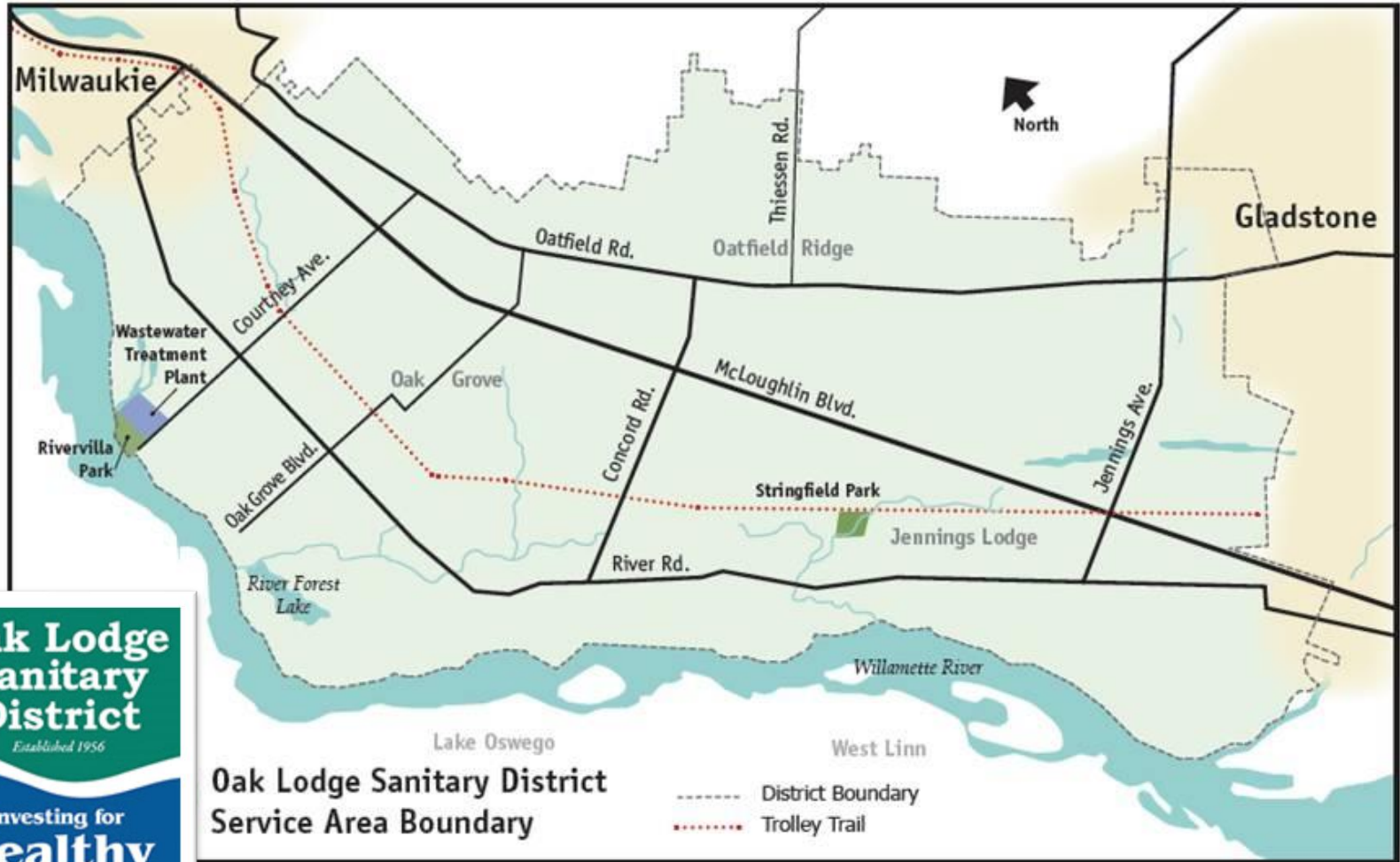


# Leveraging CMMS for Performance and Program Development

Rich Ludlow  
Oak Lodge Sanitary District

# Oak Lodge Sanitary District



**Oak Lodge Sanitary District**  
*Established 1956*

Re-Investing for  
**Healthy Rivers**

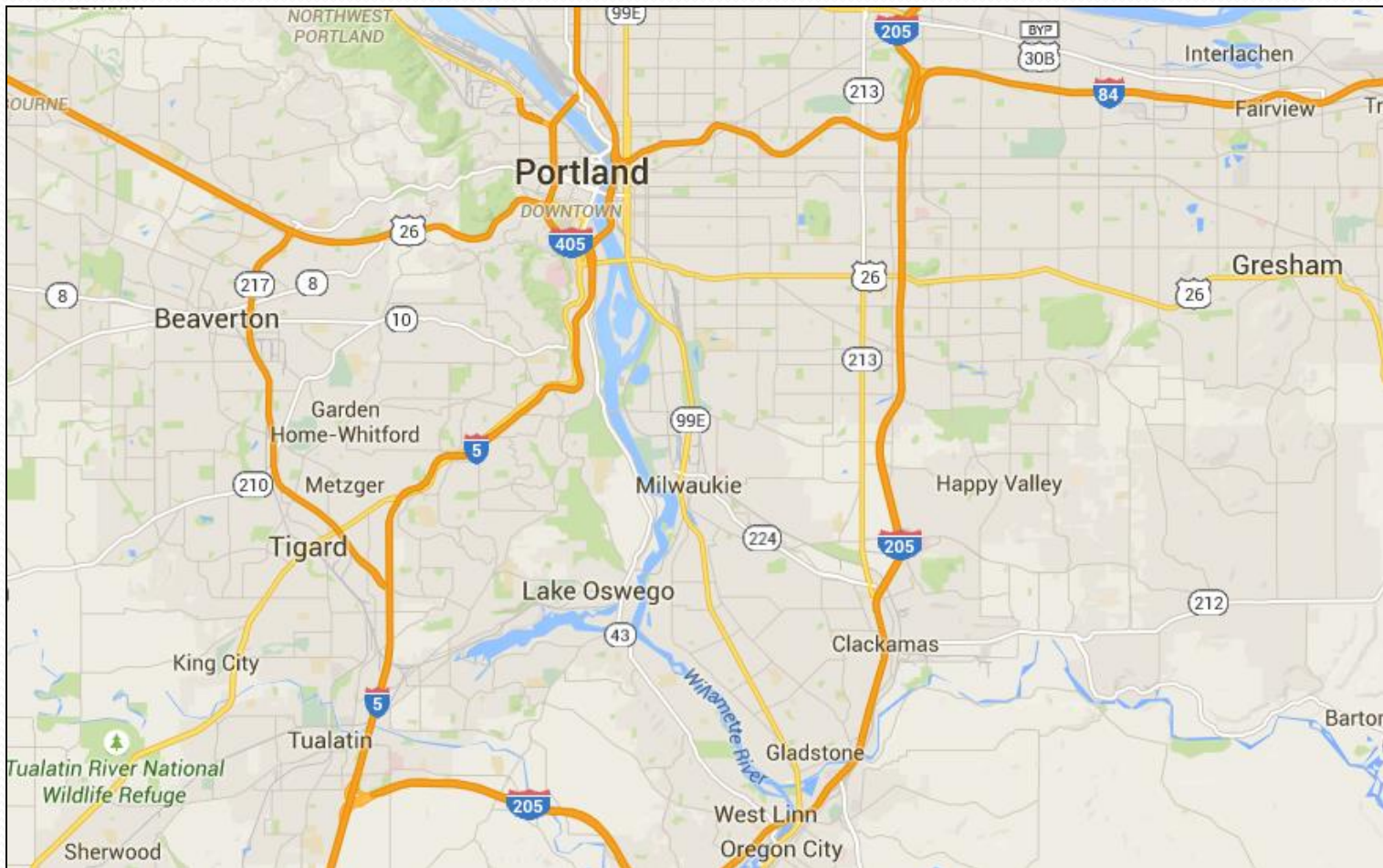
**Oak Lodge Sanitary District  
Service Area Boundary**

