





Massachusetts Water Resources Authority

MASSACHUSETTS WATER RESOURCES AUTHORITY

Board of Directors Report

on

Key Indicators of MWRA Performance

for

Fourth Quarter FY2015

Q1	Q2	Q3	Q4

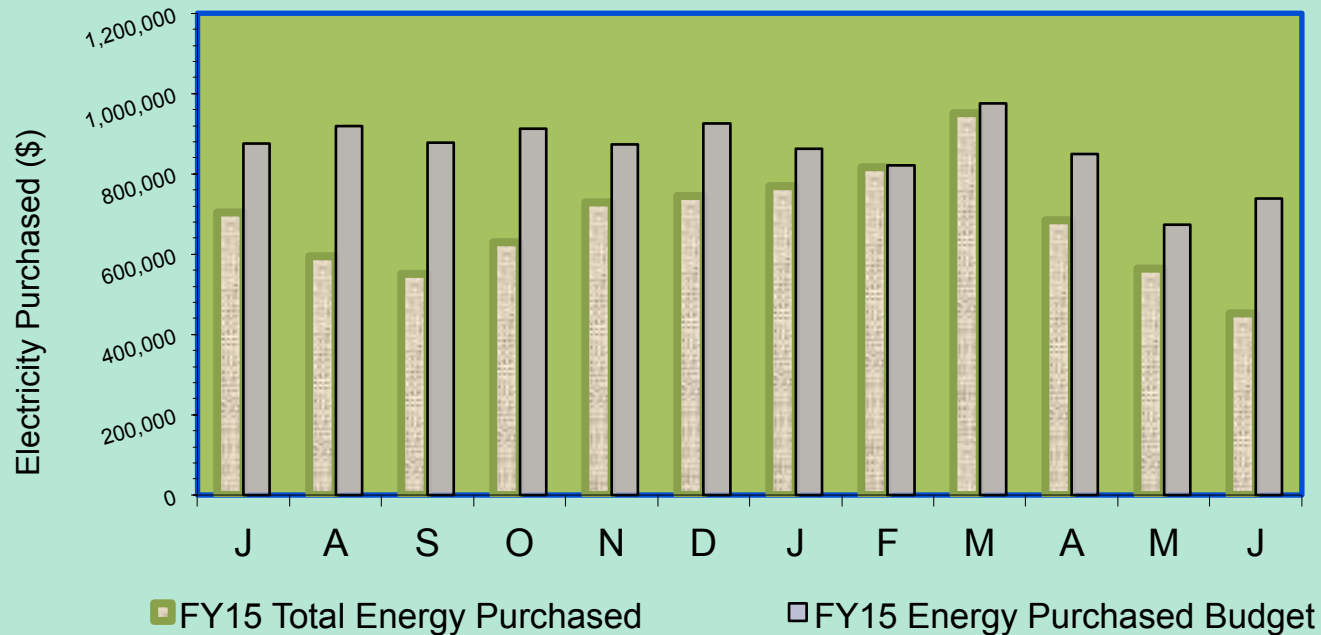


Frederick A. Laskey, Executive Director
Michael J. Hornbrook, Chief Operating Officer
September 16, 2015



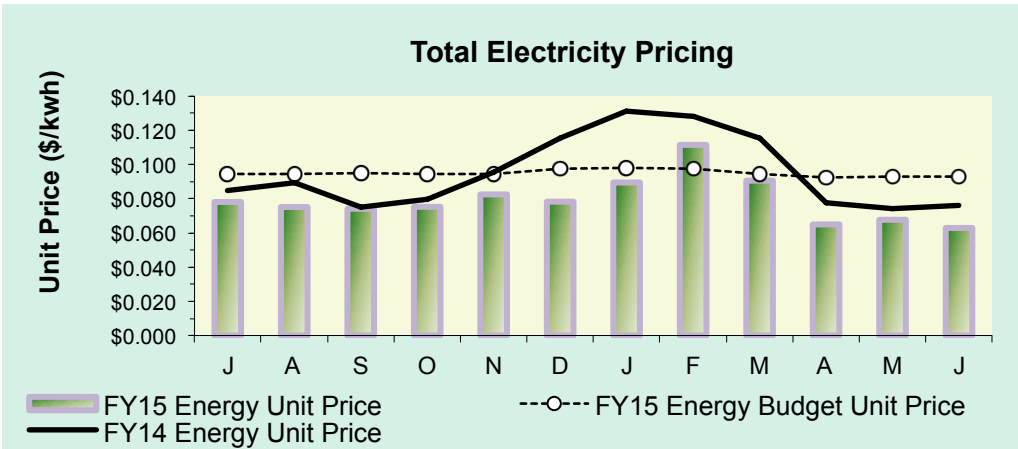
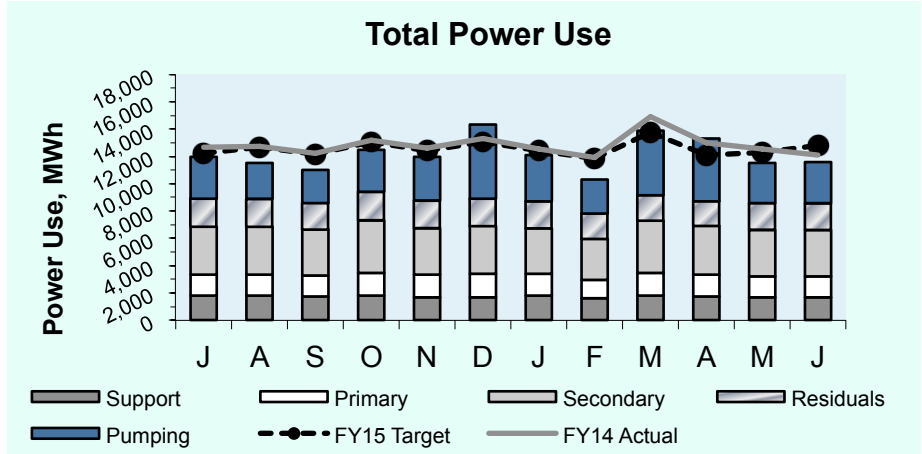
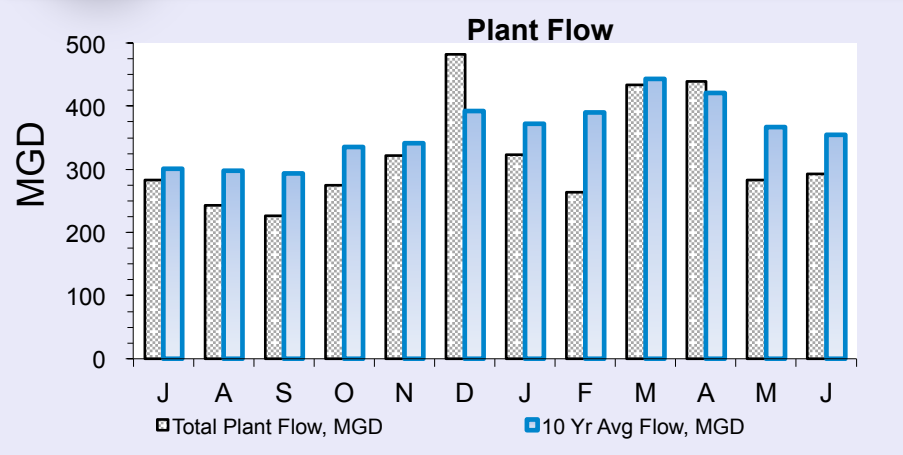
Deer Island Energy Use and Cost 20.5% Under Budget

