

# The Metro Wastewater Reclamation District

## Airflow and Odor Mitigation Plan for Delgany Interceptor System

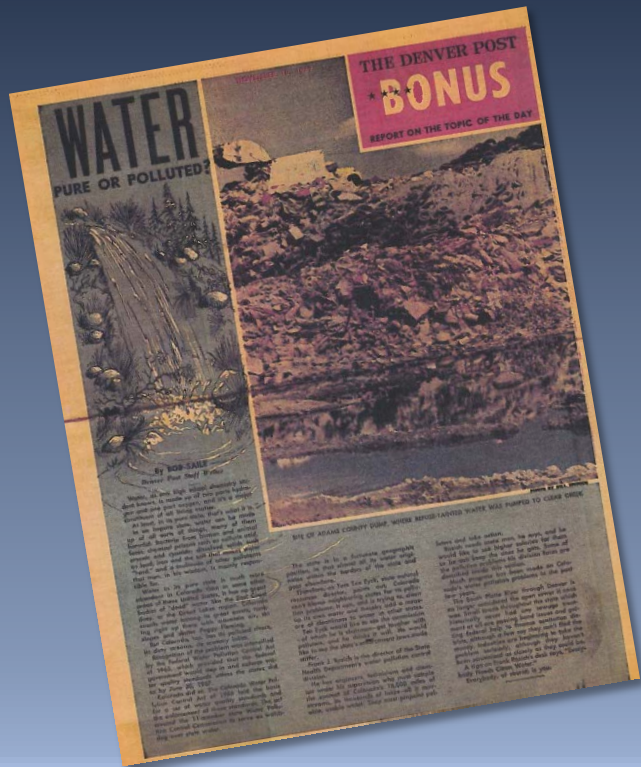


Jim McQuarrie, Director of Strategy and Innovation

Robert W. Hite Treatment Facility Outfall Facility

# Water Pure or Polluted?

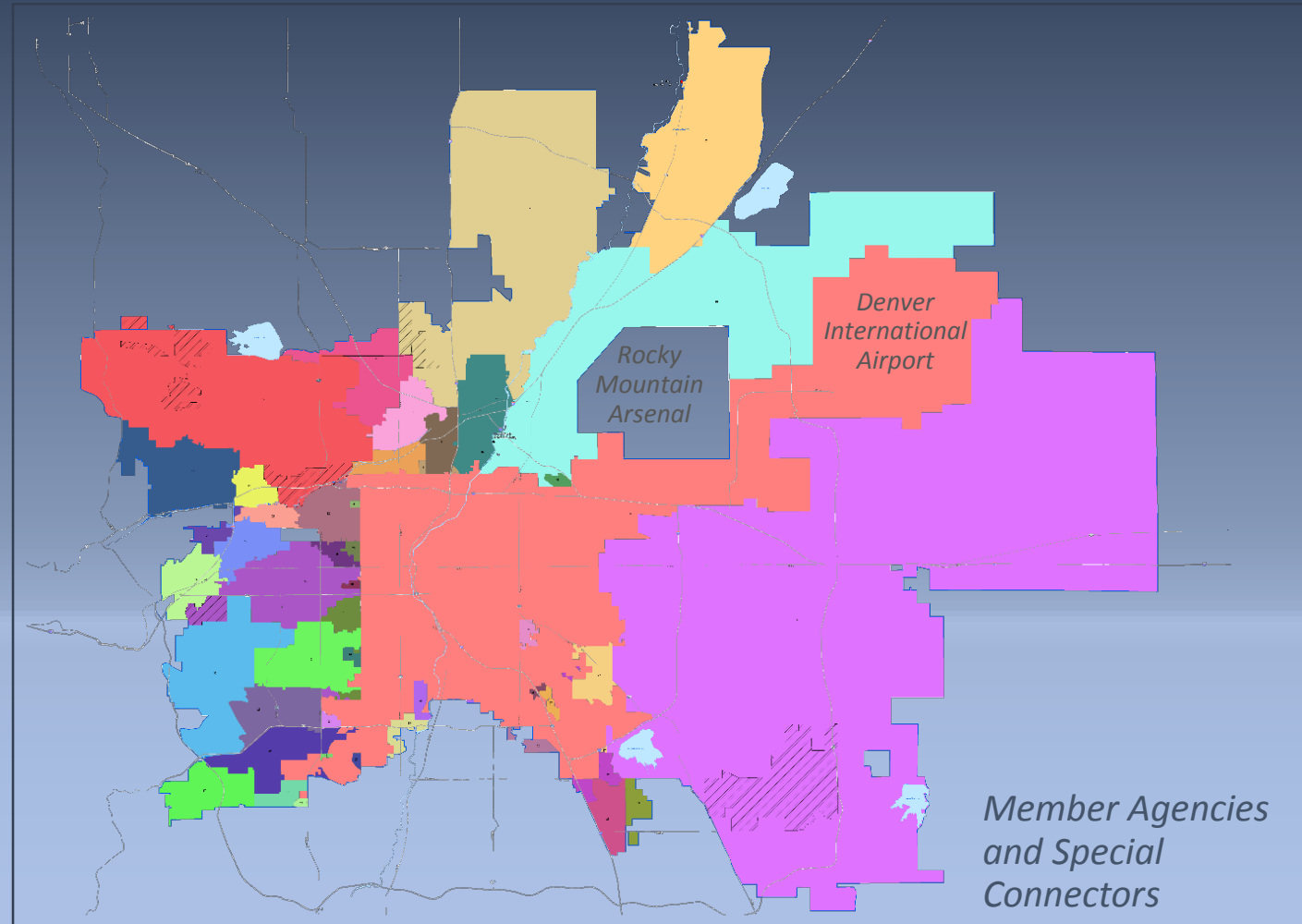
Denver Post - November 18, 1969