- District Boundary
- ..... Trolley Trail

# Oak Grove + Jennings Lodge



# Regional Perspective



# Areas of Responsibility

- Sewer System
  - Approximately 8,600 sewer connections
  - 100 miles of sewer pipe
  - 2273 sewer manholes
  - 5 wastewater pump stations
- Water Reclamation Facility, 10 MGD, Cannibal Plant
- Surface Water Management:
  - 2,500 catch basins
  - 53 miles of storm lines
  - 100 sedimentation manholes
  - 50 private detention systems.



# Asset Maintenance Manager

- Me
- Responsible for:
  - Field Operations and Maintenance (4 staffs)
  - Treatment Plant Maintenance (2 staffs)
  - CMMS (Lucity) implementation continuation and development
  - SCADA maintenance/upkeep and changes
  - Safety programs
  - Fleet maintenance



# District Advantage

- Technology tools and information in place
  - SCADA – WonderWare
  - GIS – Esri ArcGIS
  - CMMS – Lucity
  - Electronic O&M Manual – eFIMS
  - Operations/Lab Database Software – Hach WIMS
- Relatively small number of Assets (records in Lucity)
  - 1103 Equipment Assets
  - 17 Fleet Assets
  - 4011 Storm Assets
  - 12059 Sewer Collection System Assets
- Treatment plant recently reconstructed (2012)



# District Challenges

- Staffed Leanly
- Many hats to wear
- Challenges focusing on shifting priorities
- Firefighting maintenance culture
- Working through plant start-up issues
- Neighboring political influences
  - Clackamas County, Gladstone, Milwaukie, Portland
  - Wide variety of customers
    - Income
    - Political involvement
    - Expectations





# Managing Organizational Shifts

- The District was in a major construction phase that threw everything out of rhythm.
- Staff came to work not knowing what they would be doing each day.
- Field Operations had set a 5 year goal to clean and TV the entire system in 2009, just over 50% in 2014
- How do we get things back on track?



# The Plan

- Field crews had been tracking footage for line cleaning and TV inspections in Lucity since 2009, and prior to that in the previous system.
- We needed to reset the target.



# The Focus

- In January 2014, a production target was implemented for Field Operations.
  - Trevor Lierman calculated an achievable goal that would put us back on the 5-year track.
  - Focused on bite sized pieces, Trevor did the math
    - Known system footage divided by the 5 year goal, equates to inspecting 9,000 feet of line per month or 2,250 ft. per week.
  - The goal is intentionally attainable to ensure achievability and still provide for project work and other responsibilities.

# Tracking Work

- A Crystal Report was developed to track to the goal

## Hydrocleaning

| WO NUMBER | NT USMAN | NT DSMAN | Work Completed Date | Footage Completed |
|-----------|----------|----------|---------------------|-------------------|
| 14-001614 | A2-767   | A2-741   | 2/11/15             | 25.03             |
| 14-001614 | A2-741   | A2-543   | 2/11/15             | 198.76            |
| 14-001614 | A2-095   | A-2552   | 2/11/15             | 95.77             |
| 14-001614 | A2-319   | A2-095   | 2/11/15             | 224.53            |
| 14-001614 | A-12929  | A-12819  | 2/26/15             | 110.00            |
| 14-001614 | A5-1612  | A5-1448  | 2/12/15             | 162.45            |
| 14-001614 | A-12310  | A-11830  | 2/26/15             | 480.00            |
| 14-001614 | A-12819  | A-12709  | 2/26/15             | 110.00            |
| 14-001614 | A-13138  | A-12929  | 2/26/15             | 209.00            |
| 14-001614 | A-13165  | A-13138  | 2/26/15             | 27.00             |
| 14-001614 | A07-1219 | A07-805  | 2/12/15             | 423.88            |
| 14-001614 | A04-503  | A04-205  | 2/10/15             | 297.86            |
| 14-001614 | A07-805  | A07-608  | 2/24/15             | 197.00            |
| 14-001614 | A07-499  | A07-302  | 2/25/15             | 197.93            |
| 14-001614 | A07-608  | A07-499  | 2/25/15             | 110.02            |
| 14-001614 | A-12510  | A-12310  | 2/26/15             | 200.00            |
| 14-001614 | A-12709  | A-12510  | 2/26/15             | 199.00            |
| 14-001614 | A4-494   | A4-370   | 2/24/15             | 122.01            |
| 14-001614 | A4-717   | A4-494   | 2/24/15             | 223.33            |
| 14-001614 | A02-266  | A02-184  | 2/10/15             | 82.00             |
| 14-001614 | A07-302  | A07-261  | 2/25/15             | 41.57             |
| 14-001614 | A-11830  | A-11491  | 2/26/15             | 339.00            |
| 14-001614 | A5-825   | A5-643   | 2/24/15             | 182.12            |
| 14-001614 | A02-475  | A02-349  | 2/10/15             | 128.57            |
| 14-001614 | A42-340  | A42-155  | 2/11/15             | 184.00            |
| 14-001614 | A5-1918  | A5-1612  | 2/12/15             | 318.59            |

