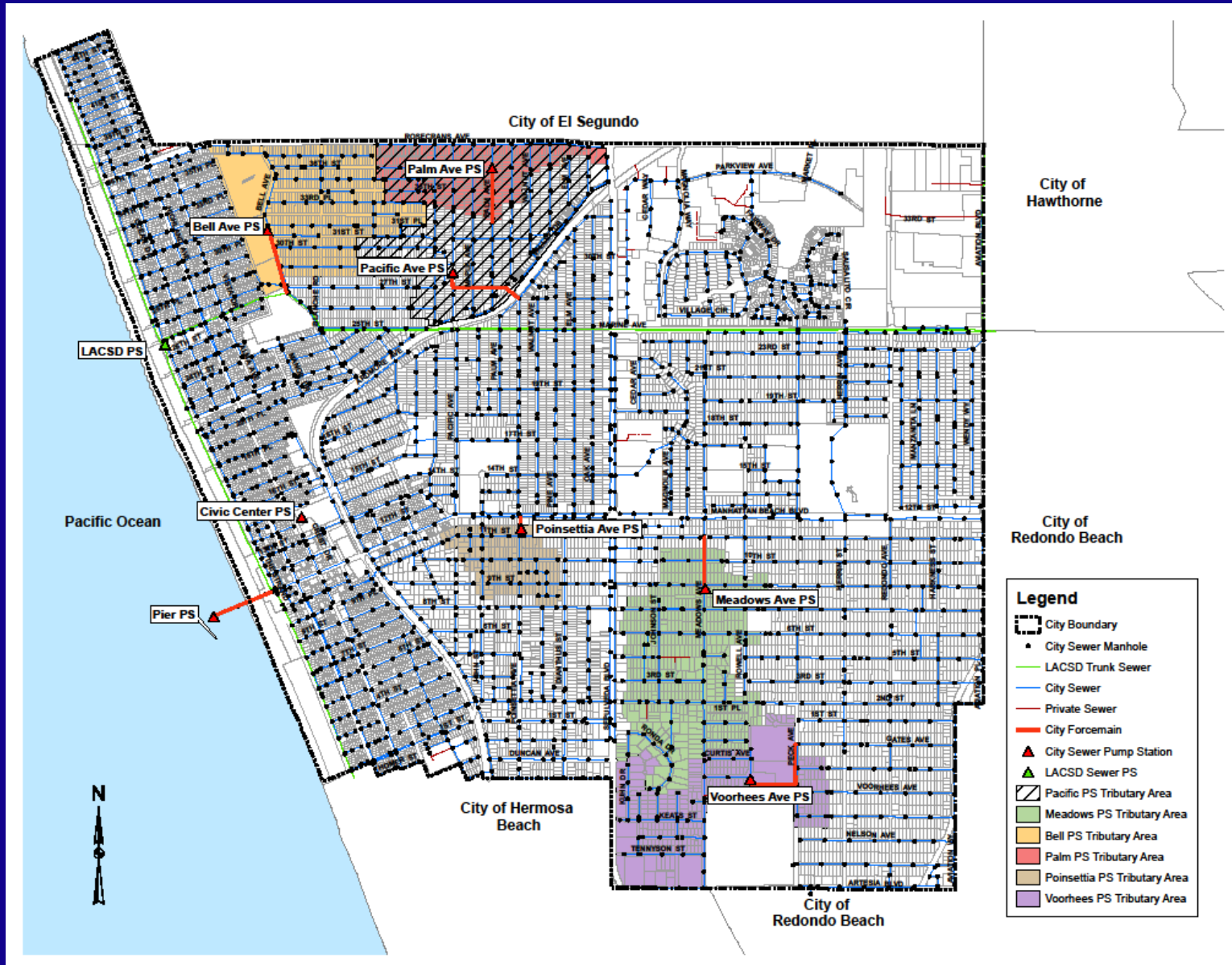


- **Manhattan Beach provides wastewater collection service to approximately 12,000 customers**
- **The service area encompasses approximately 3.9 square miles within the corporate boundaries**
- **Wastewater is conveyed to one of the Los Angeles County Sanitation District (LACSD) trunk sewers**
- **Wastewater is ultimately treated at LACSD's Joint Water Pollution Control Plant in the City of Carson**

