

City of Denton Solid Waste & Recycling Department Operational Review & Staffing Assessment



Presentation of Findings



Presented By: Neal Bolton, P.E.

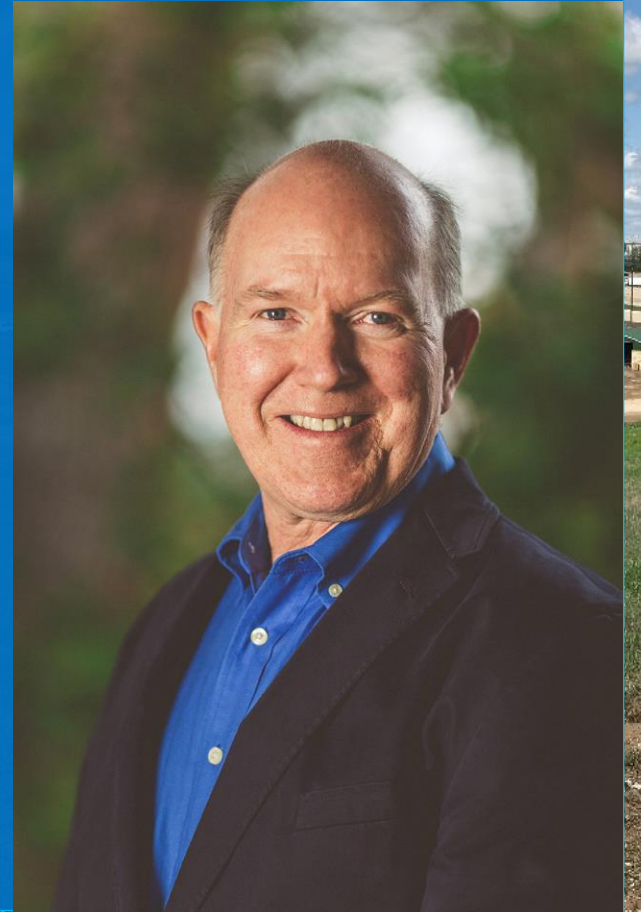
- 40+ years in solid waste industry
- President Blue Ridge Services, Inc.

Author

- The Handbook of Landfill Operations
- The Handbook of Landfill Safety
- 200+ landfill articles and technical papers

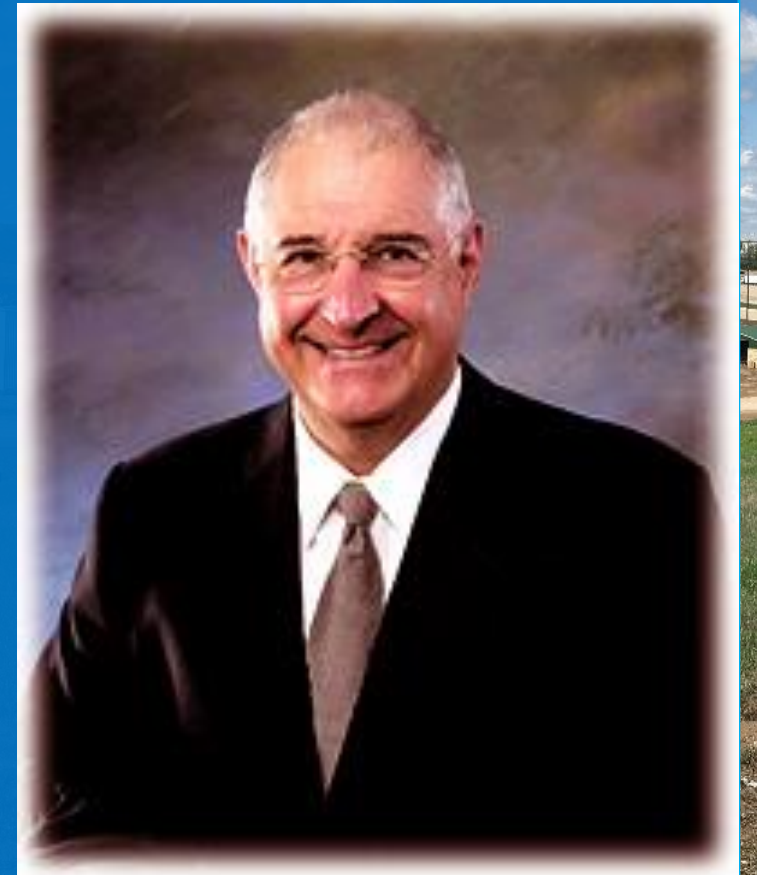
Instructor

- 200+ training classes across US and abroad



Presented By: Ronald J. Proto

- 50+ years in solid waste industry
- President Ronald J. Proto Consulting Group, Inc.
- Engineering Manager – Oakland Scavenger Company
- Group Manager Recology San Francisco Operations
 - Two Hauling Companies
 - Solid Waste Transfer Station
 - Materials Recovery Facility