## TV Inspections

| WO NUMBER | NT USMAN | NT DSMAN | Work Completed Date | Footage Completed |
|-----------|----------|----------|---------------------|-------------------|
| 14-001615 | A22-213  | A2-1209  | 2/17/15             | 212.93            |
| 14-001615 | A22A-359 | A22-667  | 2/17/15             | 359.57            |
| 14-001615 | A24-454  | A24-423  | 2/4/15              | 31.49             |
| 14-001615 | A24-423  | A24-299  | 2/4/15              | 124.00            |
| 14-001615 | A05-444  | A05-300  | 2/19/15             | 144.00            |
| 14-001615 | A51-498  | A51-407  | 2/13/15             | 91.65             |
| 14-001615 | A5-1448  | A5-1175  | 2/13/15             | 272.62            |
| 14-001615 | A5-1175  | A5-825   | 2/13/15             | 350.65            |
| 14-001615 | A51-407  | A51-060  | 2/13/15             | 346.80            |
| 14-001615 | A22A-860 | A22A-703 | 2/17/15             | 156.32            |
| 14-001615 | A21-821  | A21-499  | 2/3/15              | 322.36            |
| 14-001615 | A11-798  | A11-568  | 2/2/15              | 232.95            |
| 14-001615 | A1-605   | A1-530   | 2/2/15              | 71.74             |
| 14-001615 | A11-568  | A11-336  | 2/2/15              | 232.95            |
| 14-001615 | A11-336  | A11-246  | 2/2/15              | 90.58             |
| 14-001615 | A21-200  | A2-543   | 2/3/15              | 199.97            |
| 14-001615 | A2-972   | A2-767   | 2/17/15             | 204.85            |
| 14-001615 | A2-1209  | A2-972   | 2/17/15             | 237.26            |
| 14-001615 | A2-767   | A2-741   | 2/17/15             | 25.03             |
| 14-001615 | A2-741   | A2-543   | 2/17/15             | 198.76            |

|           |         |         |         |        |
|-----------|---------|---------|---------|--------|
| 14-001614 | A2-543  | A2-319  | 2/11/15 | 226.96 |
| 14-001614 | A07-261 | A07-067 | 2/25/15 | 226.80 |
| 14-001614 | A07-067 | A-10069 | 2/25/15 | 67.75  |

|           |          |         |         |        |
|-----------|----------|---------|---------|--------|
| 14-001615 | A22B-206 | A22-213 | 2/17/15 | 206.50 |
| 14-001615 | A5-2580  | A5-2248 | 2/13/15 | 332.00 |
| 14-001615 | A10-270  | A-6859  | 2/26/15 | 270.50 |

Total Footage

14,006.70

Total Footage

10,882.96

# Time Bandits

- The first few months the goals were not met
  - What is preventing crews from the core work?
- Questions lead to information that sometimes lead to more questions.
  - Let's look at the data...



# Another Query

- Expanded reporting tracked the labor time charged to Work Orders by the Field Operations Technicians

## Grease Lines

| <u>WR_STRT_DT</u> | <u>WO_NUMBER</u> | <u>WR_RSRC_TY</u> | <u>WR_UNITS_GT</u> |
|-------------------|------------------|-------------------|--------------------|
| 2/5/15            | 15-000132        | Merritt, Abe      | 1.50               |
| 2/5/15            | 15-000132        | Woods, Doug       | 1.50               |
| 2/6/15            | 15-000130        | Woods, Doug       | 2.25               |
| 2/6/15            | 15-000132        | Woods, Doug       | 3.75               |
| 2/6/15            | 15-000130        | Merritt, Abe      | 2.25               |
| 2/6/15            | 15-000132        | Merritt, Abe      | 3.75               |
| 2/9/15            | 15-000130        | Woods, Doug       | 1.75               |
| 2/9/15            | 15-000132        | Woods, Doug       | 1.50               |
| 2/9/15            | 15-000130        | Merritt, Abe      | 1.75               |
| 2/9/15            | 15-000132        | Merritt, Abe      | 1.50               |
| <b>SS0090</b>     |                  |                   | <b>21.50</b>       |

## Hydrocleaning

| <u>WR_STRT_DT</u> | <u>WO_NUMBER</u> | <u>WR_RSRC_TY</u> | <u>WR_UNITS_GT</u> |
|-------------------|------------------|-------------------|--------------------|
| 2/9/15            | 14-001614        | Merritt, Abe      | 0.50               |
| 2/9/15            | 14-001614        | Woods, Doug       | 0.50               |
| 2/10/15           | 14-001614        | Woods, Doug       | 5.25               |
| 2/10/15           | 14-001614        | Merritt, Abe      | 5.25               |
| 2/11/15           | 14-001614        | Merritt, Abe      | 6.75               |
| 2/11/15           | 14-001614        | Woods, Doug       | 6.75               |
| 2/12/15           | 14-001614        | Woods, Doug       | 3.25               |
| 2/12/15           | 14-001614        | Woods, Doug       | 0.50               |
| 2/12/15           | 14-001614        | Merritt, Abe      | 3.25               |
| 2/23/15           | 14-001614        | Woods, Doug       | 0.75               |
| 2/24/15           | 14-001614        | Merritt, Abe      | 4.50               |
| 2/24/15           | 14-001614        | Woods, Doug       | 4.50               |
| 2/25/15           | 14-001614        | Woods, Doug       | 2.25               |
| 2/25/15           | 14-001614        | Merritt, Abe      | 2.25               |
| 2/26/15           | 14-001614        | Merritt, Abe      | 4.50               |
| 2/26/15           | 14-001614        | Woods, Doug       | 4.50               |
| <b>SS0100</b>     |                  |                   | <b>55.25</b>       |