*Although the South Platte River through Denver is greatly improved from the open sewer it once was, the river at the north city limits doesn't sparkle. Here, streaming hot water enters the dirty river from a meat packing plant.*

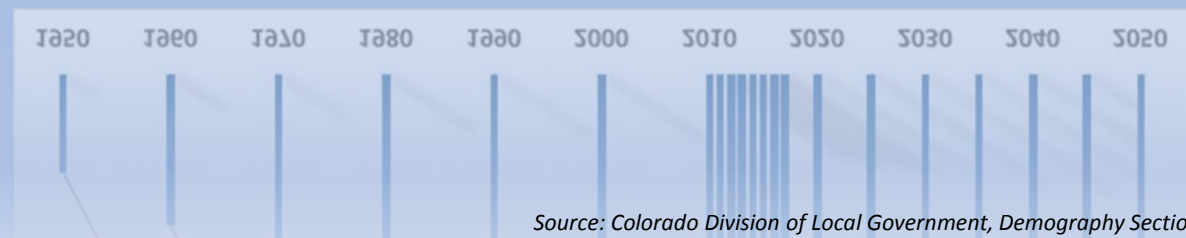
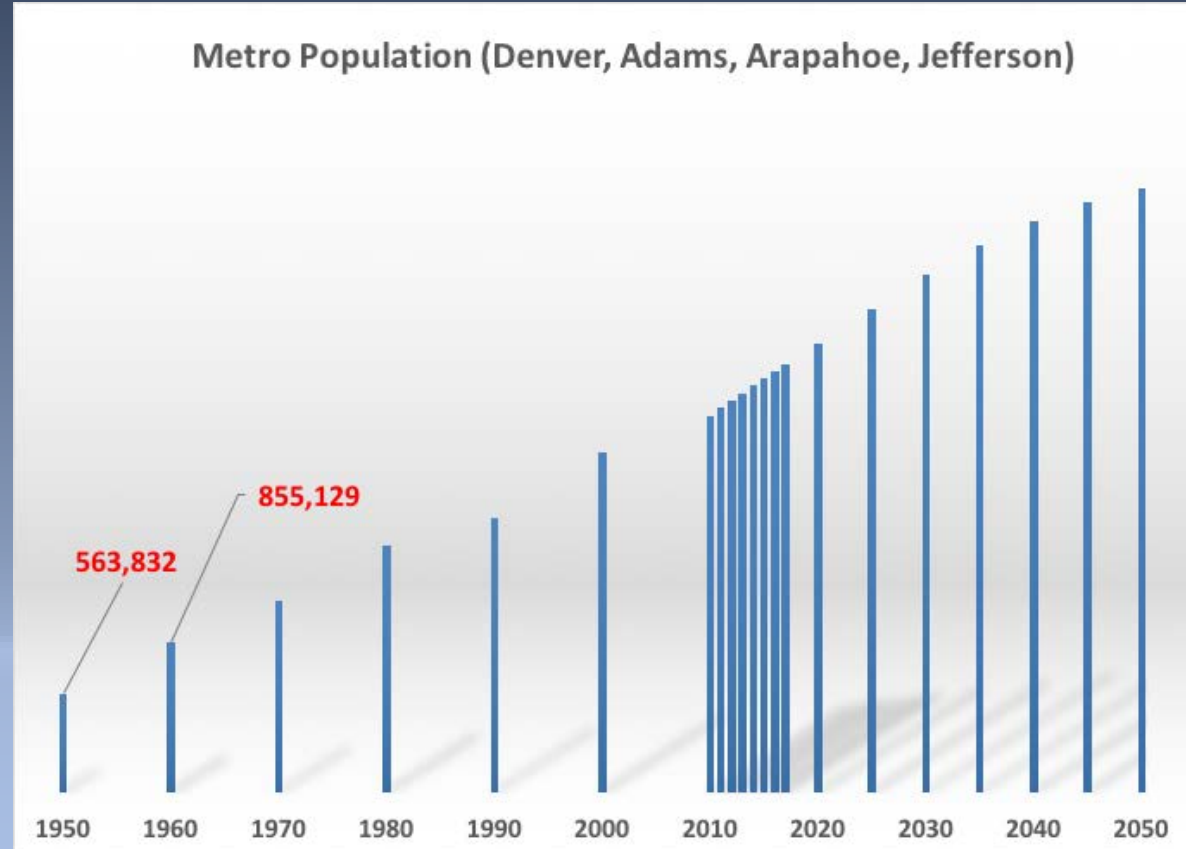
# Metro District – Product of Regional Collaboration