Total Cost of Electricity





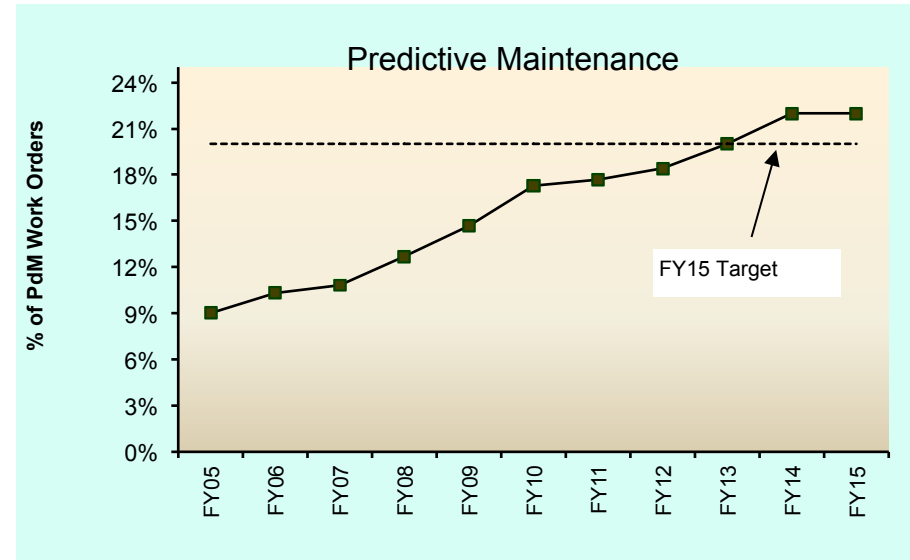
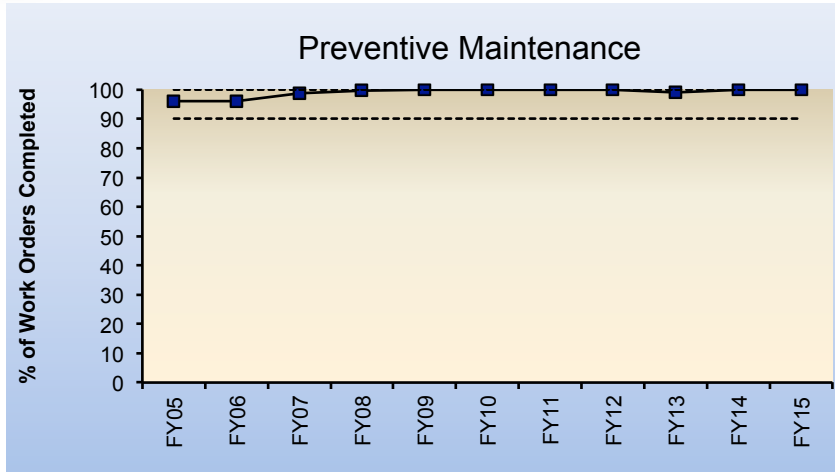
Deer Island Energy Use