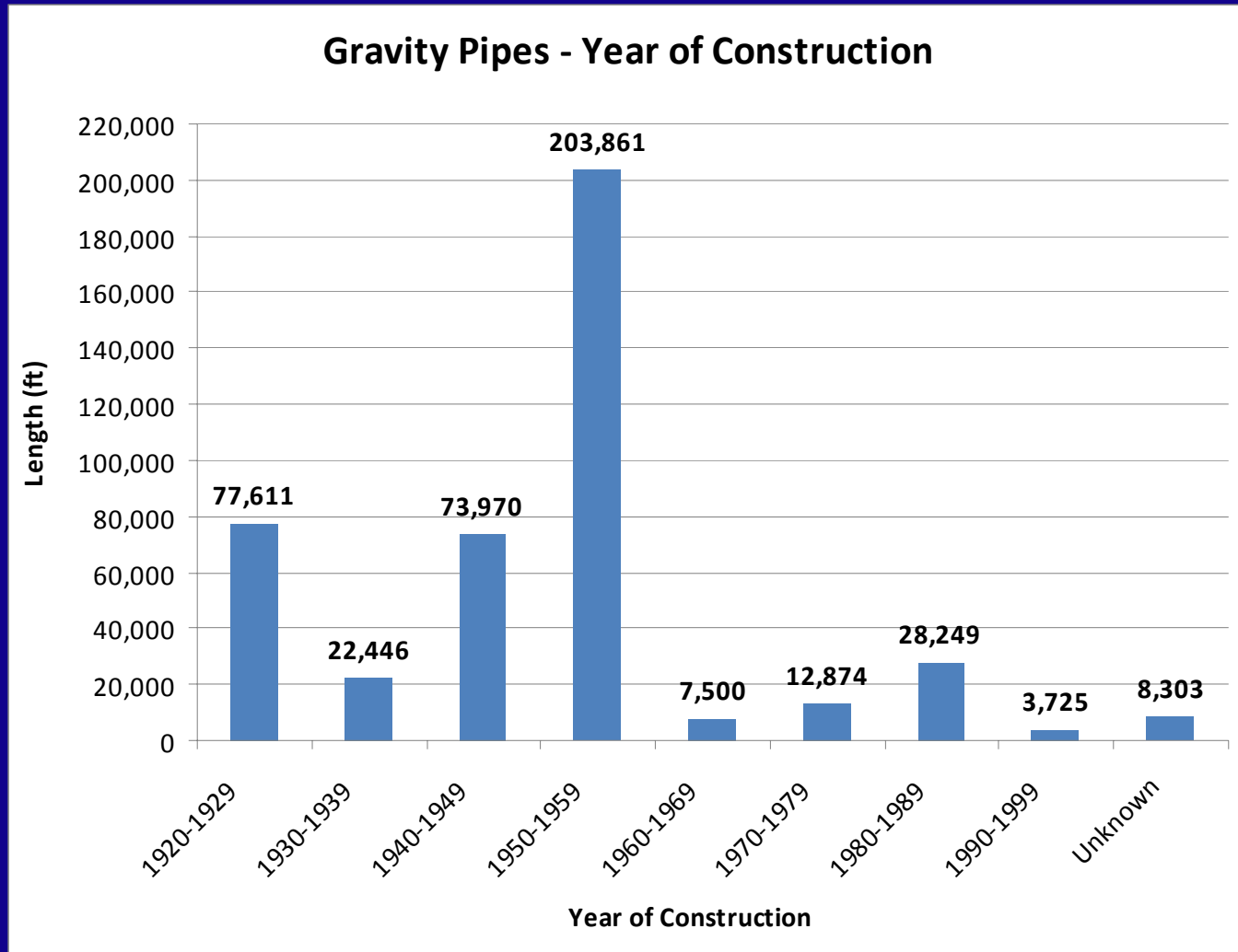


- **The City's wastewater collection system consists of:**
 - ✓ **83 miles of gravity pipe (438,500 feet)**
 - ✓ **Gravity pipes range in diameter from 6-inches to 21-inches, with the majority being 8-inches**
 - ✓ **Gravity pipes are primarily vitrified clay pipe**
 - ✓ **2,060 manholes**
 - ✓ **Six (6) large and two (2) small pump stations**
 - ✓ **5,120 feet of force main, ranging in diameter from 4-inches to 6-inches**





- Collection System



- **Eight (8) Pump Stations and Force Mains** (continued)
 1. **Bell Pump Station** (*constructed 1938, P.S. retrofitted 1997*)
 2. **Meadows Pump Station**
(*constructed 1953, P.S. retrofitted 1997*)
 3. **Pacific Pump Station**
(*constructed 1953, P.S. retrofitted 1997*)
 4. **Palm Pump Station**
(*constructed 1953, P.S. retrofitted 1997*)
 5. **Poinsettia Pump Station** (*constructed 1949*)
 6. **Voorhees Pump Station**
(*constructed 1953, P.S. retrofitted 1997*)
 7. **Pier Pump Station** (*constructed 1935, upgraded in 1992*)
 8. **Civic Center Pump Station** (*constructed 1973*)



Wastewater Waste Discharge Requirements

- **State Water Resources Control Board issued the General Waste Discharge Requirements (Order No. 2006-0003) on May 2, 2006**
- **The Order prohibits:**
 - ✓ Any sanitary sewer overflow (SSO) that results in a discharge of untreated or partially treated wastewater to the waters of the United States
 - ✓ Any SSO that results in a discharge of untreated or partially treated wastewater that creates a nuisance as defined in California Water Code Section 13050 (m)



Wastewater Waste Discharge Requirements

- **Order requires that all wastewater collection agencies prepare a Sewer System Management Plan (SSMP)**