- Formed in 1961
- Transmission and Treatment Services
- 2 million people served (est.)
- 715-square mile service area
- 38-member Board of Directors



# 20<sup>th</sup> Century Infrastructure Investments

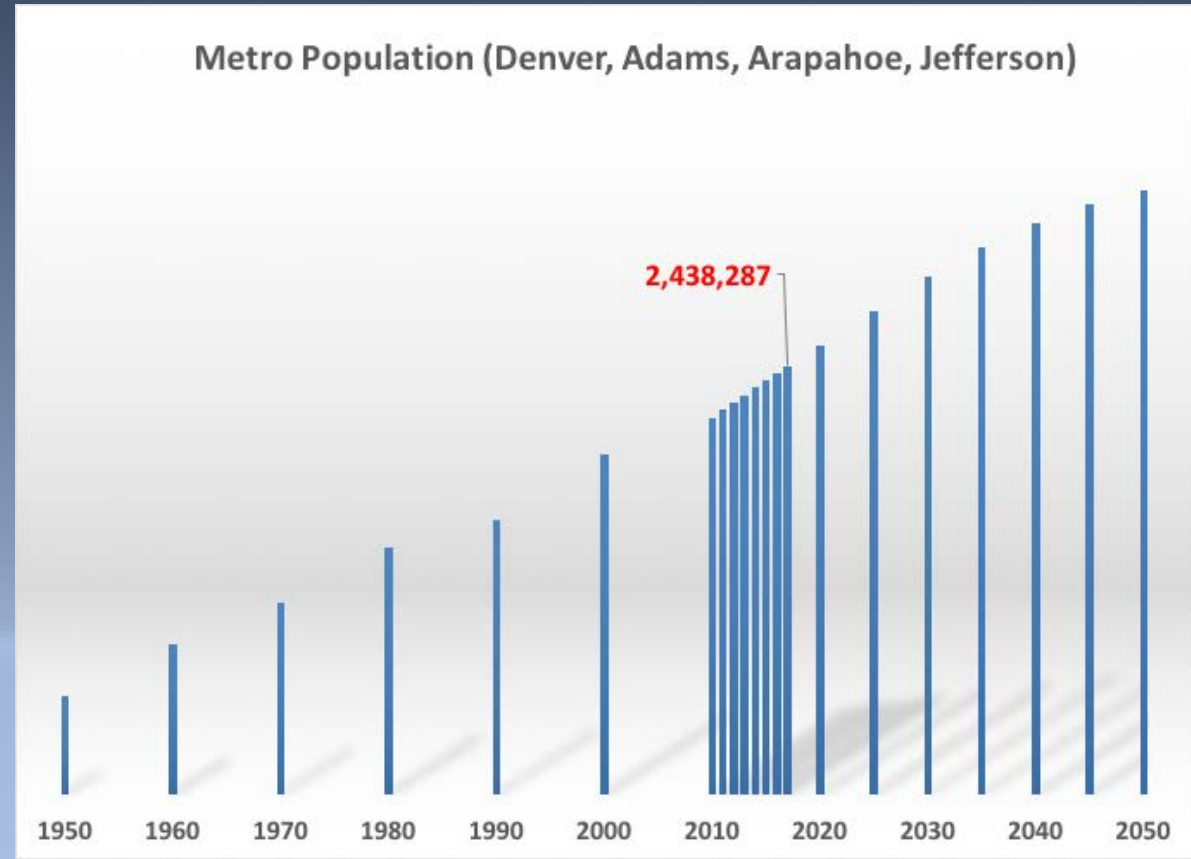
*1965-ish*



Source: Colorado Division of Local Government, Demography Section