Deer Island - Key Maintenance Metrics

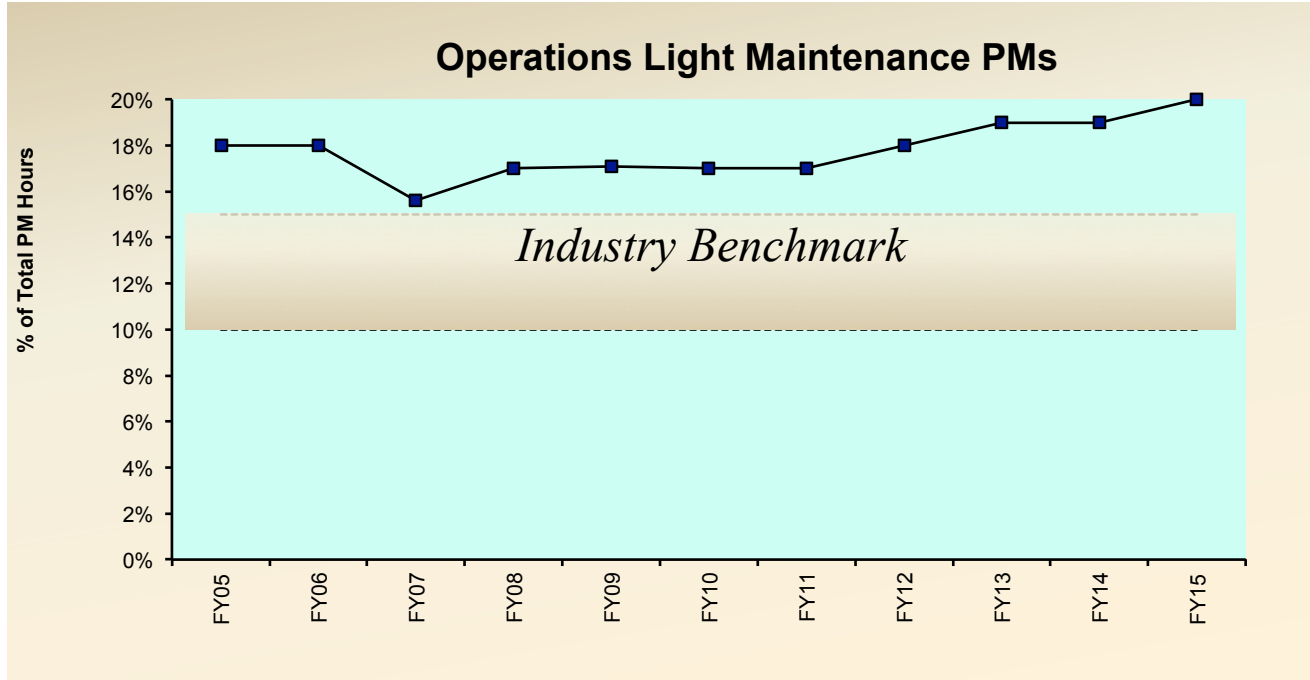
Predicative and Preventive Maintenance





Deer Island - Key Maintenance Metrics

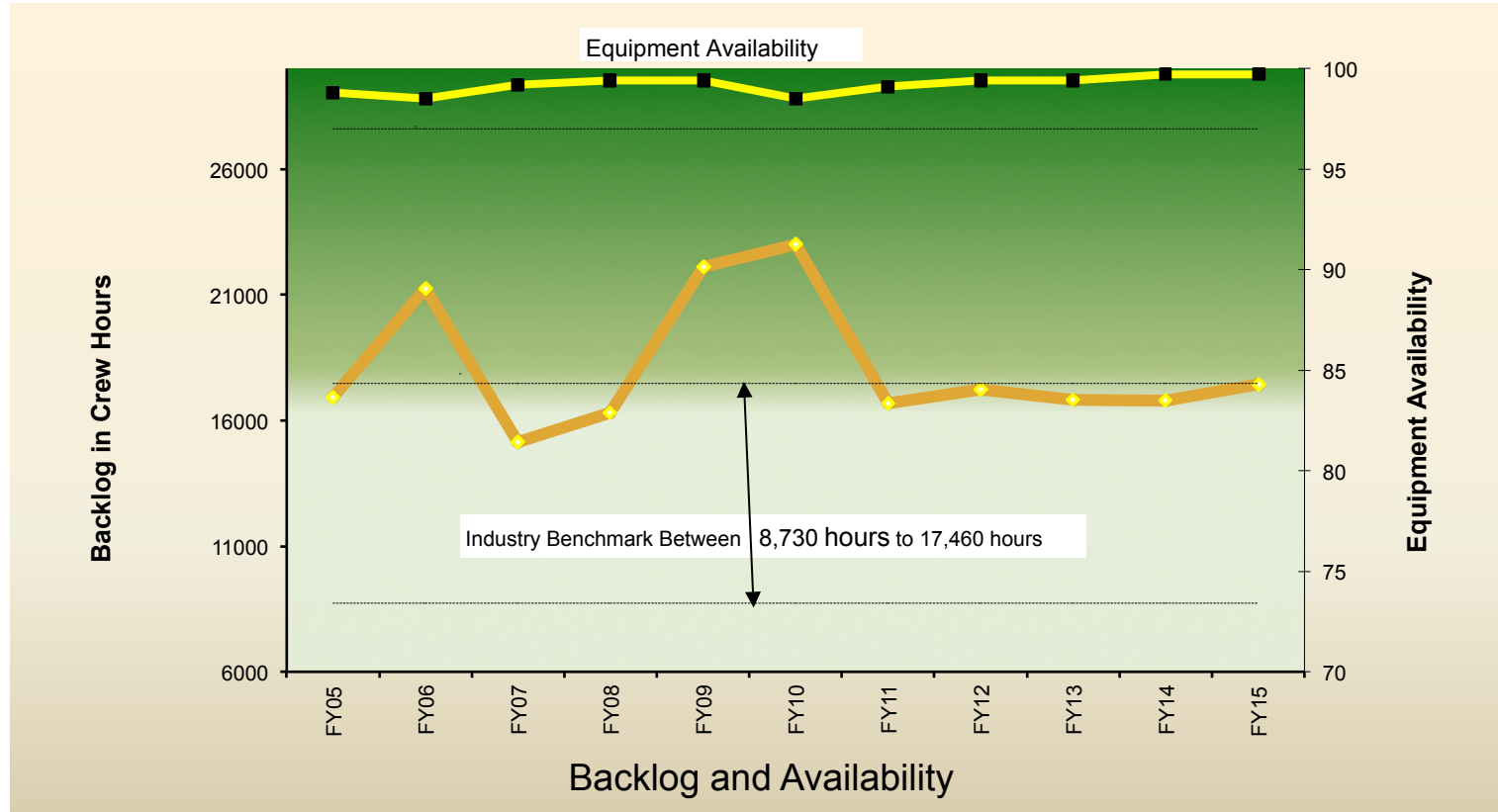
Light Maintenance





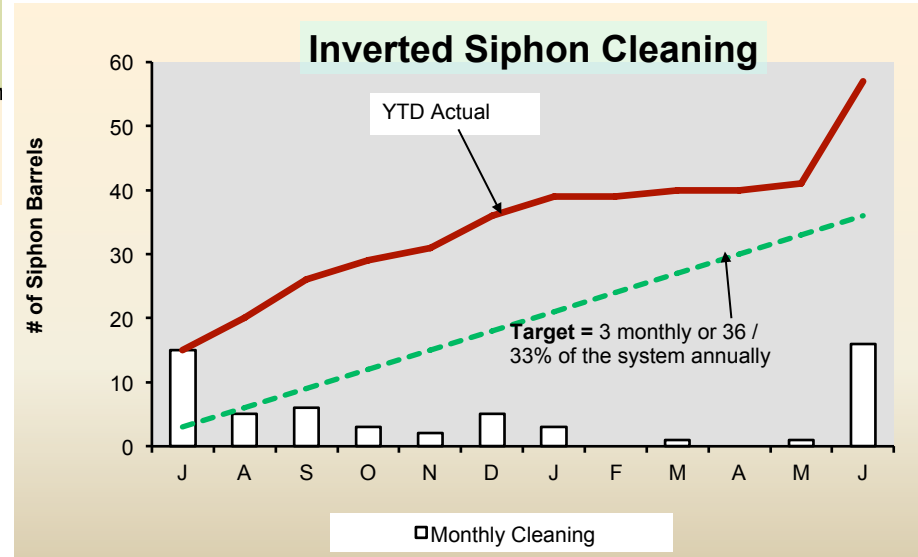
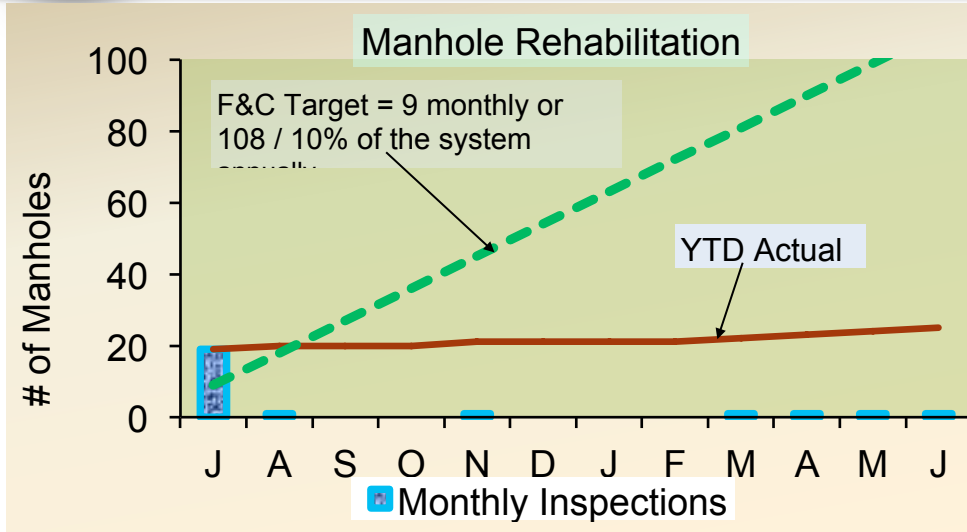
Deer Island - Key Maintenance Metrics