## TV Inspections

| <u>WR_STRT_DT</u> | <u>WO_NUMBER</u> | <u>WR_RSRC_TY</u> | <u>WR_UNITS_GT</u> |
|-------------------|------------------|-------------------|--------------------|
| 2/2/15            | 14-001615        | Lierman, Trevor   | 6.00               |
| 2/2/15            | 14-001615        | Strong, Larry     | 6.00               |

## Fleet Repairs

| <u>WR_STRT_DT</u> | <u>WO_NUMBER</u> | <u>WR_RSRC_TY</u> | <u>WR_UNITS_GT</u> |
|-------------------|------------------|-------------------|--------------------|
| 2/5/15            | 15-000165        | Woods, Doug       | 0.25               |
| 2/5/15            | 15-000165        | Merritt, Abe      | 1.00               |
| 2/6/15            | 15-000165        | Merritt, Abe      | 1.00               |
| 2/6/15            | 15-000165        | Woods, Doug       | 1.00               |
| 2/6/15            | 15-000165        | Woods, Doug       | 0.25               |
| 2/24/15           | 15-000217        | Woods, Doug       | 2.00               |
| <b>FL0210</b>     |                  |                   | <b>5.50</b>        |
| <u>WR_STRT_DT</u> | <u>WO_NUMBER</u> | <u>WR_RSRC_TY</u> | <u>WR_UNITS_GT</u> |
| 2/9/15            | 15-000173        | Woods, Doug       | 0.50               |
| 2/25/15           | 15-000173        | Woods, Doug       | 1.75               |
| <b>FL0225</b>     |                  |                   | <b>2.25</b>        |

## Locates

| <u>WR_STRT_DT</u> | <u>WO_NUMBER</u> | <u>WR_RSRC_TY</u> | <u>WR_UNITS_GT</u> |
|-------------------|------------------|-------------------|--------------------|
| 2/2/15            | 15-000138        | Woods, Doug       | 1.25               |
| 2/2/15            | 15-000138        | Woods, Doug       | 0.50               |
| 2/3/15            | 15-000138        | Merritt, Abe      | 3.00               |
| 2/4/15            | 15-000138        | Merritt, Abe      | 2.00               |
| 2/5/15            | 15-000138        | Woods, Doug       | 1.50               |
| 2/5/15            | 15-000138        | Merritt, Abe      | 1.50               |
| 2/6/15            | 15-000138        | Strong, Larry     | 2.00               |
| 2/23/15           | 15-000138        | Woods, Doug       | 4.75               |
| 2/24/15           | 15-000138        | Strong, Larry     | 5.50               |
| 2/25/15           | 15-000138        | Strong, Larry     | 2.00               |
| 2/25/15           | 15-000138        | Woods, Doug       | 0.25               |
| 2/26/15           | 15-000138        | Woods, Doug       | 1.50               |
| 2/27/15           | 15-000138        | Woods, Doug       | 1.00               |
| <b>SS0030</b>     |                  |                   | <b>84.75</b>       |

# Knowledge is Key

- It's impossible to manage what we don't measure
- Looking into the data helped us:
  - Highlighting the impact of our utility locate program
  - Giving a more clear picture of how District resources are used
  - Demonstrating the importance of capturing time to Work Orders

# Non-Work Order Time

- Reliability maintenance professionals consider staff utilization at 50-60% as world class in the Physical Asset Management Handbook

<http://www.reliabilityweb.com/excerpts/excerpts/PAM-ch6.pdf>

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- “In world class facilities, maintenance craft efficiency tends to be above 50%.”  
**‘Big M’ and the Performance Culture**  
**Managing Maintenance for Production Reliability**

*by James Davis, PE, CMRP*

[http://reliabilityweb.com/index.php/print/big\\_m\\_and\\_the\\_performance\\_culture](http://reliabilityweb.com/index.php/print/big_m_and_the_performance_culture)



# Capturing Work Order Time



- CMMS Timesheets automatically capture Work Order time

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RJLudlow ▾

[Timesheet Overview](#) X [Lierman, Trevor - Wc](#) X



### Lierman, Trevor - Work Timesheet 2

FY15/16 < 2/16/2015 15 >



#### Summary

| Description  | Task | Time Code | Project Number | Account Number | Class | Mon Feb 16 | Tue Feb 17 | Wed Feb 18 | Thu Feb 19 | Fri Feb 20 | Sat Feb 21 | Sun Feb 22 | Mon Feb 23 | Tue Feb 24 | Wed Feb 25 | Thu Feb 26 | Fri Feb 27 | Sat Feb 28 | Total Hours |
|--------------|------|-----------|----------------|----------------|-------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|-------------|
| Daily Totals |      |           |                |                |       |            | 7          | 4          | 4          |            | 2          |            |            |            |            | 2          |            |            | 19          |

#### Additional Time

| Description | Task | Time Code | Project Number | Account Number | Class | Mon Feb 16 | Tue Feb 17 | Wed Feb 18 | Thu Feb 19 | Fri Feb 20 | Sat Feb 21 | Sun Feb 22 | Mon Feb 23 | Tue Feb 24 | Wed Feb 25 | Thu Feb 26 | Fri Feb 27 | Sat Feb 28 | Total Hours |
|-------------|------|-----------|----------------|----------------|-------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|-------------|
|             |      |           |                |                |       |            |            |            |            |            |            |            |            |            |            |            |            |            |             |

#### Linked Work

| Description     | Task | Time Code | Project Number | Account Number | Class | Mon Feb 16 | Tue Feb 17 | Wed Feb 18 | Thu Feb 19 | Fri Feb 20 | Sat Feb 21 | Sun Feb 22 | Mon Feb 23 | Tue Feb 24 | Wed Feb 25 | Thu Feb 26 | Fri Feb 27 | Sat Feb 28 | Total Hours |
|-----------------|------|-----------|----------------|----------------|-------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|-------------|
| Locate          |      |           |                |                | 11-14 |            |            |            |            |            | 2          |            |            |            |            |            |            |            | 2           |
| Sewer Pipe - TV |      |           |                |                | 11-14 |            | 7          |            |            |            |            |            |            |            |            |            |            |            | 7           |
| Sewer Pipe - TV |      |           |                |                | 11-14 |            |            | 4          |            |            |            |            |            |            |            |            |            |            | 4           |
| Sewer Pipe - TV |      |           |                |                | 11-14 |            |            |            | 4          |            |            |            |            |            |            |            |            |            | 4           |
| Sewer Pipe - TV |      |           |                |                | 11-14 |            |            |            |            |            |            |            |            |            |            | 2          |            |            | 2           |