Project Overview

City of Denton Solid Waste and Recycling Department (SWRD) contracted Blue Ridge Services, Inc. (BRS) to conduct an:

- Operational Review; and
- Staffing Assessment

For

- City of Denton Landfill (CDL)
- City of Denton Collections (CDC)



Project Overview

This project included:

1. Submitting and reviewing detailed CDL and CDC questionnaires
2. Landfill and collections data analysis
3. Operations and safety document review
4. March 26 – March 30 on-site visit (96 staff hours) by:
 1. Neal Bolton
 2. Ron Proto
 3. Kasem Cornelius
5. Further analysis, review, and input from BRS team

Findings & Recommendations

Three Areas for Discussion:

- Landfill
- Collections
- Solid Waste & Recycling Department (as a whole)

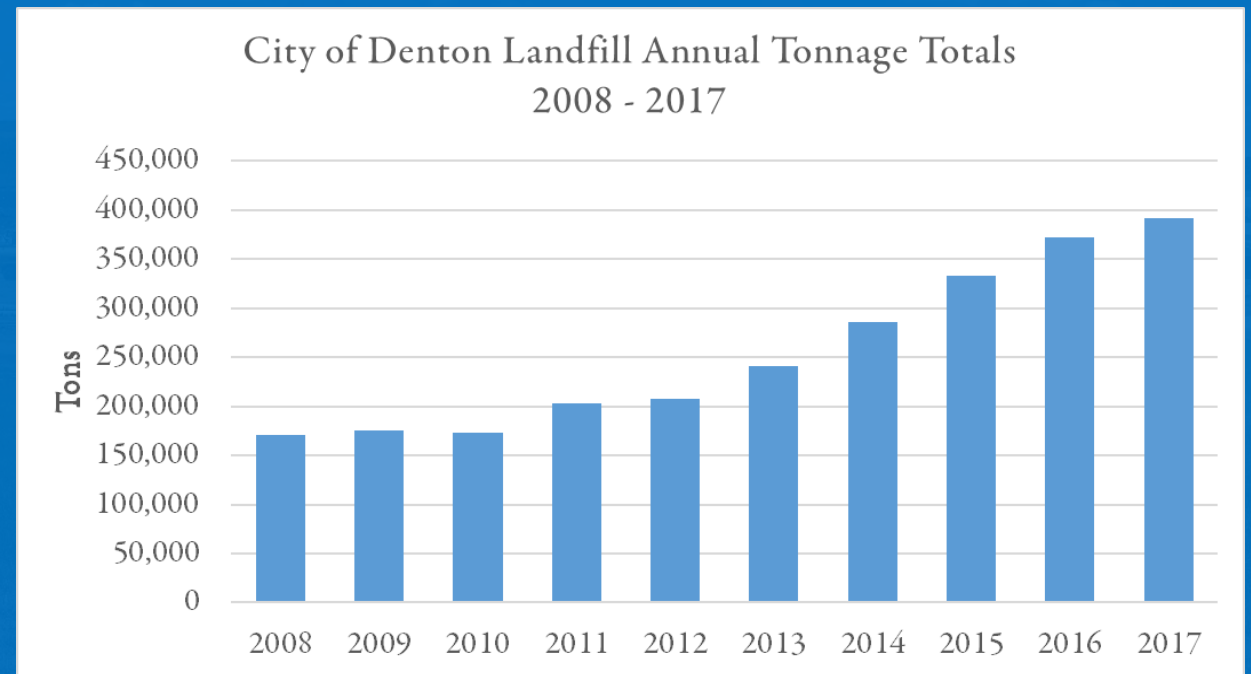


Findings & Recommendations

City of Denton Landfill

CDL Tonnage Growth

- Landfill tonnage has greatly increased in recent years
- SWRD has instituted multiple ancillary services as well
- Rapid growth and addition of ancillary activities often results in planning and staffing inefficiencies



Landfill Operations Planning

By planning ahead for both long and short-term operations, significant savings and efficiency improvements can be made to operations and landfill airspace utilization.

