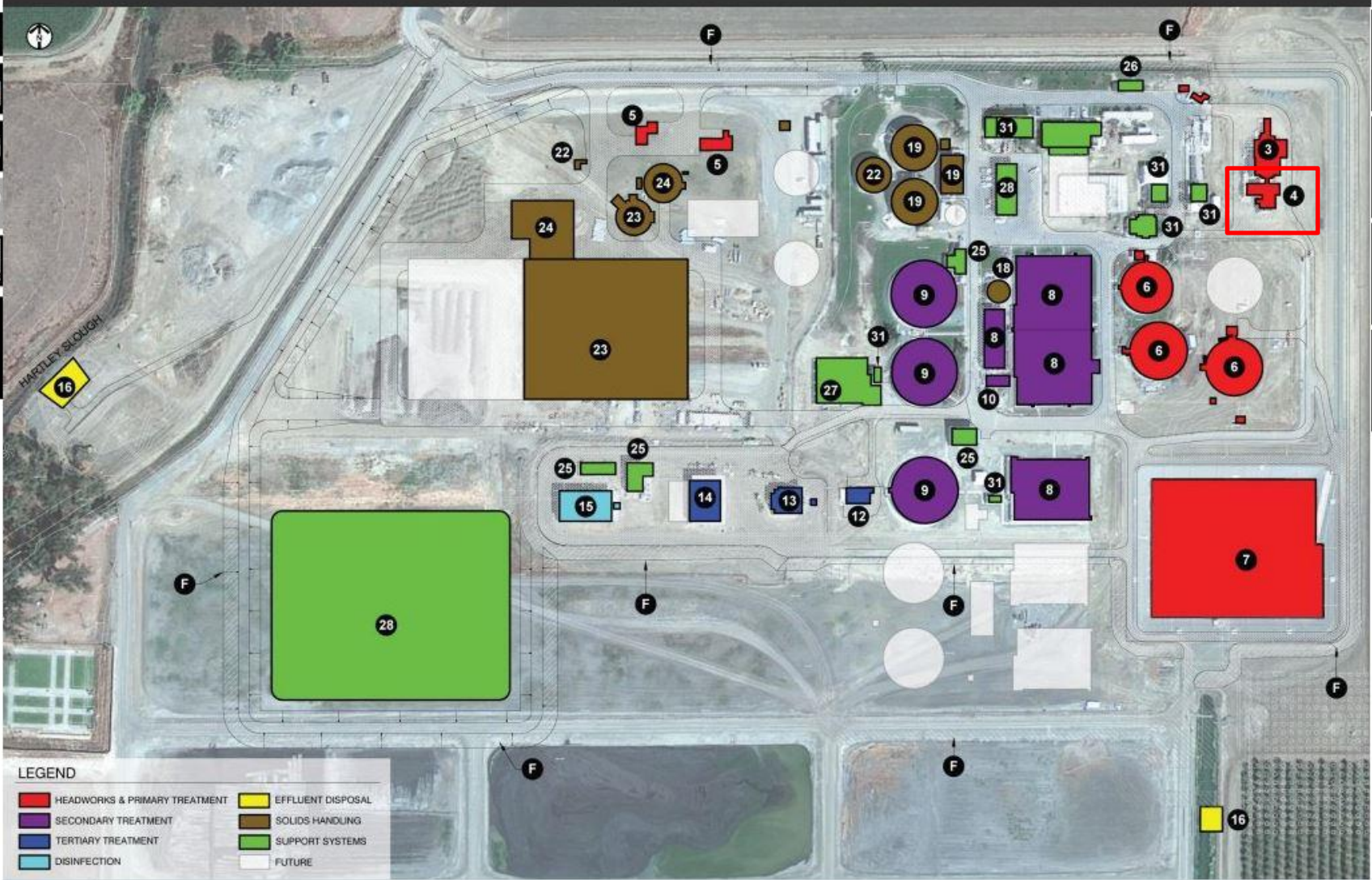
NOTES

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LEGEND

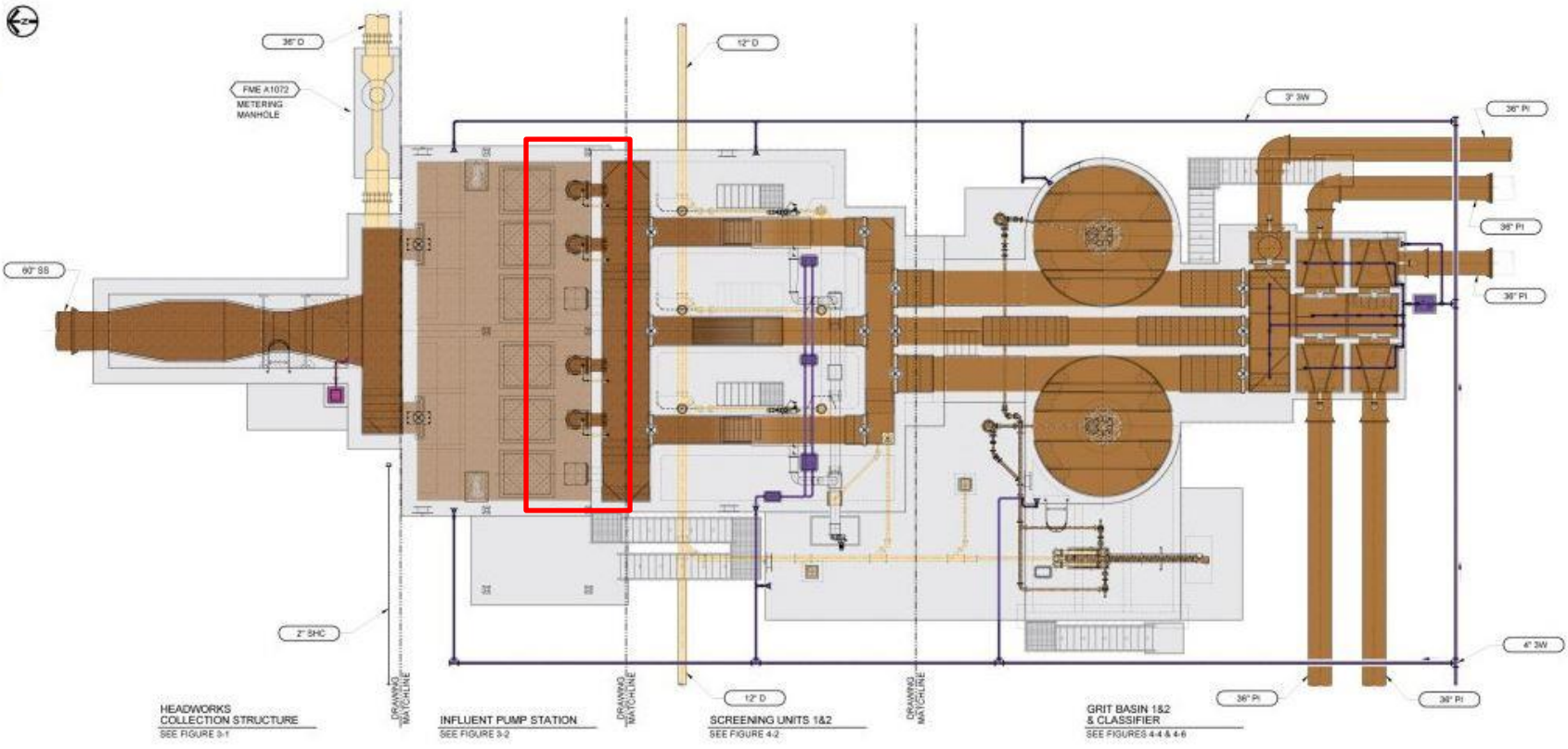
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|------------|-------------------------------|--------|-------------------|
| Red | HEADWORKS & PRIMARY TREATMENT | Yellow | EFFLUENT DISPOSAL |
| Purple | SECONDARY TREATMENT | Brown | SOLIDS HANDLING |
| Blue | TERTIARY TREATMENT | Green | SUPPORT SYSTEMS |
| Light Blue | DISINFECTION | White | FUTURE |