- **Three very significant elements of the SSMP are:**
 - ✓ **Operation and Maintenance Program, which includes an accurate map of the system, and a Rehabilitation and Replacement Plan based on visual and closed circuit television (CCTV) inspection of manholes and sewer pipes**
 - ✓ **Fats, Oils, and Grease (FOG) Control Program**
 - ✓ **System Evaluation and Capacity Assurance Plan**
- **The Sewer Master Plan completed these elements of the SSMP**



- **Under the FOG Program, AKM prepared**
 - ✓ Draft FOG Ordinance
 - ✓ FOG Discharge Manual
 - ✓ Reviewed the City's Municipal Code and provided comments for revision of the Code



- **Master Plan Tasks Related to Capacity Evaluation**
 - ✓ Georeferenced over 750 as-built drawings
 - ✓ Collected data from as-built drawings and created new Sewer GIS
 - ✓ Built hydraulic model (geometry based on Sewer GIS)
 - ✓ Flow monitored eight locations for three months to develop unit flow factors and for calibrating the model
 - ✓ Reviewed water use records for entire city to aid in development of unit flow factors
 - ✓ Reviewed pump station plans and SCADA information to evaluate influent flow rates, pump capacities, and wetwell capacities



Capacity Evaluation Results

- **Collection System**

- ✓ One reach identified with minor capacity deficiency (PDWF $d/D = 0.65$) – no action recommended at this time

- **Pump Stations in Need of Capacity Upgrades to Handle Estimated Wet Weather Flows**

- ✓ Poinsettia PS (increase capacity to 150 gpm)
- ✓ Pacific PS (increase capacity to 400 gpm)
- ✓ Voorhees PS (increase capacity to 350 gpm)
- ✓ Meadows PS (increase capacity to 310 gpm)
- ✓ Bell PS (increase capacity to 300 gpm)