Key Equipment Availability



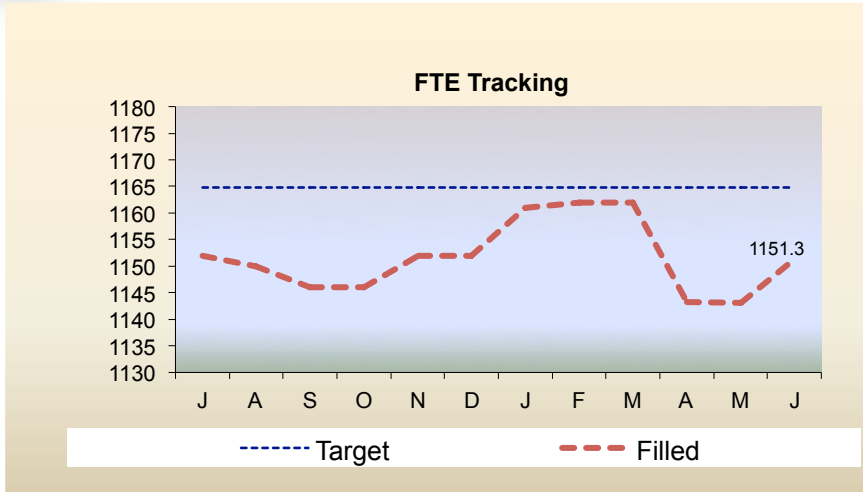


Wastewater Pipeline Inspections and Maintenance



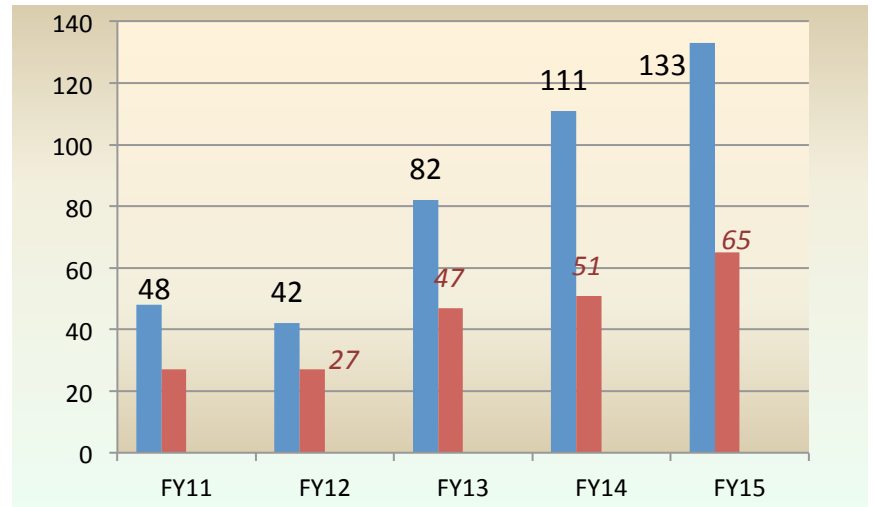
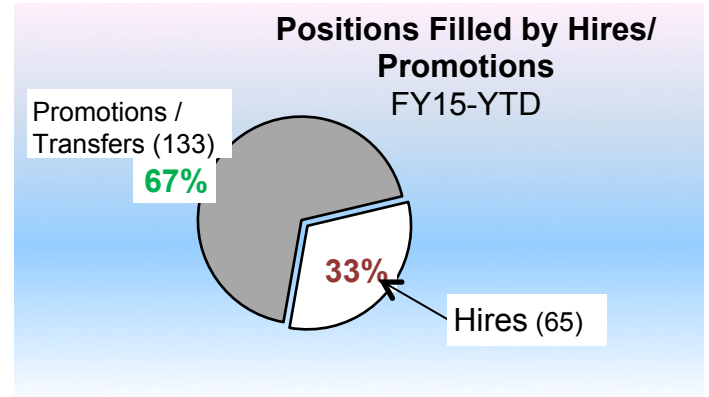