Notes + Posted Actions

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03-20-14 ✗

Navigation icons: Home, PDF, Print, Camera, Zoom, Notes, Other Files



Legend & Abbreviations
 Note: Not all symbols & abbreviations in this legend are used in this drawing

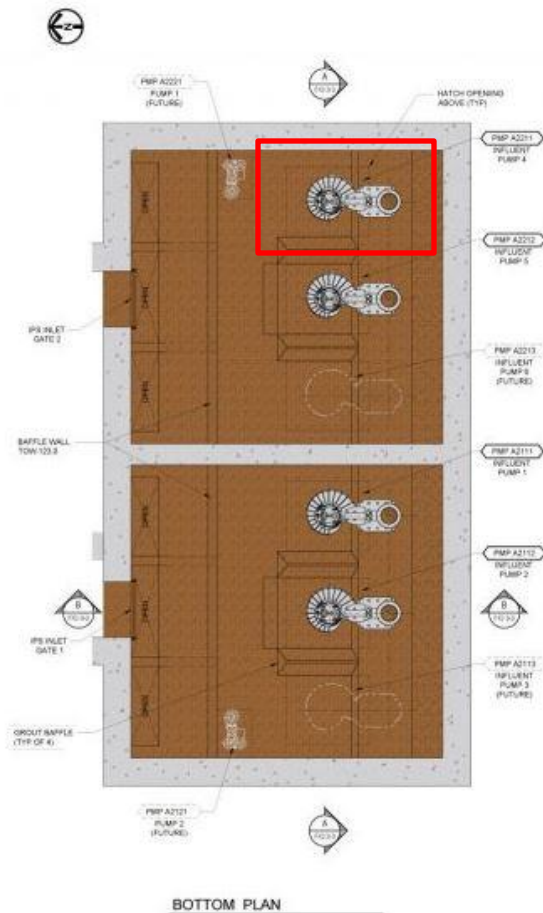
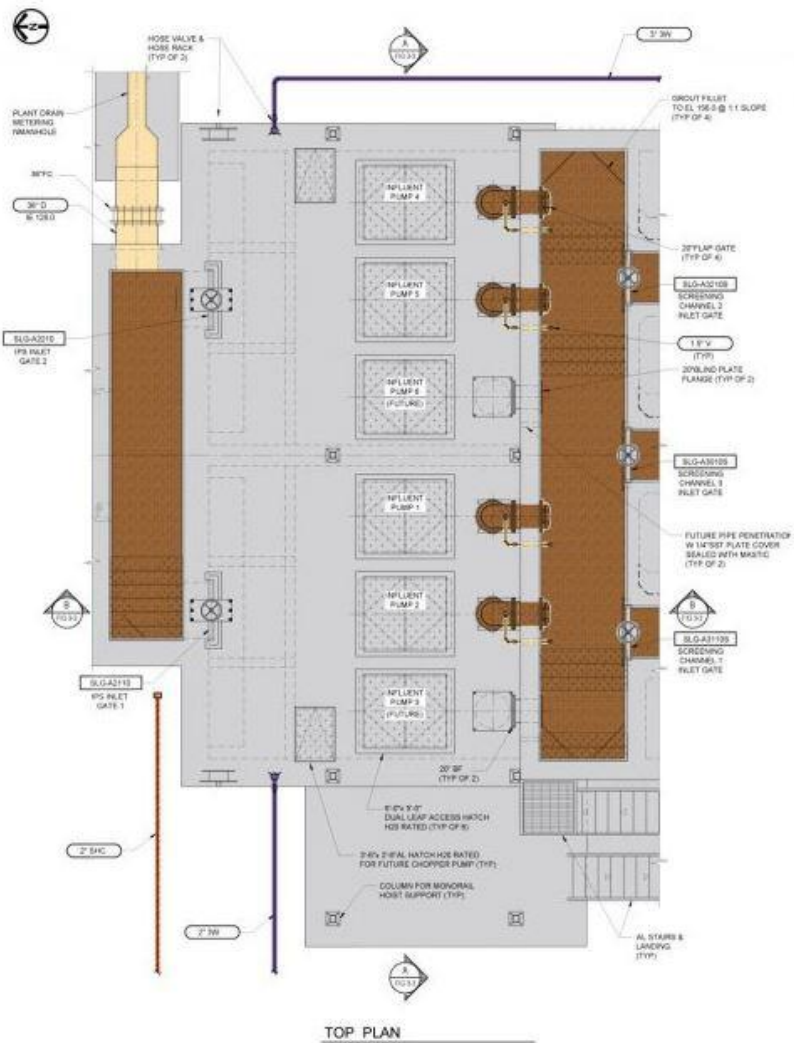
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|--------------------------|-------------------------------|---------------------------------|----------------------------|-----------------------|--------------------------|
| Sanitary Air (SA) | Oil (O) | Flow Sludge (FS) | Dupermat (DL) | Sodium Hypochlorite | Blower (BLR) |
| Centrifuge (CHT) | High Pressure Air (HPA) | Fluctuation (FL) | Thermal WAG (TWA) | Sodium Hydroxide | Mixer (MR) |
| Chemical | Mixed Liquid (ML) | Industrial Sludge (IAS) | Up (U) and (D) | Plug Valve (PV) | Slide Gate (SLD) |
| Digestion Sludge (DS) | Neutral Gas (NG) | Sanitary (SM) | Water Aqueous Sludge (WAS) | Butterfly Valve (BFV) | Flap Gate |
| Development Sludge (DWS) | Overflow (OF) | Sanitary Sewer (SS) | Water, Non-Probable (WNP) | Check Valve (CV) | Stop Plate (STP) |
| Dryness Gas (DG) | Primary Digested Sludge (PDS) | Secondary Digested Sludge (SDS) | Water, Recycled (WR) | Diaphragm Valve (DV) | Monitoring |
| Drain, Vent (D, PD, V) | Primary Effluent (PE) | Secondary Effluent (SE) | Water, Original (WO) | Ball Valve (BV) | Automation Equipment |
| Filter Effluent (FE) | Primary Influent (PI) | Secondary Influent (SI) | EPS | Manual Valve | Microbial Operator (MOO) |
| Filter Influent (FI) | Primary Sludge (PS) | Secondary Sludge (SS) | NEP | Flow Meter (FM) | Structure |
| Four Air (FA) | Primary Sludge (PS) | Sludge Drain (SD) | SBS | Pump (PMP) | Chemical Injection |

