

OC San Collection System

Presented by:
Don Stokes
Maintenance
Manager

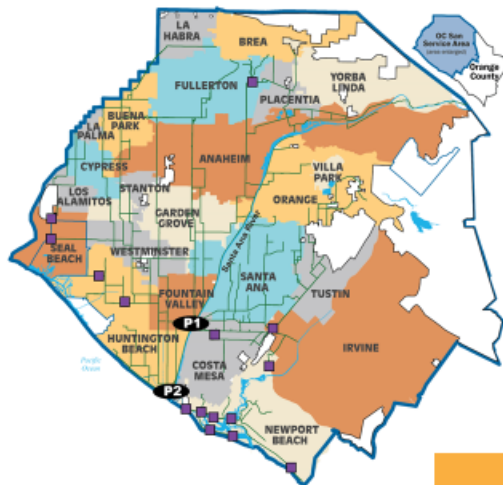
Operations
Committee

October 4, 2023



1

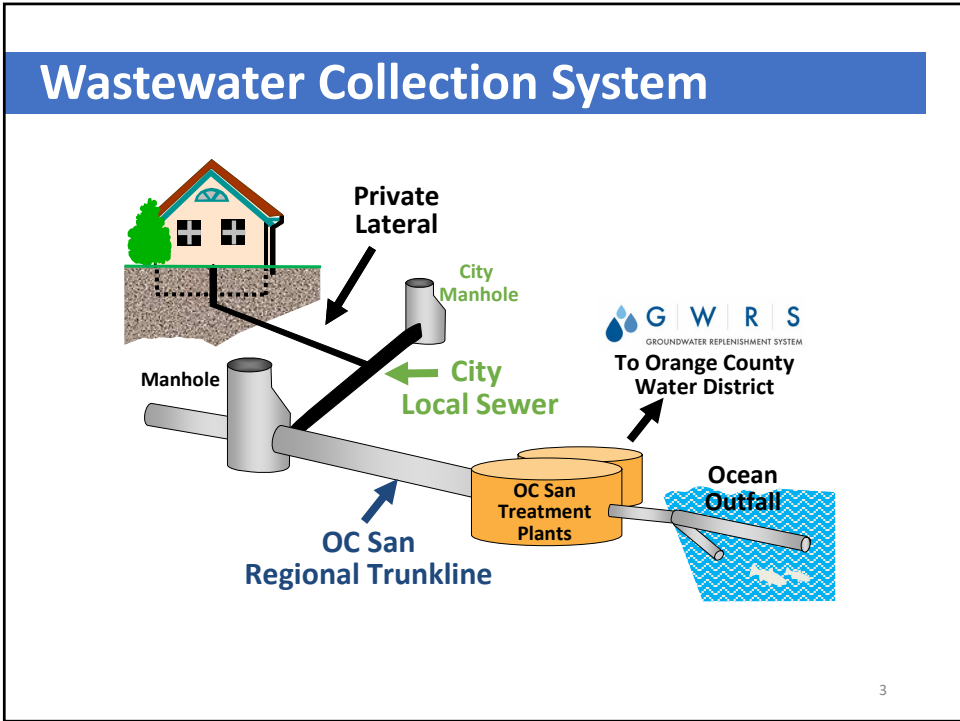
Our Service Area



- 388 miles of sewers
- 479 square miles
- ~180 million gallons per day
- 2.6 million population
- 2 ● treatment plants
- 15 ■ pump stations
- 20 cities
- 4 special districts
- unincorporated parts of County of Orange

2

2



3

Gravity Systems

- Various pipe materials
- Trunks, interconnections, reliefs
- Inverted siphons
- Diversions

Trunklines and Diversions

The map shows a dense network of colored lines representing different trunklines and diversions across Orange County. A legend in the bottom left corner identifies various pipe materials and system components. A north arrow is located in the bottom right corner.