Workforce Management



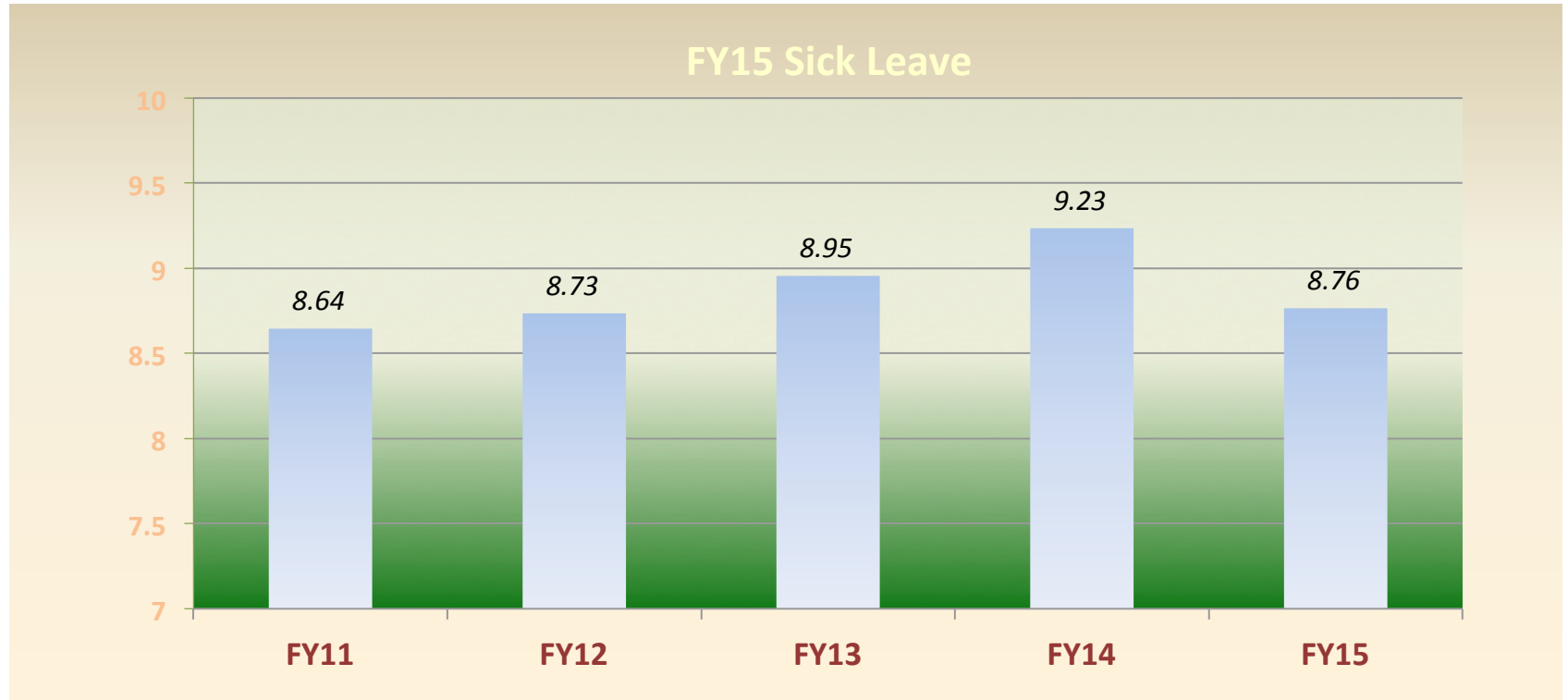
FY15 Target for FTE's = 1164.8

FTE's as of June 2015 = 1151.3





Sick Leave Usage







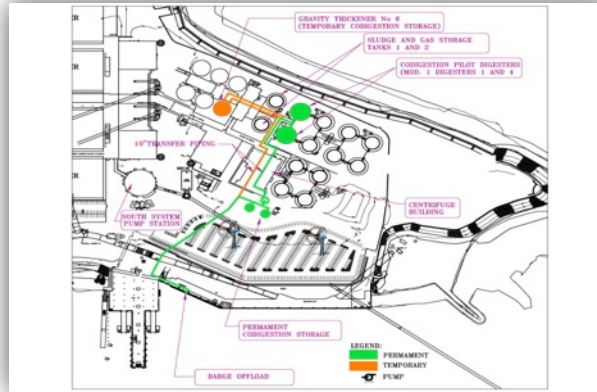
Co-Digestion Update





Co-Digestion Status

- **Supply Contract with Waste Management**
 - Expired June 1, 2015
 - No food waste ever delivered to MWRA
 - Switch to Barging made project financially unsustainable under contract structure





Co-Digestion Status

Staff see value in program:

- Pilot: \$2.1 M in energy value over 3 years
- Permanent: \$2.3 M annually @ 70 dtpd
Tipping fee + \$2.7 M annually

Expected Capital Costs

- Pilot: \$2.3 M receive by barge
- Permanent: \$4.4 M



Where does MWRA go from here?

- **Issue RFI – specify:**
 - Pre-processed then Barge delivery
 - 5-yr non-exclusive contract + 5 yr extension
 - 3 yrs at 7-21 tpd, phased to 70 tpd
 - No tipping fee first 5 years, then set fee
 - MWRA would accept from all qualified vendors
- **If positive responses, issue RFQ**
 - Award Contract (s)
 - Construct Barge Offload Station
 - Continue funding assistance with MaDEP
- **If no responses, abandon program**
- **Market place would provide feedback on proposed program**



MaDEP Organics Ban Update

- **MaDEP Regulation:**

- Promulgated in late 2012 – Goal – to reduce material going to landfills & incinerators, encourages organic to green fuel program

- **MaDEP Organics Metrics – is there adequate source material?**

- State produces 1,000,000 wet tons annually of food waste 630 tpd
- 100,000 wet tons diverted prior to ban – food pantries, compost operations 63 tpd
- 250,000 wet tons GOAL to be diverted through ban 150 tpd
- 650,000 wet tons still going to landfill annually 417 tpd

- MWRA proposed program – up to... 70 tpd

- **MaDEP Organics Ban:** effective October, 2014:

- Target commercial/industrial sources > 1 wet ton/week
- Impacts 1,700 commercial/industrial generators



MaDEP Organics Ban Update

- **“Most targeted sources have found a home for their waste”**
 - **Tipping Audit results:**
 - No obvious violations at landfills
 - **Food Banks & Composters report increased production**
 - Only 2 composters within MWRA district, on fringe of district
- **According to MaDEP, “lots of non-targeted organic material around”**
 - **650 K to 900 K tons per year not subject to ban**
- **Banned generators could be enticed to use MWRA if economics are favorable**



The Competition

- **Any organics disposal alternatives in Massachusetts?**
 - **Food Banks**
 - **Composting operations**
 - **One active digestion project - Jordan Dairy Farm, MA (private digester)**
 - **Greater Lawrence Sanitary District – awarded contract with WM**
 - **2 others pursuing digestion but not fully designed or permitted**
 - **Stop & Shop (Freetown), Food waste digester**
 - **Harvest Power (Bourne), Co-Digestion digester**



Greater Lawrence Sanitary District – Co-Digestion Update

- Issued RFQ/P
- Bidders List
 - Casella Organics – non-bid, bid didn't meet spec
 - Harvest Power – didn't submit tipping fee with bid
 - Waste Management – complete bid, including \$0.004/gal tipping fee,
 - using Charlestown Facility
- GLSD Signed contract with Waste Management
 - 5 yr contract + 2 x 5 yr extensions
 - Non exclusive contract
 - 3.5 tpd – 16.4 tpd Pilot (6 month)
 - Up to 53 tpd for permanent program
 - No tipping fee for pilot, \$0.004/gal tipping fee for permanent program