Figure 4-1 Headworks Overall Plan

Notes + Posted Actions

Vertical navigation tabs: Schematic, Layout, Process, Operation, Control, Maintenance, Stop/Start, TS

- Other Files
- NOTES
- Icons for various file types and actions



Legend & Abbreviations
 Note: Not all symbols & abbreviations in this legend are used in this drawing

- Aeration Air (AA)
- Cercrete (CNT)
- Chemical
- Digested Sludge (DS)
- Dewatered Sludge (DWS)
- Digester Gas (DG)
- Drain, Vern (D, PD, VI)
- Filter Effluent (FEF)
- Filter Influent (FI)
- Four Air (FA)
- Grout (GR)
- High Pressure Air (HRA)
- Mixed Liquor (ML)
- Natural Gas (NG)
- Overflow (OF)
- Primary Digested Sludge (PDS)
- Primary Effluent (PE)
- Primary Influent (PI)
- Primary Sludge (PS)
- Primary Scum (PSM)
- Raw Sludge (RS)
- Recirculation (RES)
- Return Activated Sludge (RAS)
- Sample (SMP)
- Sanitary Sewer (SS)
- Secondary Digested Sludge (SDS)
- Secondary Effluent (SE)
- Secondary Influent (SI)
- Secondary Sludge (SSC or BSM)
- Storm Drain (SD)
- Supernatant (SL)
- Thickened WAS (TWAS)
- UV Effluent (UVE)
- Waste Activated Sludge (WAS)
- Water, Non-Potable (ZM)
- Water, Recycled (ZRW)
- Water, Irrigation (ZRI)
- EPS Emulsion Polymer Solution
- NEP Neat Polymer
- SBS Sodium Bisulfite
- SHC Sodium Hypochlorite
- SHX Sodium Hydroxide
- Plug Valve (PV)
- Butterfly Valve (BFV)
- Check Valve (CV)
- Diaphragm Valve (DV)
- Ball Valve (BV)
- Manual Valve
- Flow Meter (FM)
- Pump (PMP)
- Blower (BLR)
- Mixer (MXR)
- Slide Gate (SLG)
- Flap Gate
- Stop Plate (STP)
- Monitoring
- Aeration Equipment
- Motorized Operator (MOV)
- Structure
- Chemical Injection

Figure 3-2 Influent Pump Station Layout

Notes



Posted Actions

- Schematic
- Layout
- Process
- Operation
- Control
- Maintenance
- Stop/Start
- TS

OPERATION AND DESCRIPTION

HEADWORKS COLLECTION STRUCTURE

The headworks collection structure combines the primary flow from the City's sewer collection system with various drains and recycled flows from the wastewater treatment plant.

Influent wastewater flow from the collection system is measured by a 60-inch Parshall flume and level sensor (FE:A1071), while the combined flows from other sources are measured by a 12-inch Parshall flume and level sensor (FE:A1072).

A refrigerated auto-sampler (SMP-A1011) takes flow proportional plant influent samples for process control use, and influent monitoring purposes.

INFLUENT PUMP STATION

The influent pump station consists of two wetwells, each of which can be isolated for maintenance purposes by manually operated slide gates. An opening in the common wall dividing the two wetwells functions as an emergency overflow in the event of a pump failure or high influent flows.

Wetwell Cleaning Cycles – Each wetwell contains two submersible pumps with provision for a future third pump and future chopper pump in each wetwell. One of the pumps is situated in a lower section in the well and is used during the wetwell cleaning cycle. This configuration allows for pumping down the well to a lower level, which helps to remove any accumulated solids and floating scum.

The operator should initially inspect the wetwells frequently to determine how often the wetwells should be cleaned using a manually initiated cleaning cycle. By determining the rate of accumulation of floating and settled material, the wetwell cleaning cycle can be scheduled on a regular basis. Once the cleaning frequency is determined, wetwells can be inspected during a cleaning cycle.