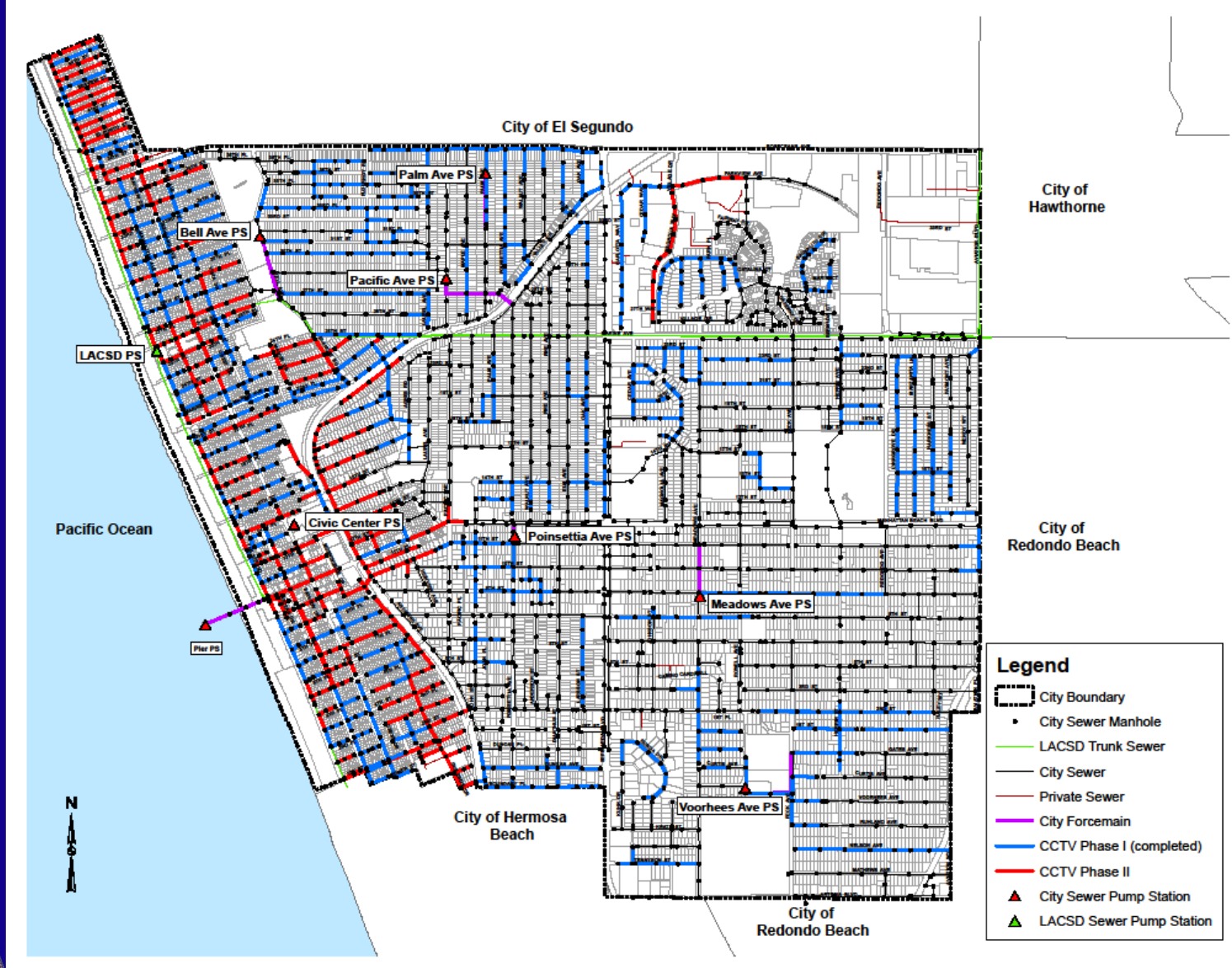
- **Pump Stations Have Minimal Operational Storage and no Emergency Storage**
- **Emergency Storage of 30 minutes of Peak Wet Weather Flow Should be Provided to Allow City Staff Response Time in Case of a Mechanical Failure**
 - ✓ Pacific PS (capacity = 12,000 gallons)
 - ✓ Voorhees PS (capacity = 10,500 gallons)
 - ✓ Meadows PS (capacity = 9,300 gallons)
 - ✓ Bell PS (capacity = 8,400 gallons)
 - ✓ Palm PS (capacity = 4,800 gallons)
 - ✓ Emergency storage for Poinsettia Pump Station should be provided in the new pump station