# 20<sup>th</sup> Century Investments – Robert W. Hite Treatment Facility

2016

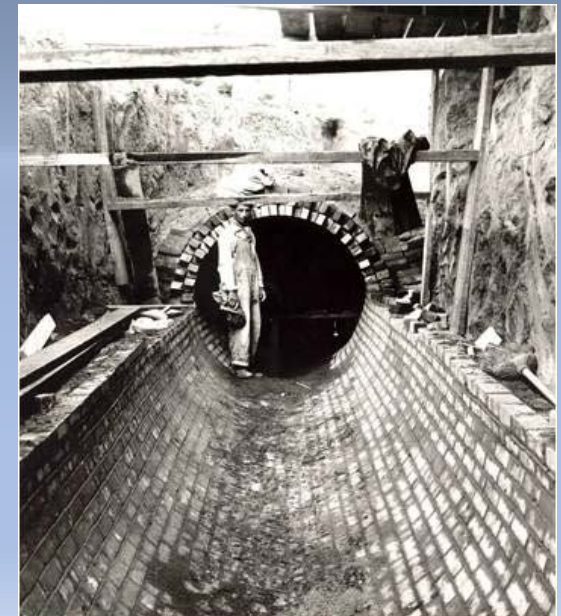


# Transmission System

- Sanitary sewer (no stormwater)
- 260 +/- miles of large-diameter pipe
- 8-inch to 90-inch diameter
- Oldest from 1890
- Mostly gravity flow – only 3 lift stations

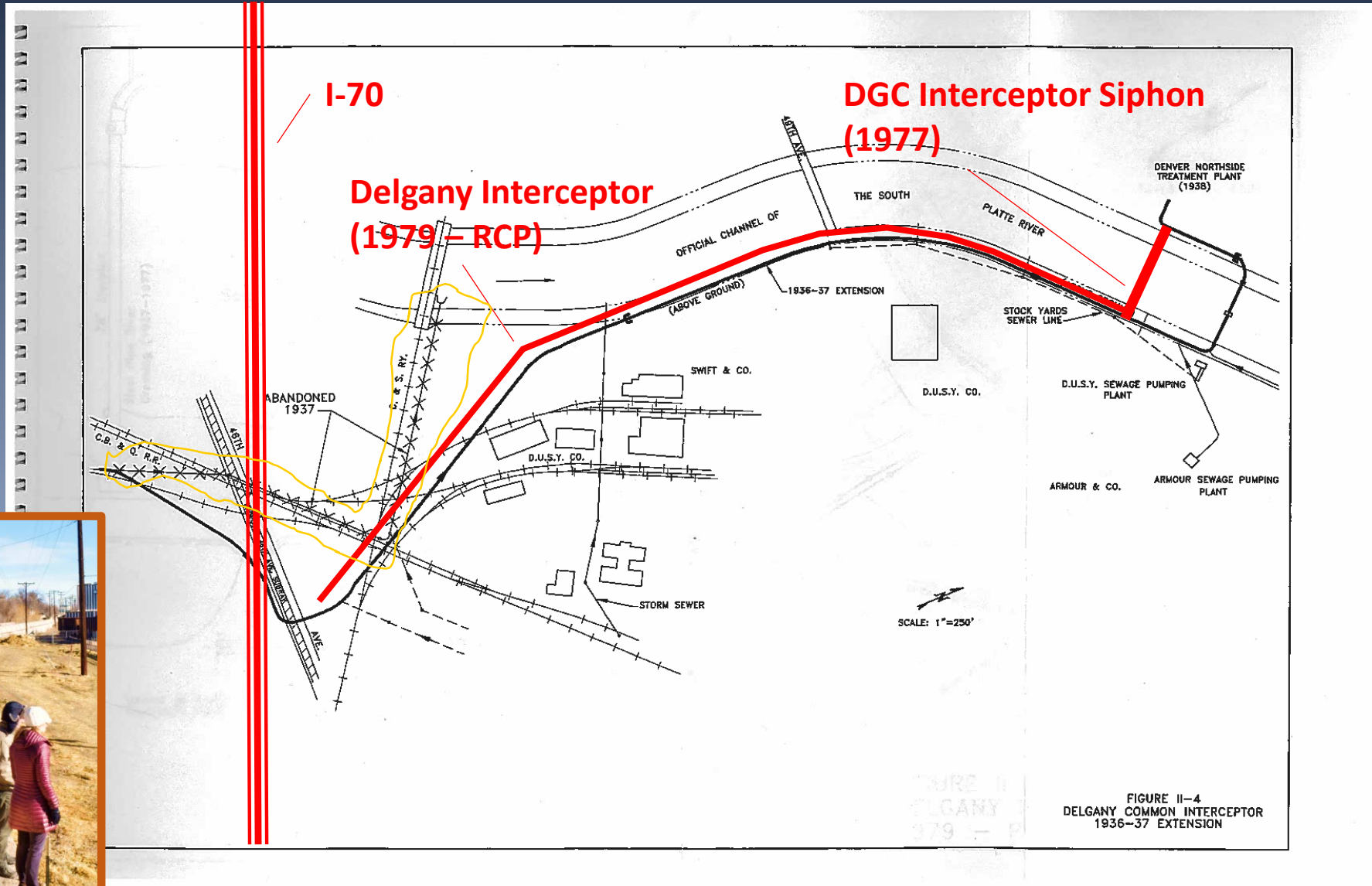
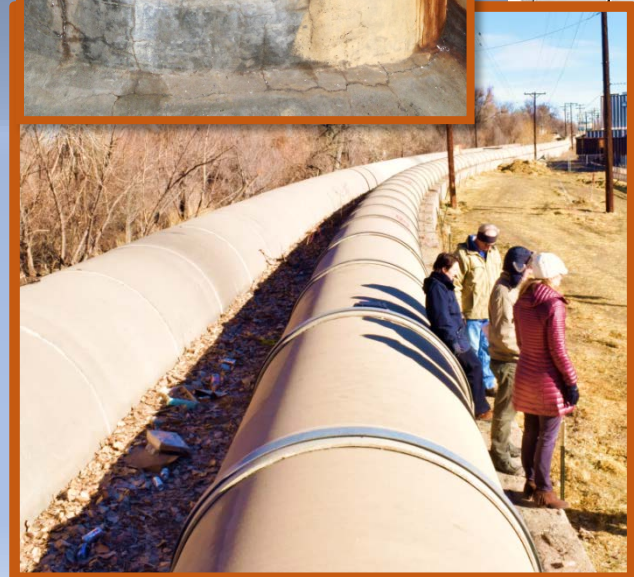