Other Files

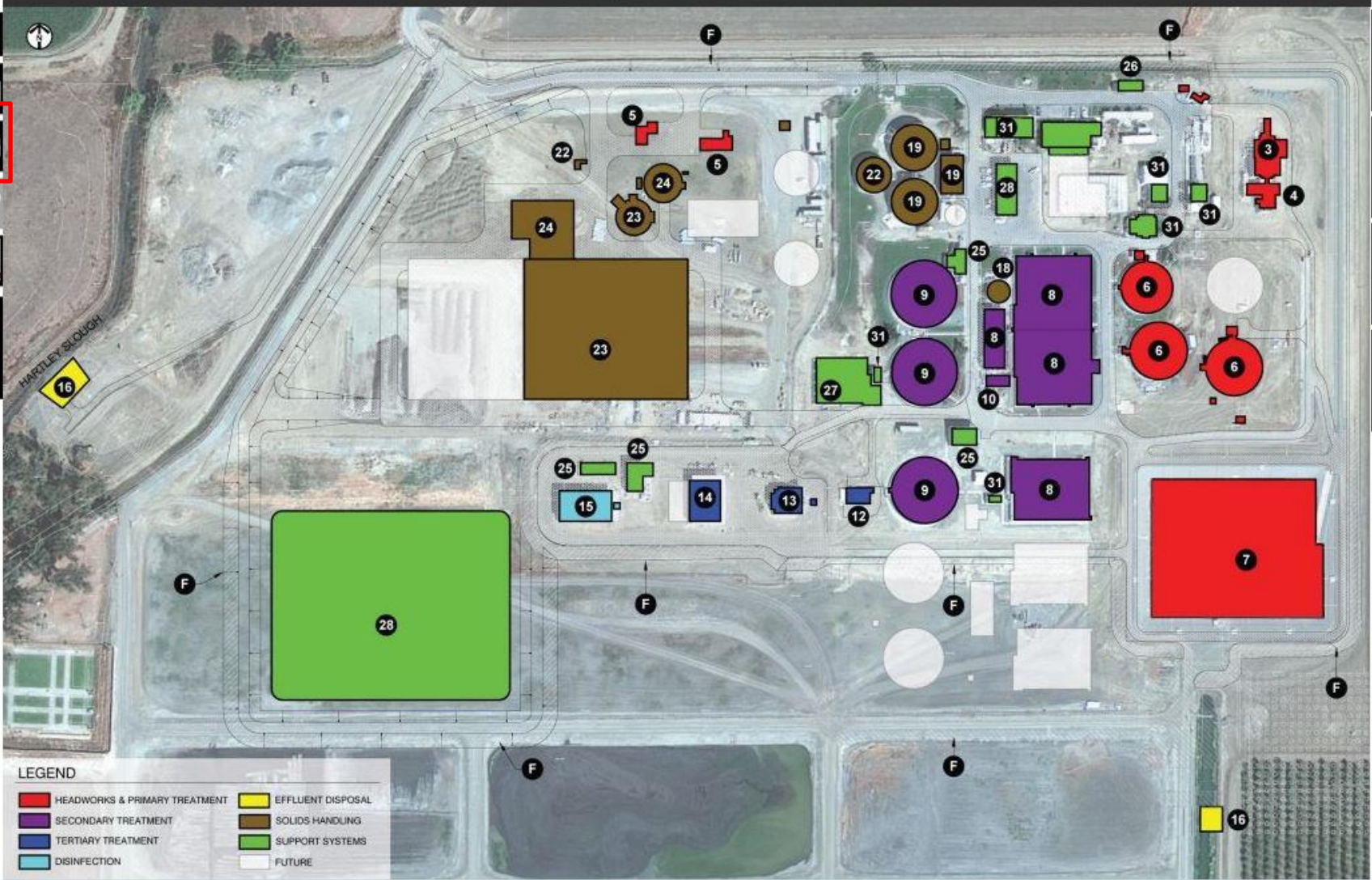
- Home
- Back
- Forward
- Print
- Notes

Schematic

Layout

Overview







Process



LEGEND

| | |
|--|---|
| ■ HEADWORKS & PRIMARY TREATMENT | ■ EFFLUENT DISPOSAL |
| ■ SECONDARY TREATMENT | ■ SOLIDS HANDLING |
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| Notes | Posted | Actions |
|---|----------|---------|
| (D. Gregory) New Phase-V drawings and text are now uploaded and linked. Please QC and advise any issues. Thank you! - Dennis 916-773-8100 | 03-20-14 | |

| Title | Filename | Notes | Uploaded On | Uploaded By | |
|---|----------------------------------|-------|-------------|----------------|---|
| Ariel View  | site_layout2.jpg | 0 | 05/12/2011 | Dennis Gregory |  |
| MercedSign1  | MercedSign1.jpg | 0 | 01/31/2012 | Dennis Gregory |  |
| MercedSign2  | MercedSign2.jpg | 0 | 01/31/2012 | Dennis Gregory |  |

 Add a new item * File uploads must be one of the following filetypes: .jpg/.png/.pdf/.word/.excel

NOTES

Other Files

Schematic

Layout

Overview

Process

Add Tab

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| Notes | Posted | Actions |
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Other Files