# Capturing Non-WO Time

- The rest of the story

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Timesheet Overview X Lierman, Trevor - Wc X

**Lierman, Trevor - Work Timesheet 2** FY15/18 < 3/16/2015 15 >

**Summary**

| Description  | Task | Time Code | Project Number | Account Number | Class | Mon Mar 16 | Tue Mar 17 | Wed Mar 18 | Thu Mar 19 | Fri Mar 20 | Sat Mar 21 | Sun Mar 22 | Mon Mar 23 | Tue Mar 24 | Wed Mar 25 | Thu Mar 26 | Fri Mar 27 | Sat Mar 28 | Sun Mar 29 |
|--------------|------|-----------|----------------|----------------|-------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Daily Totals |      |           |                |                |       | 7.25       | 8          | 6.75       | 5.5        | 4          |            |            | 6          | 6.5        | 6.5        | 7          | 8          |            |            |

**Additional Time**

| Description               | Task              | Time Code    | Project Number | Account Number | Class | Mon Mar 16 | Tue Mar 17 | Wed Mar 18 | Thu Mar 19 | Fri Mar 20 | Sat Mar 21 | Sun Mar 22 | Mon Mar 23 | Tue Mar 24 | Wed Mar 25 | Thu Mar 26 | Fri Mar 27 | Sat Mar 28 | Sun Mar 29 |
|---------------------------|-------------------|--------------|----------------|----------------|-------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Childrens Festival        |                   | Regular Time |                |                |       |            | 8          |            |            |            |            |            |            |            |            |            |            |            |            |
| Festival Video            | Program Developpr | Regular Time |                |                |       | 2          |            |            |            |            |            |            |            |            |            |            |            |            |            |
| Field/Ops MTG             | Staff Meeting     | Regular Time |                |                |       | 0.75       |            | 0.75       |            |            |            |            |            |            |            |            |            |            |            |
| Forklift Training         | Training          | Regular Time |                |                |       |            |            | 4          |            |            |            |            |            |            |            |            |            |            |            |
| Granite Inspection Review | Program Developpr | Regular Time |                |                |       |            |            |            | 1          |            |            |            |            |            |            |            |            |            |            |
| Lucity/GIS data gathering | Work Planning     | Regular Time |                |                |       |            |            |            |            |            |            |            |            |            | 2          | 3          |            |            |            |
| Lucity/GIS work           | Program Developpr | Regular Time |                |                |       | 1          |            | 2          |            |            |            |            |            |            |            |            |            |            |            |
| Presentation meeting      | Staff Meeting     | Regular Time |                |                |       |            |            |            | 1.5        |            |            |            |            |            |            |            |            |            |            |
| Presentation Prep.        | Program Developpr | Regular Time |                |                |       |            |            |            |            |            |            |            | 2          |            |            |            |            |            |            |

**Linked Work**

| Description                    | Task | Time Code    | Project Number | Account Number | Class | Mon Mar 16 | Tue Mar 17 | Wed Mar 18 | Thu Mar 19 | Fri Mar 20 | Sat Mar 21 | Sun Mar 22 | Mon Mar 23 | Tue Mar 24 | Wed Mar 25 | Thu Mar 26 | Fri Mar 27 | Sat Mar 28 | Sun Mar 29 |
|--------------------------------|------|--------------|----------------|----------------|-------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Customer Service Call          |      | Regular Time |                |                | 11-14 |            |            |            |            |            |            |            |            |            | 0.5        |            |            |            |            |
| Customer Service Call          |      | Regular Time |                |                | 11-14 |            |            |            |            |            |            |            |            |            | 0.5        |            |            |            |            |
| Fleet- Service Fleet Equipment |      | Regular Time |                |                | 11-14 |            |            |            |            |            |            |            |            |            |            |            |            |            |            |
| Investigate                    |      | Regular Time |                |                | 11-14 |            |            |            |            |            |            |            |            |            | 1          |            |            |            |            |
| Investigate                    |      | Regular Time |                |                | 11-14 |            |            |            |            |            |            |            |            |            |            | 1.5        |            |            |            |
| Locate                         |      | Regular Time |                |                | 11-14 |            |            |            | 3          |            |            |            |            |            |            |            |            |            |            |
| Locate                         |      | Regular Time |                |                | 11-14 |            |            |            |            |            |            |            | 2          |            |            |            |            |            |            |
| Locate                         |      | Regular Time |                |                | 11-14 |            |            |            |            |            |            |            |            | 2.5        |            |            |            |            |            |
| Locate                         |      | Regular Time |                |                | 11-14 |            |            |            |            |            |            |            |            |            | 2.5        |            |            |            |            |

# Telling the Story

- Where do the resources go?
- Now we know
- Communicating to Stakeholders

## knowl·edge

/ˈnələj/

*noun*

1. facts, information, and skills acquired by a person through experience or education; the theoretical or practical understanding of a subject.  
"a thirst for knowledge"  
*synonyms:* understanding, comprehension, grasp, command, mastery; **More**
2. awareness or familiarity gained by experience of a fact or situation.  
"the program had been developed without his knowledge"  
*synonyms:* awareness, consciousness, realization, cognition, apprehension, perception, appreciation; *formal cognizance*  
"he slipped away without my knowledge"



# Reporting

Field Operations Monthly Report for February, 2015

Staff Availability:

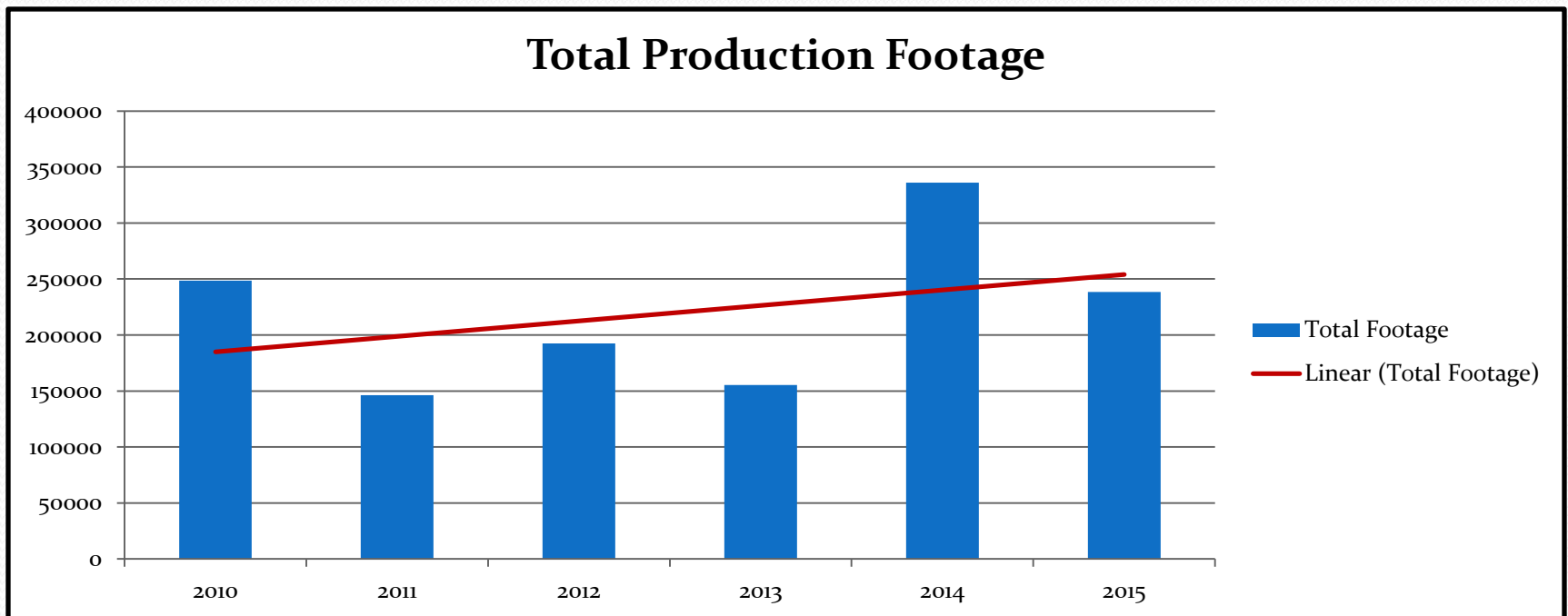
|                        |   |
|------------------------|---|
| Working Hours in Month | Actual Attendance/Available Hours (working hours minus leave) |
| 608                    | 506.25  |

Accomplishments:

|  | Goal | Actual  | % Goal Met                         | Staff Hours |
|--|------|---------|------------------------------------|-------------|
| Sewer Cleaning (linear feet)                 | 9450 | 14006.7 | 148%                               | 55.25       |
| TV Inspections (linear feet)                 | 9450 | 10883   | 115%                               | 78.75       |
| Grease Line Cleaning                         |      | 5972.4  | 100%                               | 22.5        |
| Sewer Line Repairs                           |      |         |                                    | -           |
| Utility Locates                              |      | 152     | 100%                               | 84.75       |
| Bio-solids Hauling by Line Maintenance Techs |      |         |                                    | -           |
| SWM Work by Line Maintenance Techs           |      |         |                                    | 2.5         |
| Fleet Support Work                           |      |         |                                    | 32.25       |
| Plant/PS Equipment Work Orders               |      |         |                                    | 52.75       |
| Customer Service/Investigate Work Orders     |      |         |                                    | 3           |
|  |      |         | Total Work Order Hours             | 331.75      |
|  |      |         | Staff Time Utilized on Work Orders | 66%         |