*South Platte Interceptor  
construction tunneling equipment*



*City Sewer in North Denver likely Delgany*

# Delgany Interceptor System on NWC Site



# Odor associated with Wastewater

- Hydrogen Sulfide ( $H_2S$ )
- Biological breakdown of Proteins/Amino Acids during conveyance
- What does it smell like?
- We can notice it at low concentrations
  - 0.000013%
- Not dangerous outside of the sewer
  - Stay out of sewers!



# Historical Complaints



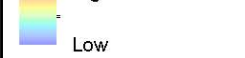
**LEGEND**

**Complaints at Location**

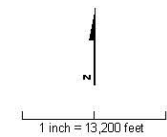
- △ 1
- △ 2
- △ 3
- △ 4

- H2S > 5 ppmV
- Interceptor Network
- Force Main

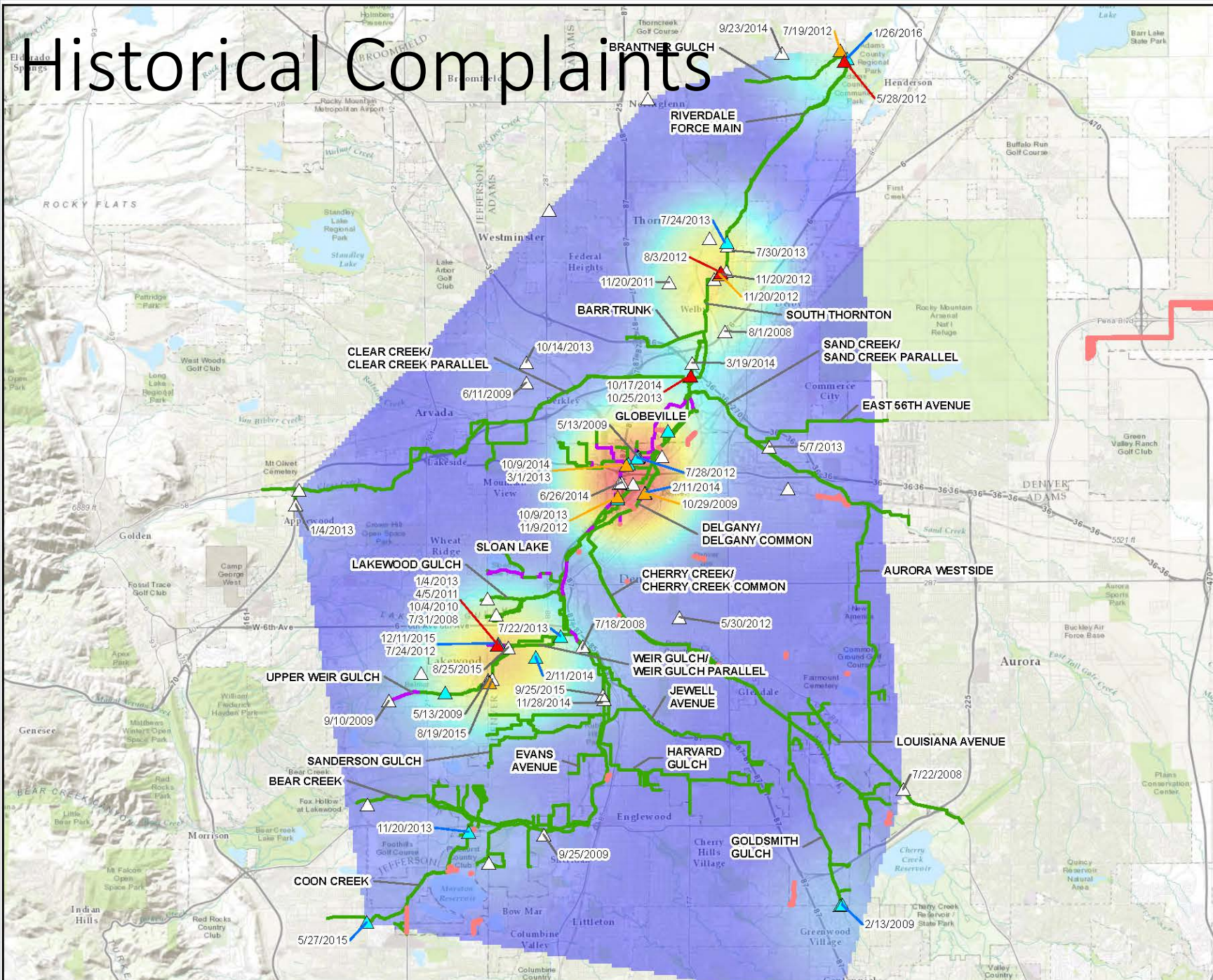
**Odor Complaint Density**



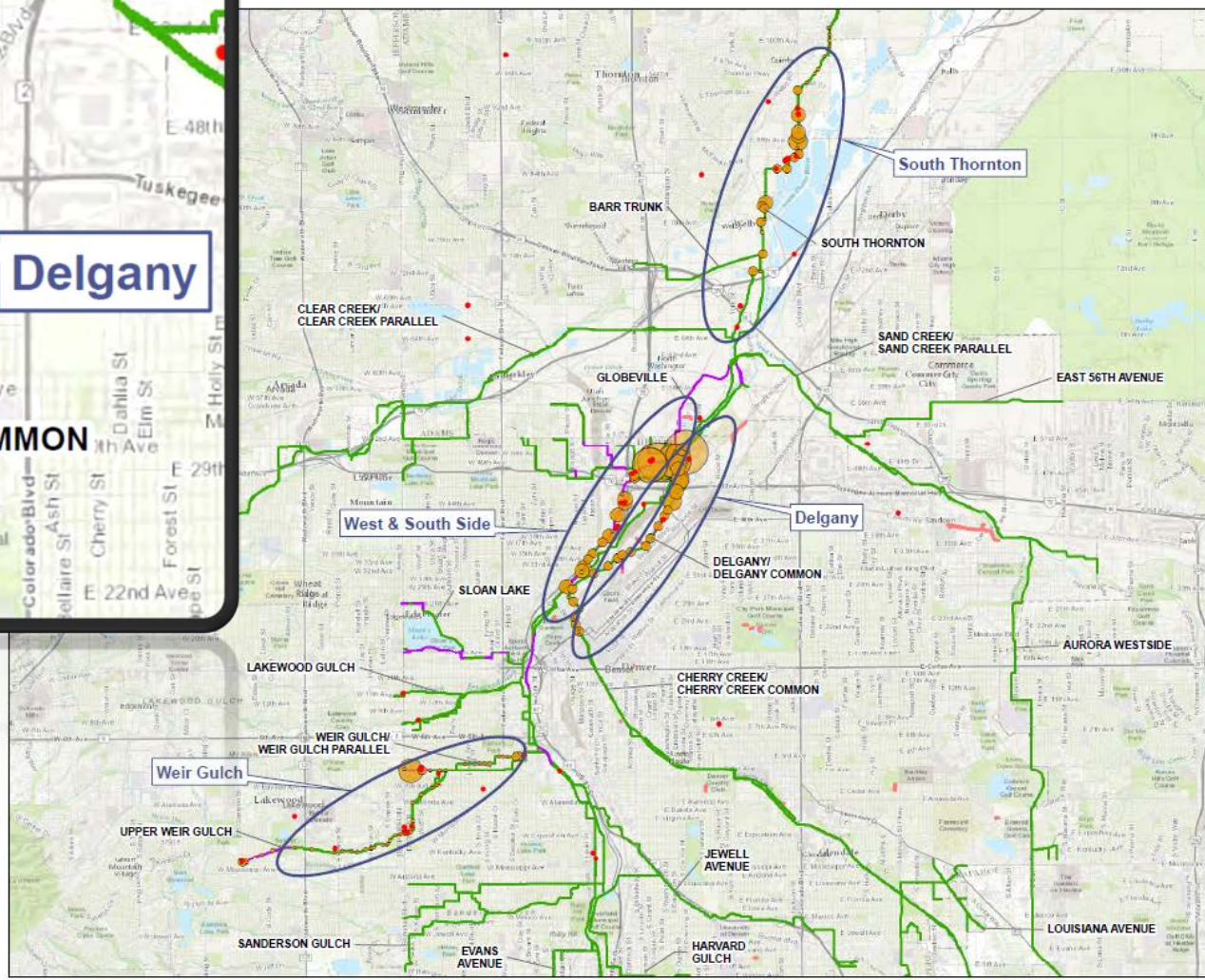
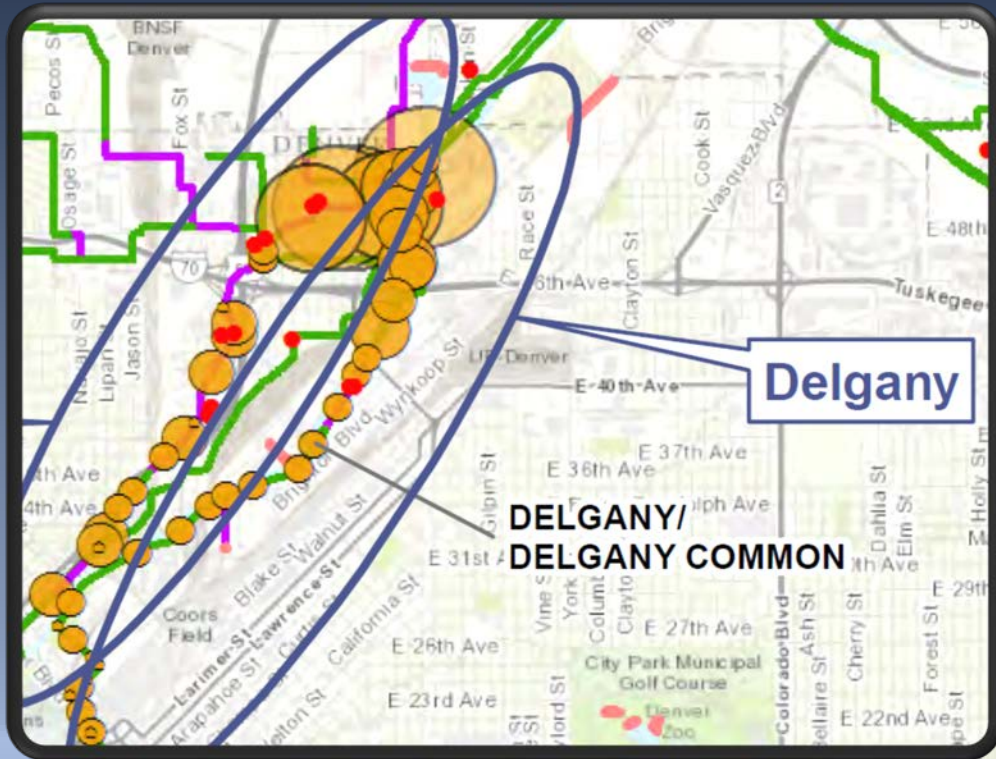
Notes:  
1. Source: PAR 1245 Odor Tracker Records provided by J. Mallorey dated 06-17-2016



**Dated Odor Complaint Density**  
MWRD Air Flow



# MODELING RESULTS OF TRANSMISSION SYSTEM



- LEGEND**
- Odor Complaint Locations
  - Odor: Background + H2S Converted
    - < 100
    - 100 - 200
    - 200 - 300
    - 300 - 400
    - 400 - 500
    - 500 - 600
    - 600 - 700
    - 700 - 800
    - > 800
  - Sanitary Main
    - Force Main
    - H2S > 5 ppmv
    - Interceptor Network