4

Pipe Sizes

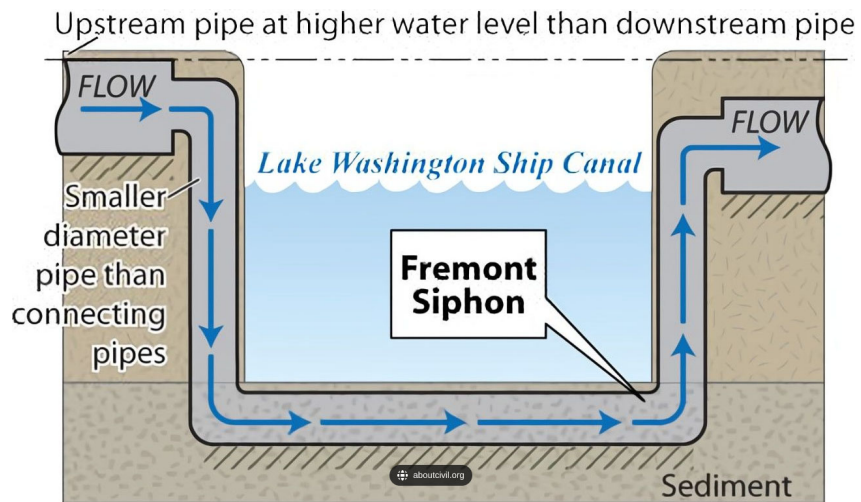
- Smallest = 8"
- Largest = 120"
- Majority range 24" to 60"



5

5

Inverted Siphon



6

6

Line Cleaning Types

- Flush work
 - Grit removal
 - Spill prevention
- Tire cleaning
 - Grit removal
 - Spill prevention
 - Line proofing