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- Refresh Icon
- Notes Icon



- Schematic
- Layout
- Overview
- Process
- Add Tab
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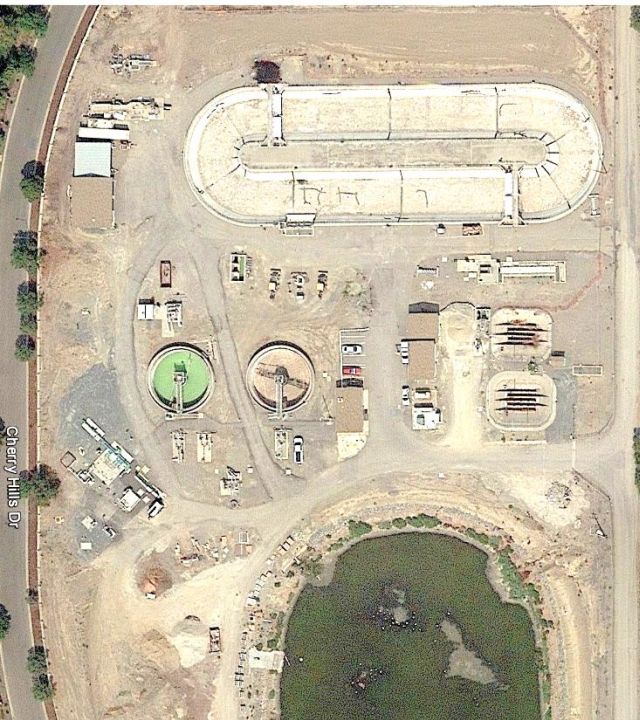
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| Ariel View | site_layout2.jpg | 0 | 05/12/2011 | Dennis Gregory |

Option 3 - Streamlined O&M Manual

Less detail, basic description with coupled drawings and manufacturers data.

Four (4) basic sections in each chapter:

- Purpose
- Design Criteria
- Appurtenance Descriptions
- PCN



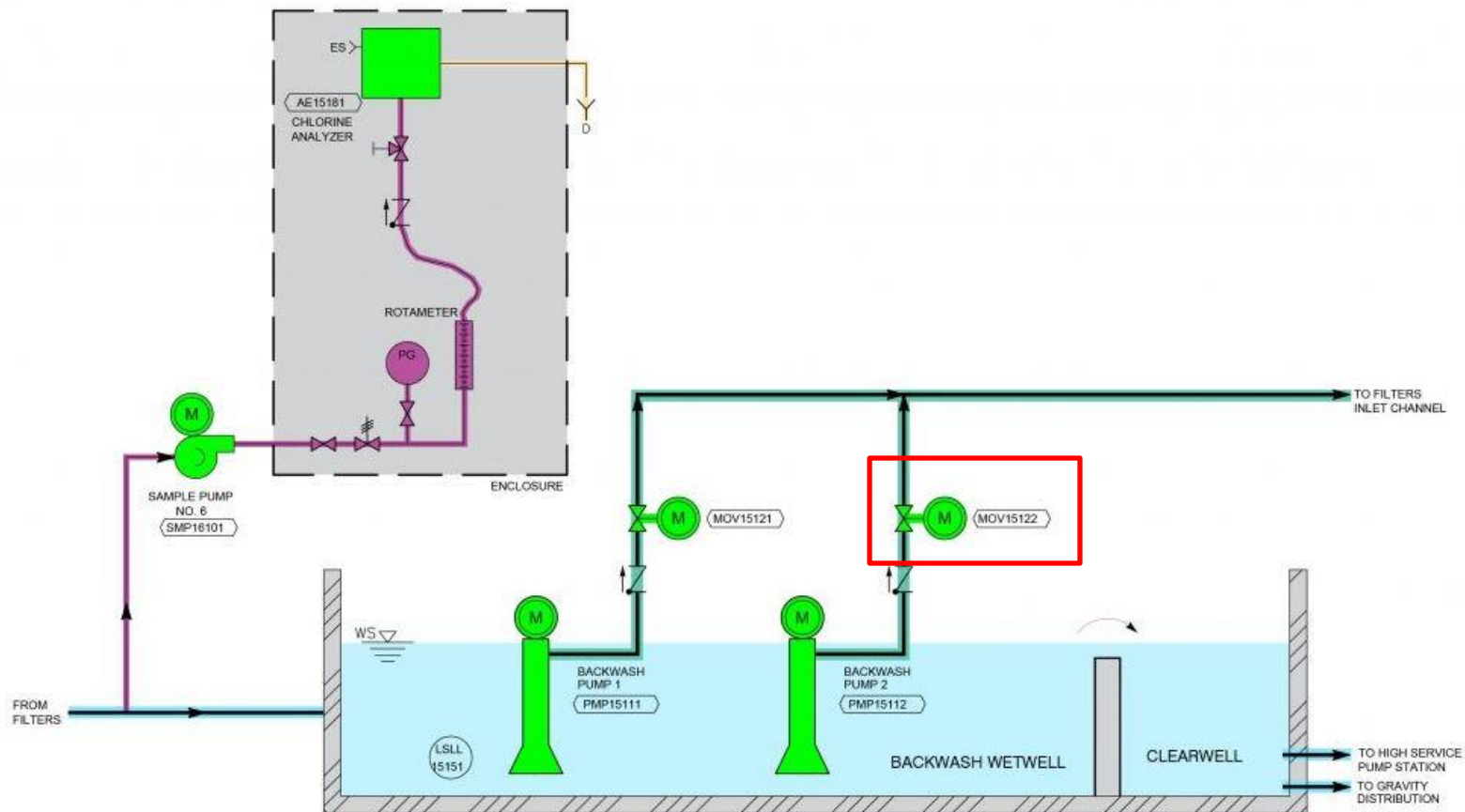
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- Other Files