- **Master Plan Tasks Related to Condition Evaluation**
 - ✓ 30 miles of pipe and 743 manholes have been CCTV inspected and its condition evaluated
 - ✓ 14 miles of pipe and associated manholes are currently being CCTV inspected (expected completion date for inspections is August 2009)
 - ✓ Approximately 53 percent of the collection system will be CCTV inspected at the end of the Master Plan project
 - ✓ Field inspections of all sewer pump stations



(Continued)

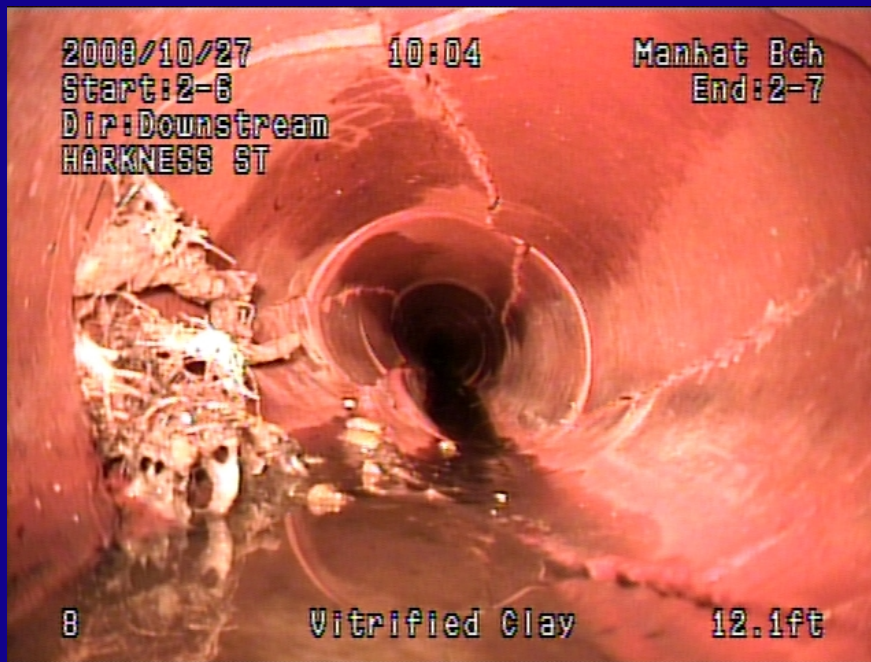


Legend

- City Boundary
- City Sewer Manhole
- LACSD Trunk Sewer
- City Sewer
- Private Sewer
- City Forcemain
- CCTV Phase I (completed)
- CCTV Phase II
- City Sewer Pump Station
- LACSD Sewer Pump Station