7

7

Line Flushing

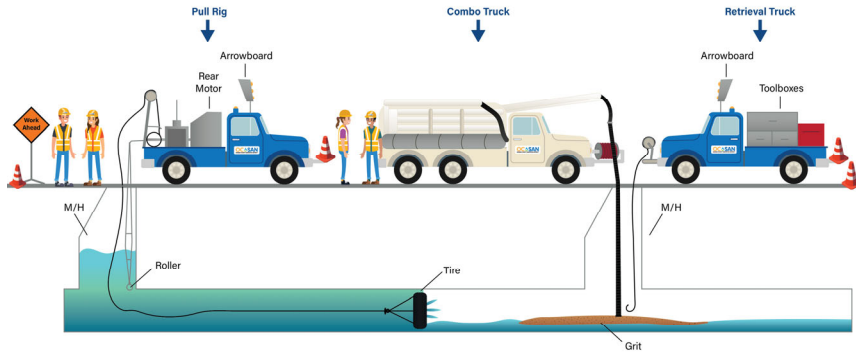


8

8

Mechanical Cleaning - Tire

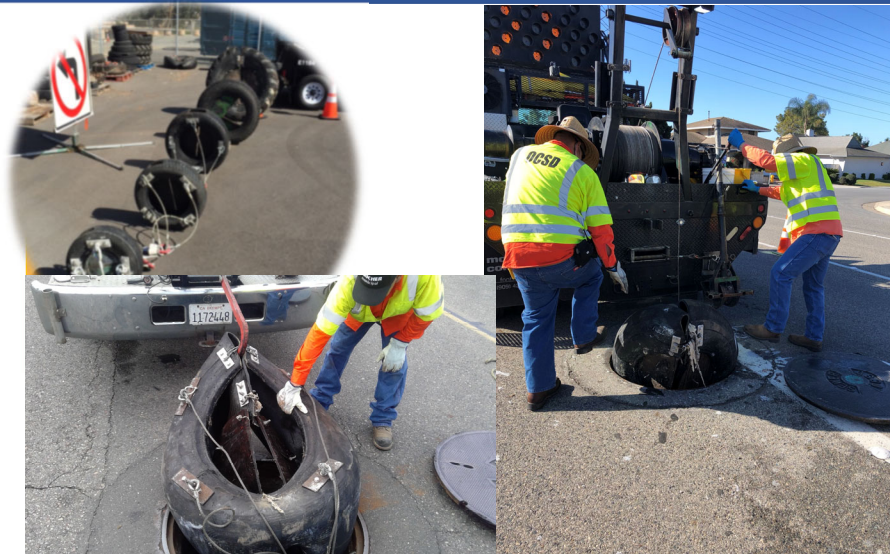
Line Cleaning Using a Tire



9

9

Mechanical Cleaning - Tire



10

10

Technology Adoption

11

11

Pressure Systems

- Old vs. New
- Small vs. Large

12

12

Pump Station Maintenance



13

13

Our Goal - Prevent Sewer Spills

- OC San relevant standard – 2.1 sewer spills per 100 miles
- Collections' goal – 0 spills



14

14

Pee, Poop & Paper



**Know what should go
down the drain that
is sewer safe**

*It's simple, the toilet is only meant to flush
the three P's—pee, poop and paper.*

15

15

Pump Station Resiliency

- Bypass pumping
 - Emergency response
 - Critical maintenance
 - Assessments
- Bypass pumping design
 - Unique to each station
 - Agile and quick assembly



16

16

Underground Line Locating

- State enforcement
- Damage prevention
- Other entity request
- Centralized system through state:
Dig-Alert system
- Field locating and marking



17

17

Regional Odor Control

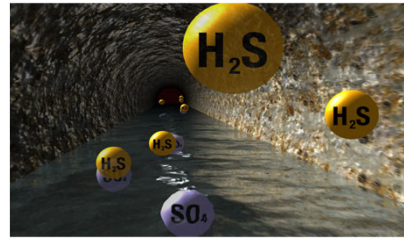
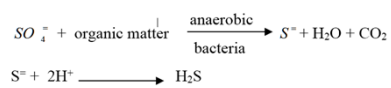


18

18

Odor Control Chemicals

- Magnesium Hydroxide
 - Raises pH to keep HS^- in solution
- Ferrous Chloride (Ferric Salts)
 - Oxidize sulfide to sulfur
 - Precipitates sulfide as ferric sulfide
- Calcium Nitrate (Bioxide)
 - Naturally occurring bacteria biochemically oxidize dissolved sulfide in the presence of nitrate
- Sodium Hydroxide
 - Sloughs off slime layer



19

19

Regional Odor Control Efforts

- Proactive outreach
- Investigate
- GIS tracking of “Hot Spots”
- Received AAEEES award and patent for approach

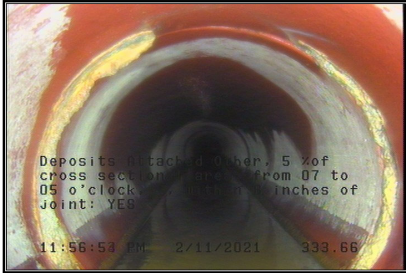


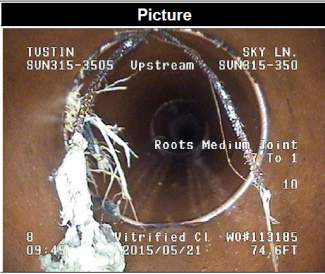
20

20

CCTV

- Asset inspection
- Structural degradation and cleaning
- Project scoping
- Spill prevention



Distance	Fault Observation	Picture
74.6	Roots Medium Joint Position: 7 To 1 Severity: None Percent: 10 Joint Maint Weight: 3	

21


Teamwork & Coordination

- Coordinate efforts
- Assist when a crisis arises
- Assist with special needs



22

Questions

A blue circle containing a white question mark is centered on the page. To the right of the circle is a vertical orange bar. The entire content is enclosed in a black rectangular border.

23