Tipping Fee: Potential non-rate revenue

- **Municipal Solid Waste Tipping Fee - \$200 – \$250 /dry ton**
 - To remain competitive, all in costs should remain consistent with MSW tipping fee
 - [DITP fee + Barge Costs] + Vendor Fee
 - DITP + Barge costs should be 25% or less of MSW fee to remain competitive
- **DITP Fee:**
 - Original proposal: \$0.062/gal (\$2.7 M annually) - \$106 / dt (42-53%)
 - Revised: \$0.025/gal (\$1.0 M income annually) - \$51.4 / dt (22-27%)
- **Barging Costs (DITP Specific costs) - \$2.5 M (1 time + on-going)**
 - 10 yr amortization - \$13 / dt [5-6% MSW fee]









Southfield Concept Plan







Spot Pond Water Storage Facility Design/Build Project



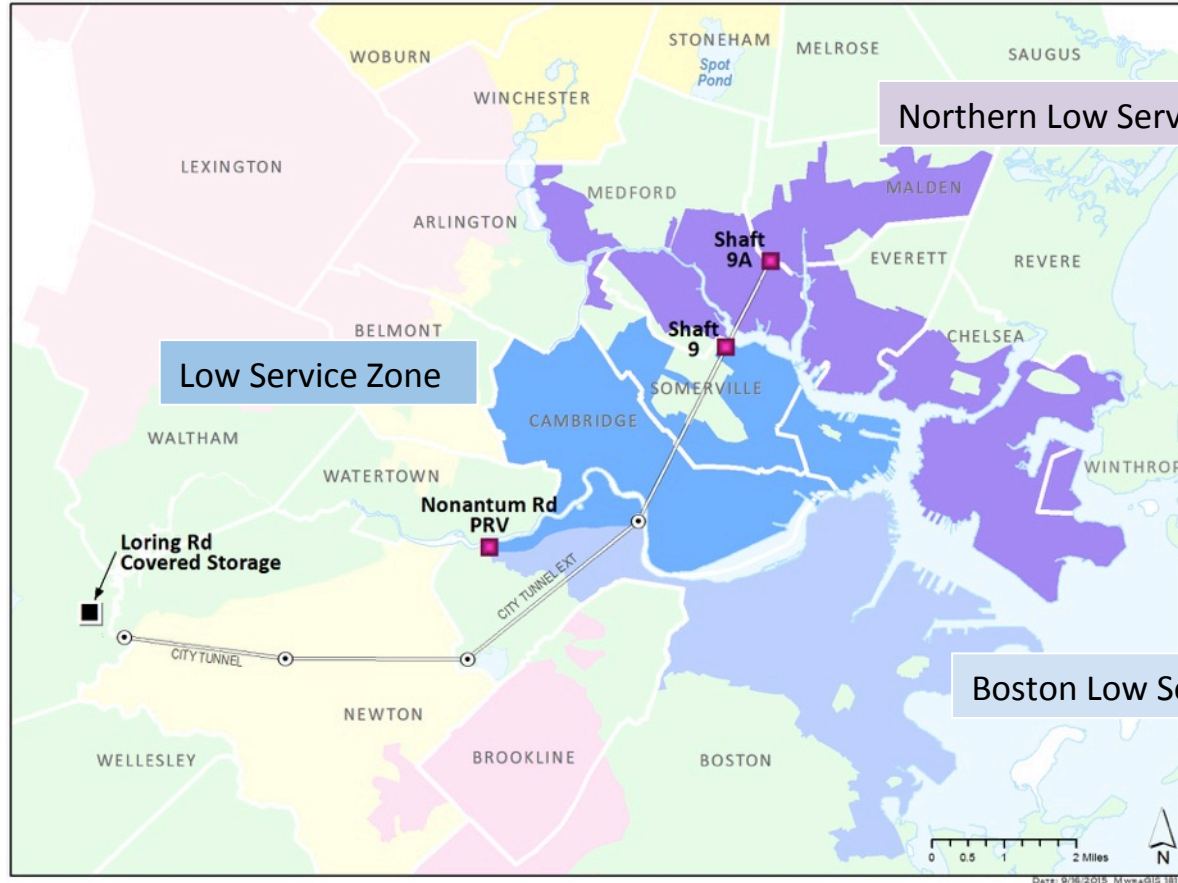
Spot Pond Water Storage Facility

Current Status

- MWRA Reconfigured Northern Low Service Area
- Tank 1 & All Piping Disinfected and Brought Into Service
 - 10 million gallons storage in service
- Commenced Pump Testing
 - Redundancy 1st Time for Gillis P.S.
- Outlet Pipe for Tank 2 Repair Needed