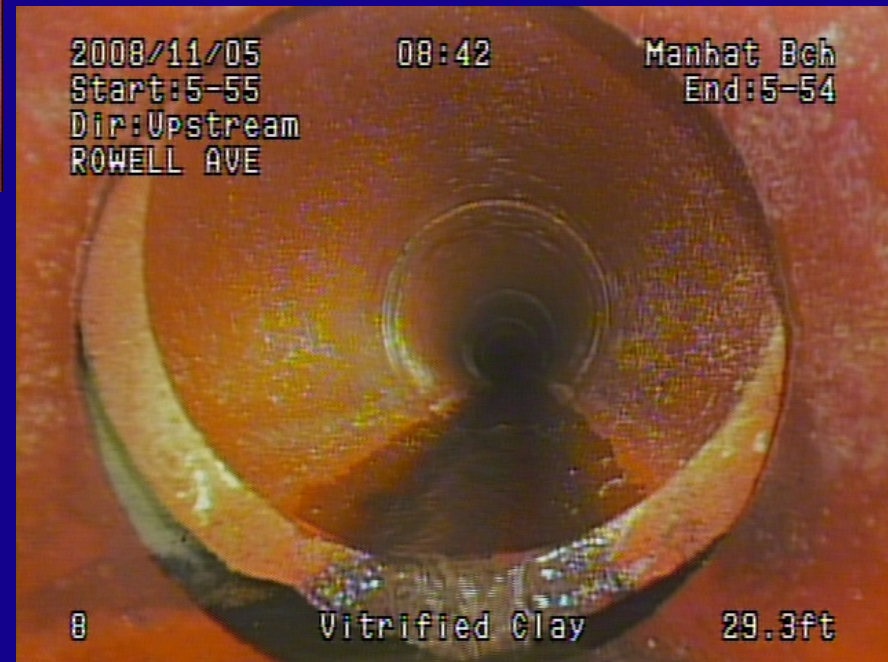


(Continued)



Broken Pipe

Large Offset Joint



(Continued)



Multiple Fractures

Grease Deposits



(Continued)



Roots

Eroding Channel in Manhole



(Continued)



Broken Manhole Cover

Corrosion in Manhole



Condition Evaluation Results

- **Collection System**

- ✓ Of the evaluated pipes,

- 9.8 percent identified with severe deficiencies

- 3.1 percent identified with major deficiencies

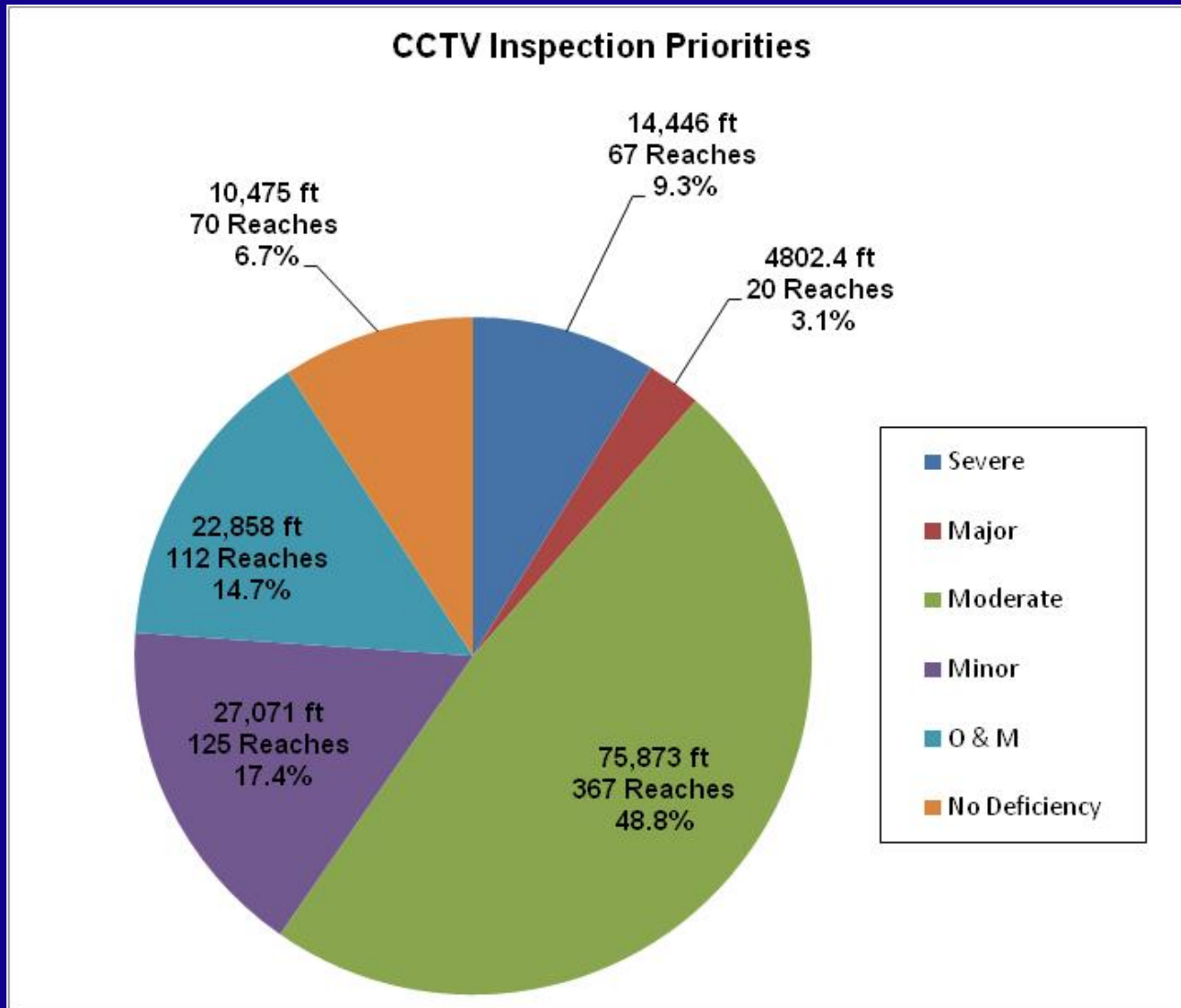
- 48.8 percent identified with moderate deficiencies