- Raw Water Pumping
- Jet Mixing
- Preliminary Treatment
- Blowers
- Filtration
- Backwash Pumping**
- High Service Pumping
- Chemical Feed
- Solids Collection and Pumping
- Washwater Return Pumping
- Solids Storage and Dewatering
- Chlorine Gas Scrubbing and Alarm
- Emergency Back-up Power



- Layout
- Schematic
- Process
- Operation
- Control
- Maintenance
- Stop/Start
- TS

-
-
-
-
-
-



LEGEND

- BACKWASH WATER (BW)
- DRAIN, VENT (D.V)
- FILTERED EFFLUENT (FE)
- SAMPLE (SMP)
- EQUIPMENT
- STRUCTURE

Backwash Pump Station Schematic

- Process
- Schematic
- Plan
- Section
- Detail
- Detail
- Top/Start
- TS

| | | | | |
|-------|--|--|--------|---------|
| Notes | | | Posted | Actions |
|-------|--|--|--------|---------|



Electric Actuators and Control Systems



Project Name: Miners Ranch WTP

Contract Number:

Contract Section: Specification Section 15135

Date: 10/5/16

Rotork Customer: FRANK A OLSEN CO.

Purchase Order No.: 12517

Rotork Job No.: C19496

Consulting Engineer: Stantec

Contractor: Overaa Construction



Submittal
Data

Revision: 2 Date: 10/05/2016

- ←
- PDF
- Images
- Video
- NOTES
- Other Files

- O&M
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Option 3 - IOM Local Hosting

Remote Hosting

- Normally hosted on Stantec Servers at no Cost.
- Reduces cost because local to program developers
- Information can still be added remotely by operation staff
- Initial data provided to Stantec to place on their servers.

Local Hosting

- System is hosted on Town servers including remote internet access.
- Similar to hosting a web page yourself vs. a provider.





Option 4 – SCADA System Programming Links

SCADA Links

- IOM is currently a separate web based application
- SCADA system is Ignition, which is web based with remote access
- Ignition can be programmed with links that could jump to IOM directly form SCADA screen vs Opening up a new application through internet browser
- Stantec has not been done before, but is possible.