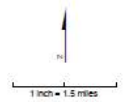
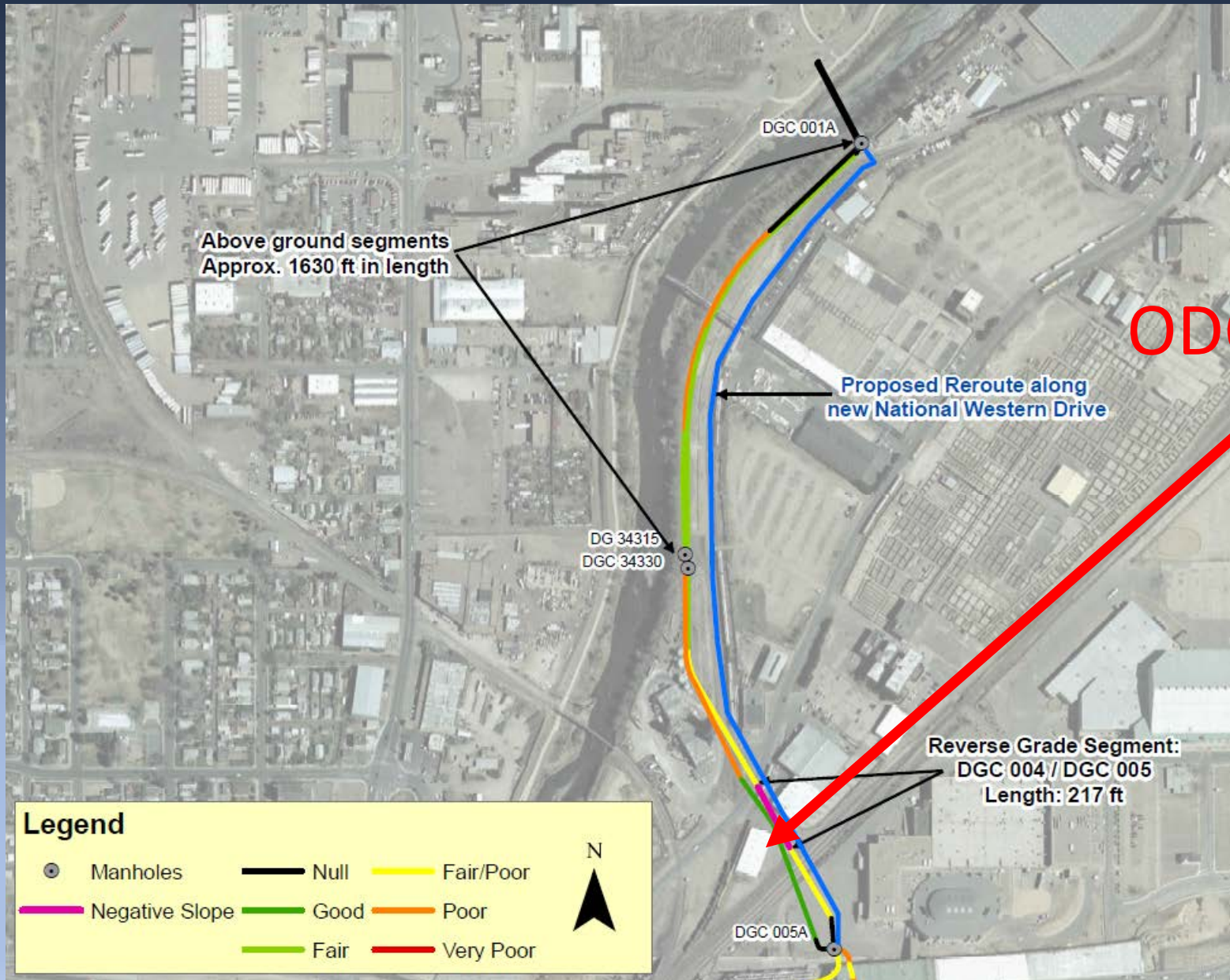


Figure 4-1  
Odor Emission Rates Visualized against  
Odor Complaint Records  
MWRD Air Flow

# IDEAL ODOR INTERCEPTION AND TREATMENT LOCATION



ODOR CTRL HERE

# WHAT DOES AN ODOR TREATMENT SYSTEM LOOK LIKE?



# Objectives for a Proactive Odor Control Strategy

- Developed a road map for odor control in Transmission System
- Integrate recommended odor mitigation strategies into capital project planning
- Consider staff safety, comfort, and worksite conditions
- Minimize complaints and maintain the Metro District's good neighbor status





Thank you for your interest!  
Public Information - [Kmeritt@mwr.dst.co.us](mailto:Kmeritt@mwr.dst.co.us)