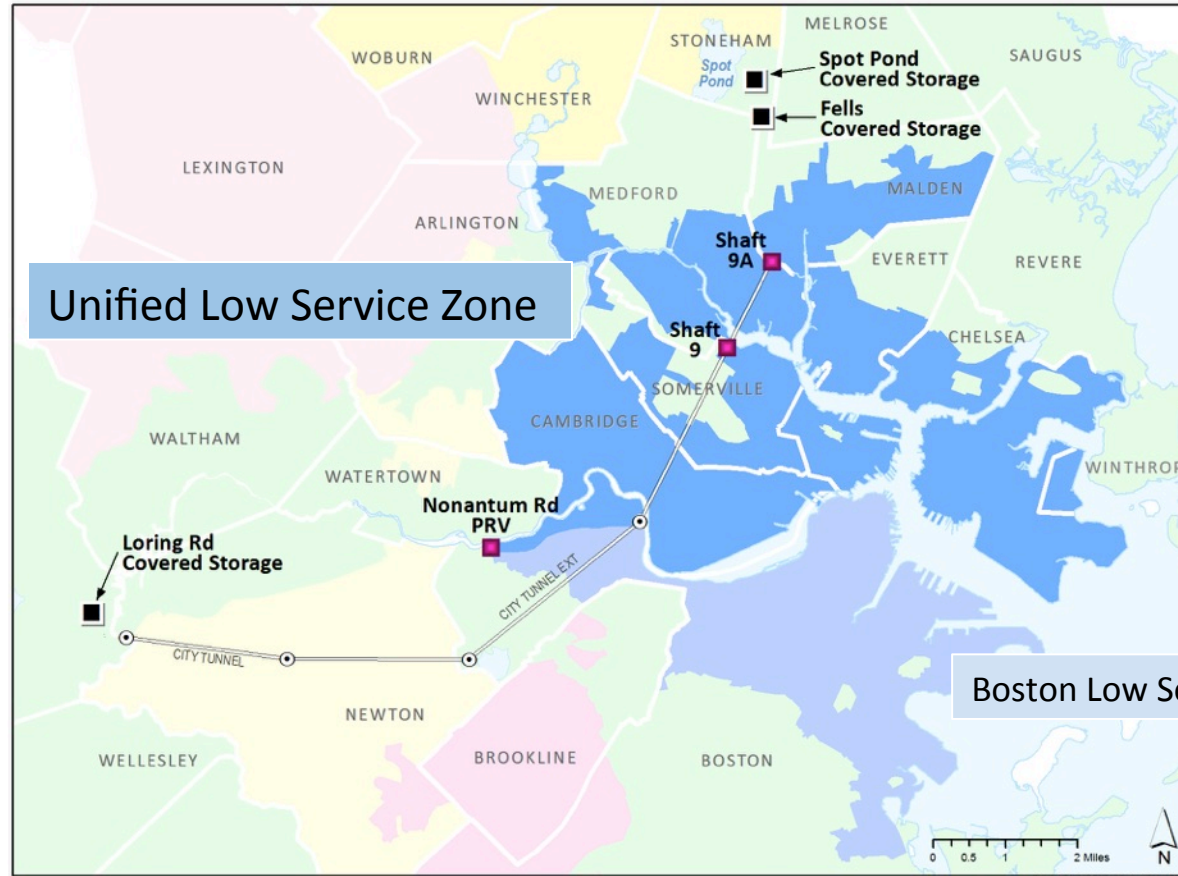


Spot Pond Water Storage Facility Unified Northern Low Service Area





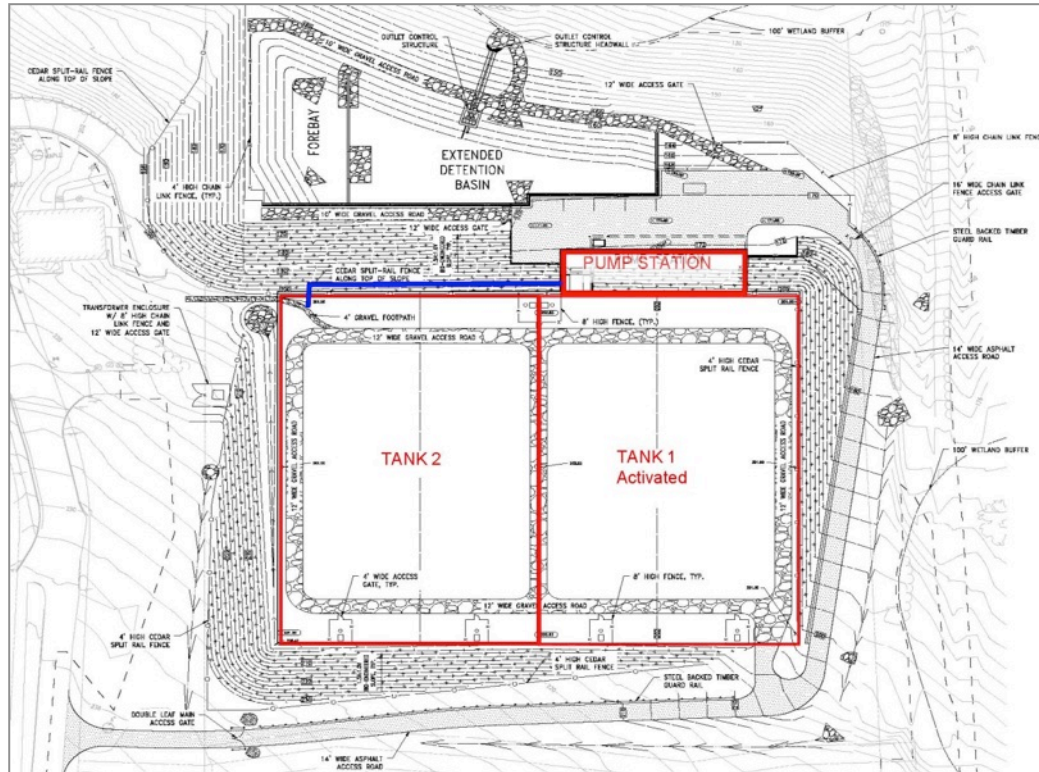
Spot Pond Water Storage Facility Unified Northern Low Service Area