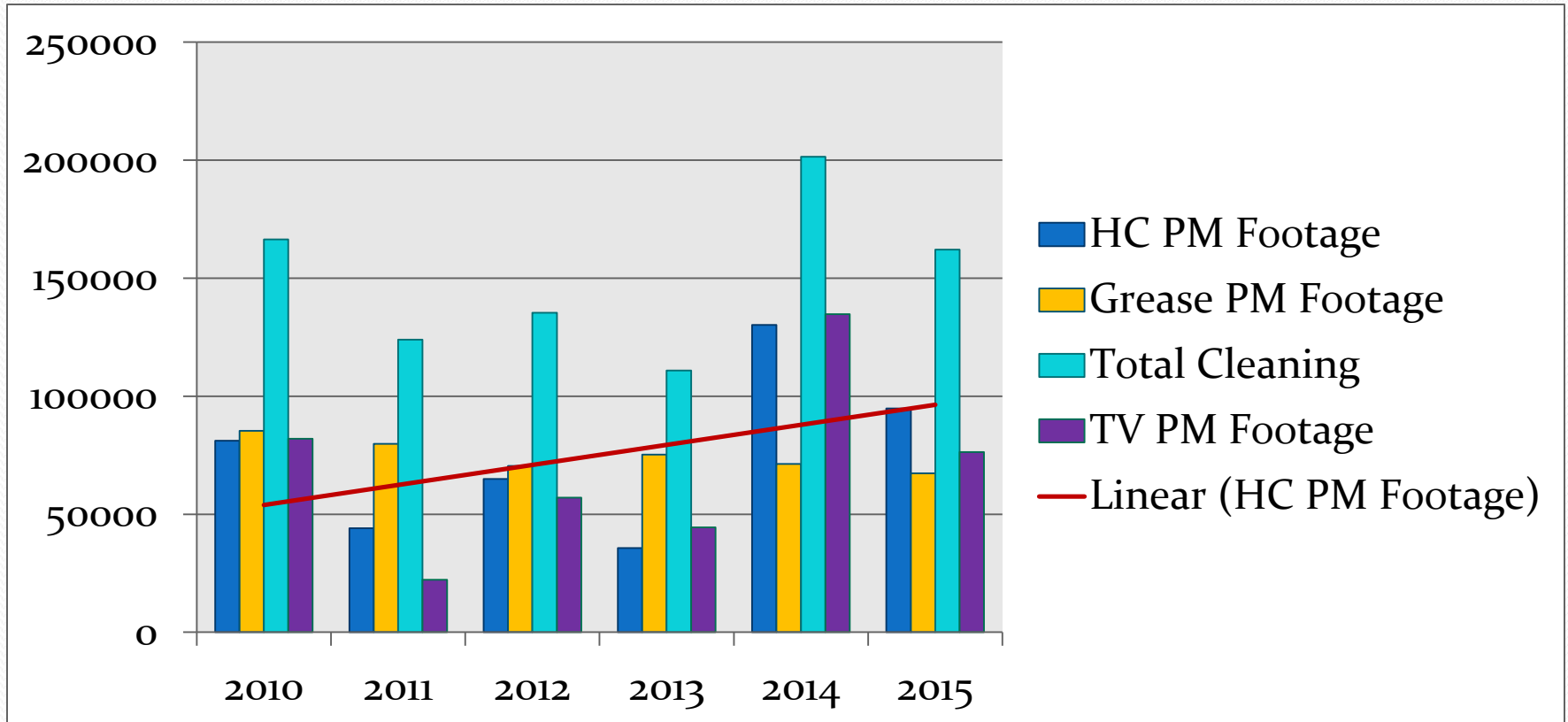
# 2015 Summary

- By focusing on meeting or exceeding the weekly goal in most months of the year, measurable production has significantly improved.