- 17.4 percent identified with minor deficiencies

- 14.7 percent identified with O&M issues only

- 6.7 percent identified with no deficiencies





- **Pump Stations**

- ✓ Poinsettia Pump Station and its force main was built in 1949 and is in need of replacement.



- **Pump Stations**

- ✓ The Pier Pump Station force main is in need of replacement.



(continued)

- **Pump Stations**

- ✓ The force mains for Pacific, Voorhees, Meadows, Palm, and Bell Pump Stations should be replaced when the pump stations are upgraded



Wastewater

Capital Improvement Program

City of Manhattan Beach
Wastewater Capital Improvement Program
2010-2020

CIP No.	Project Description	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
1	Replace Pier Pump Station Forcemain	\$486,000										
2	Replace Poinsettia Pump Station	\$405,000	\$2,295,000									
	Replace Poinsettia Pump Station Forcemain		\$67,000									
3	Replace/Rehabilitate Severe and Major Condition Pipes	\$898,000	\$1,796,000	\$1,796,000	\$1,796,000	\$1,796,000	\$1,796,000	\$1,796,000	\$1,796,000	\$1,796,000	\$1,796,000	\$1,796,000
4	Replace/Rehabilitate Sewer Manholes		\$199,800	\$199,800	\$199,800	\$199,800	\$199,800	\$199,800	\$199,800	\$199,800	\$199,800	\$199,800
5	Upgrade Pacific Pump Station			\$540,000								
	Replace Pacific Pump Station Forcemain			\$396,900								
6	Upgrade Voorhees Pump Station				\$540,000							
	Replace Voorhees Pump Station Forcemain				\$301,320							
7	Upgrade Meadows Pump Station					\$540,000						
	Replace Meadows Pump Station Forcemain					\$236,520						
8	Upgrade Bell Pump Station						\$540,000					
	Replace Bell Pump Station Forcemain						\$291,600					
9	Replace Palm Pump Station Forcemain							\$251,100				
10	Construct Emergency Storage for Pacific PS								\$1,134,000			
11	Construct Emergency Storage for Voorhees PS									\$992,250		
12	Construct Emergency Storage for Meadows PS										\$878,850	
13	Construct Emergency Storage for Bell PS											\$793,800
14	Construct Emergency Storage for Palm PS											\$453,600
	Total	\$1,789,000	\$4,357,800	\$2,932,700	\$2,837,120	\$2,772,320	\$2,827,400	\$2,246,900	\$3,129,800	\$2,988,050	\$2,874,650	\$3,243,200