Boston Low Service Zone

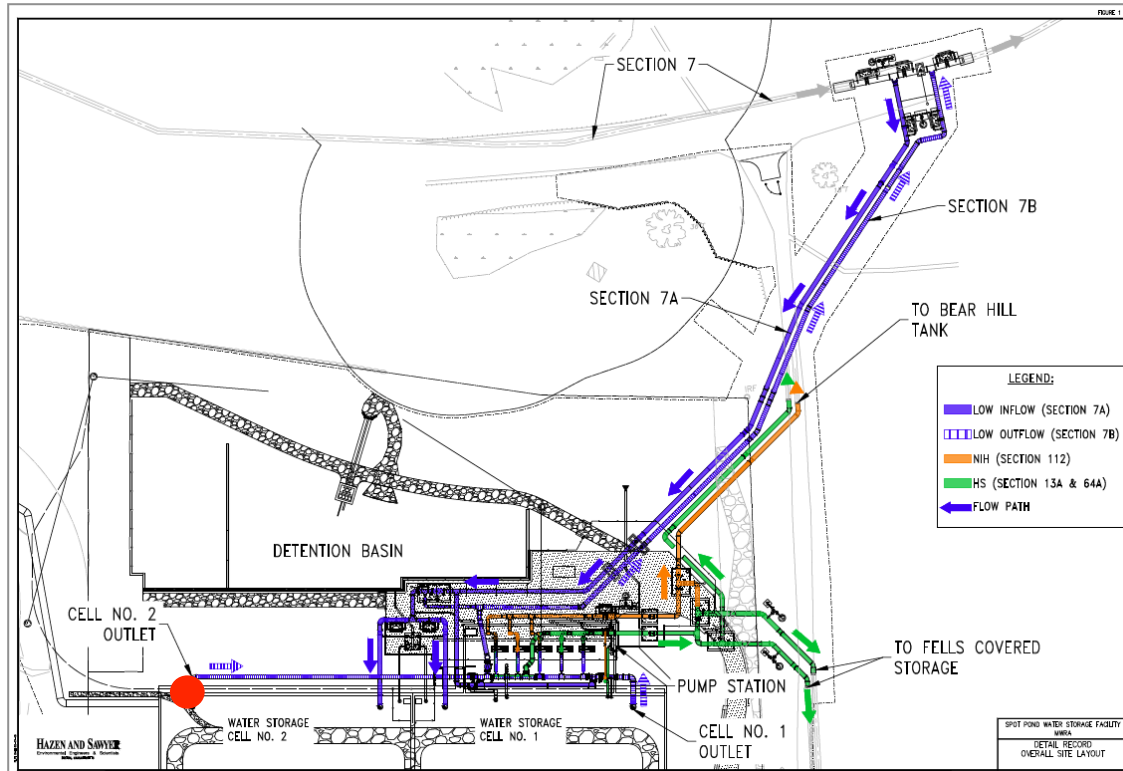


Spot Pond Water Storage Facility Site Plan





Spot Pond Water Storage Facility Yard Piping





Spot Pond Water Storage Facility MA DEP Tank Activation Prerequisites



Sanitary Protections

- Disinfected per AWWA
- Barrier between Tanks during Construction
- Dust Filters on Vents
- Flap Gates/Insect Screens & Bar Racks at Overflow

Security Measures

- Access Hatches with Internal Security Plates
- Intrusion Alarms
- Security Fencing



Spot Pond Water Storage Facility Tank 1 Security





Spot Pond Water Storage Facility Tank 1 Disinfection & Activation





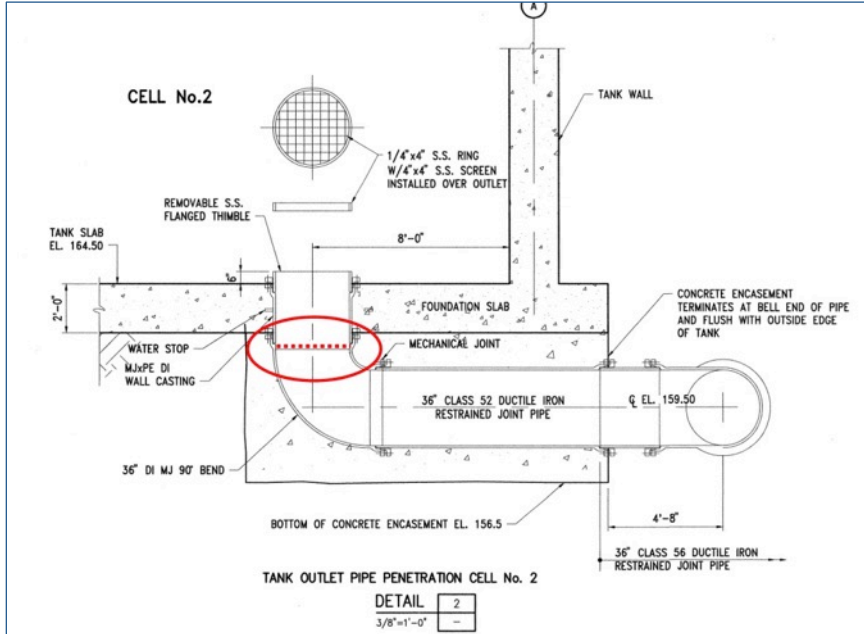
Spot Pond Water Storage Facility Pump Station & Detention Pond





Spot Pond Water Storage Facility

Tank 2 Outlet Pipe Repair





Spot Pond Water Storage Facility Tank 2 Outlet Pipe Repair



Carbon Fiber Reinforced Polymer (CFRP) Repair

Carbon fibers and high strength epoxy resins will restore the pressure boundary of pipe. Four layers of DowAksa CarbonWrap installed





Spot Pond Water Storage Facility Pump Testing



Northern High Pumps (HS.P-1 & P-2):

- 350 hp Motors with VFDs
- 13 MGD

Northern Intermediate High Pumps (NIH.P-4 & P-5):

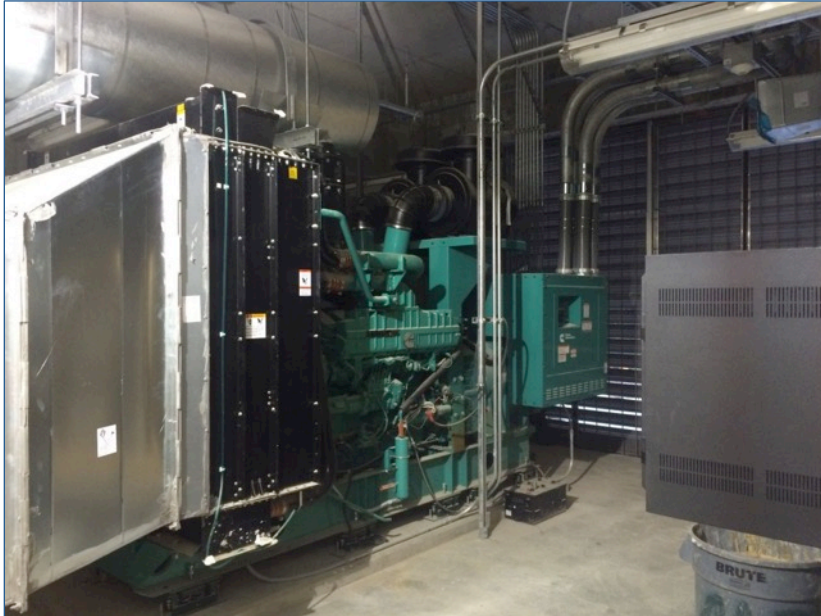
- 450 hp Motors with VFDs
- 8 MGD

Swing Pump (HS.P-3):

- 600 hp Motors with VFD
- 15 MGD



Spot Pond Water Storage Facility Standby Generator and HVAC System





Spot Pond Water Storage Facility

Remaining Site Activities



Landscape Seeding

Bioslope Plantings

Site Drainage

Detention Pond

Remove Erosion Controls

Fencing and Guardrails

Final Paving



Spot Pond Water Storage Facility Stockpile Removal



Up to **80,000 cubic yards** to be exported from the site

Starting September 28th

125 Trucks/Day

3,000 CY/day

4-5 Week Duration



Spot Pond Water Storage Facility Current Summary

- 10 mgd Storage Available for North Low Communities
- Testing Pumps – Redundancy for Gillis P.S.
- Tank 2 Outlet Repair
- Contractor behind Schedule - Working Toward Substantial Completion