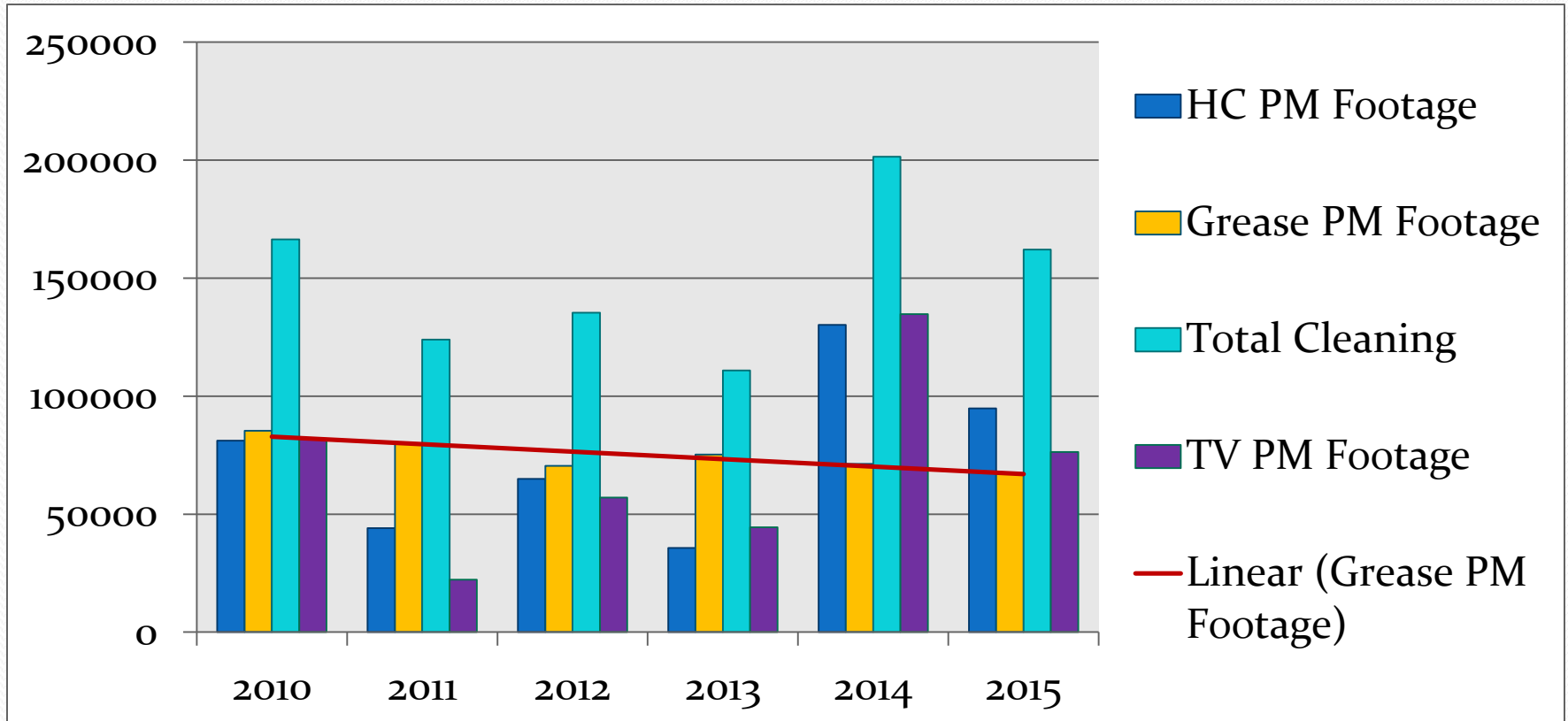
# Comparisons of work type

- Hydro Cleaning continues to trend up



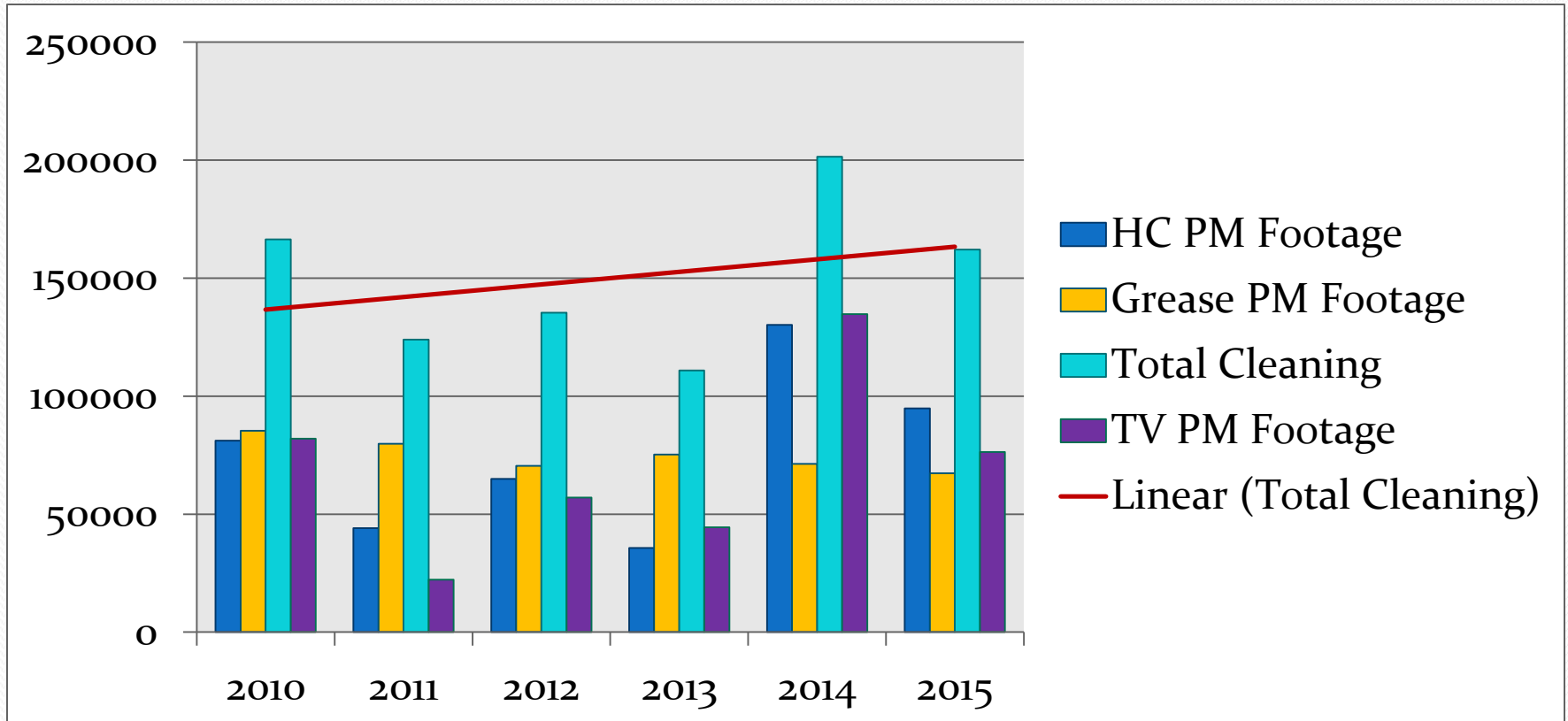
# Comparisons of work type

- Grease line cleanings have decreased - optimization



# Comparisons of work type

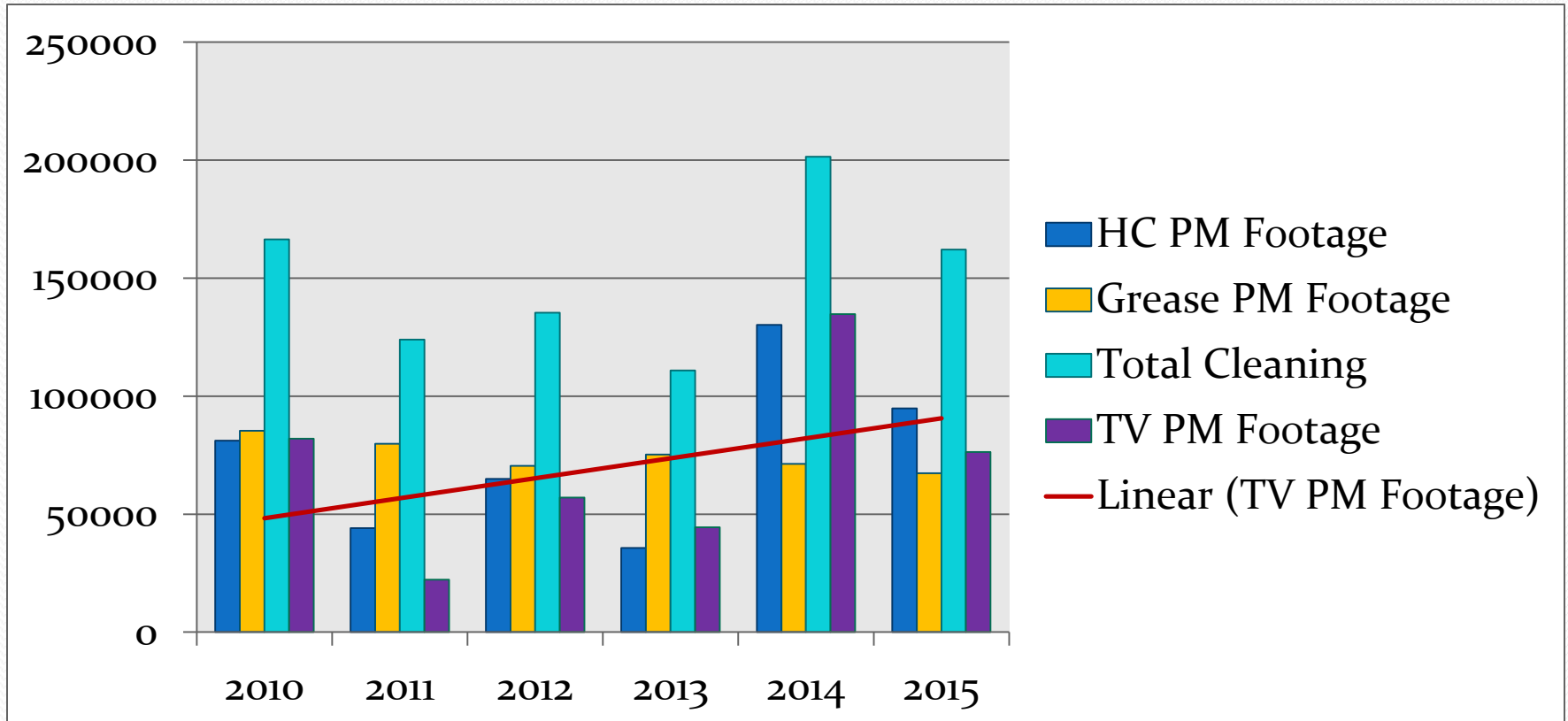
- Total Cleaning continues to trend up





# Comparisons of work type

- TV PM Footage is also trending up



# Unmeasurable Successes

- The general mood in the Field Operations group has significantly improved
- Management confidence in staff performance is up
- Interpersonal relationships have improved resulting in increased comradery
- Common goals build teams

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I like this!

Questions?