BRS recommends the following for the landfill:

- **Development of a Soil Management Plan**
- **Development of an Annual Fill Sequence Plan**
- **Construction of Wet Weather Tipping Pad**

Landfill Operations Planning

- Development of a Soil Management Plan
 - For long-term landfill site development and optimization
- Development of an Annual Fill Sequence Plan
 - For short-term landfill site development and optimization
- Construction of Wet Weather Tipping Pad
 - Industry Standard Best Management Practice for wet weather operation



Rubble Processing

- Rubble material is being overhandled and over-processed with excessive heavy equipment
- Most rubble can be used as-is for other on-site purposes, with minimal processing and, with strategic planning, the annual quantity can be reduced – helping preserve valuable landfill airspace

Rubble Processing Operation Fiscal Years 2015-2017		
	Tons	Revenue/Expenses
Concrete, Asphalt, & Brick Tons Received	226,171	\$683,116.00
Material Processed by Big City (Actual Expenses 2015-2017)	45,729	-\$336,162.00
Material Processed by SWRD (Actual Expenses 2015-2017)	180,442	-\$910,366.00
Crushed Concrete & Asphalt Sales	20,697	\$176,373.00
Tons of Concrete & Asphalt Remaining On-Site (Processed & Not Sold)	205,474	
Concrete & Asphalt Income FY 2015-2017		-\$387,039.00

We recommend that processing rubble in-house be discontinued.

Building Material Recovery (BMR)

- Labor and heavy equipment intensive process
- Should be financially viable through:
 - Commodity sales revenue
 - Value of lined-landfill airspace saved through diversion and consolidation of processed solid waste material



Building Material Recovery (BMR)

- Based on the Pro Formas available, the BMR is not a financially viable operation
- Sell all heavy equipment, grinders, screeners, etc.
- Money received from equipment sales should be set aside in SWRD reserves for future equipment maintenance/ purchases.
- Refocus efforts to increase airspace utilization on improving landfill compaction and soil usage.

BMR Financial Viability FY 2015 & 2017		
	2015	2017
Commodity Sales Revenue	\$175,785.00	\$314,926.00
Reported Airspace Savings Value on BMR Pro Forma	\$436,138.00	\$453,565.00
Reported BMR Revenue	\$611,923.00	\$768,491.00
BMR Operating Expenses	\$1,096,604.00	\$1,119,336.00
BMR Income	-\$484,681.00	-\$350,845.00

We recommend that BMR operation be discontinued.

Enhanced Leachate Recirculation (ELR)

The ELR system pumps collected leachate back through the landfill. The 2 goals of the ELR system is to:

1. Generate more LFG to increase the amount of power produced by LFG-to-energy system
2. Extend the life expectancy of the landfill by increasing the rate of landfill settlement to provide additional available airspace

Enhanced Leachate Recirculation (ELR)

However,

1. Generate more landfill gas (LFG) to increase the amount of power produced by LFG-to-energy system
 - The CDL is currently having LFG migration issues, and has no need for the additional LFG generated through ELR
2. Extend the life expectancy of the landfill by increasing the rate of landfill settlement to provide additional available airspace
 - Bringing landfill operations up to industry best management practices will have a greater impact on airspace utilization and landfill life expectancy than ELR

We recommend that ELR operation be decreased/discontinued.

Landfill Heavy Equipment

- Primary dozer (D155) currently used approximately 2,730 hours/year
 - Reduce by 50% to approximately 1,300 hours/year
- Two 826K Compactors currently used approximately 4,300 hours/year
 - Should fully utilize at approximately combined 5,600 hours/year
 - In time, exchange for CAT 836 compactors
- Smaller D65 dozer good machine for trimming, cover, pre-fill stripping



Landfill Heavy Equipment

- Currently using 3 Articulated Haul Trucks
 - Estimates indicate 1 truck operating ~1.5 hours/day is adequate for handling cover soil
- Increase utilization of Tarp-O-Matic – will require additional tarps
- Increase Effective Density from 1,100 lbs/cy to over 1,400 lbs/cy



Landfill Summary

- Development of a Soil Management Plan
- Development of an Annual Fill Sequence Plan
- Construct a Wet Weather Tipping Pad
- Discontinue processing rubble in-house
- Discontinue BMR operation
- Decrease/discontinue ELR operation

Landfill Summary

- Reduce D155 dozer hours by 50%
- Fully utilize 826K compactors
- In time exchange CAT 826 for CAT 836 compactors
- Reduce Articulated Haul Truck hours and fleet
- Increase utilization of Tarp-O-Matic
- Increase Effective Density



Findings & Recommendations

City of Denton Collections

Services Offered

- CDC offers the following services:
- Residential Collection
 - Municipal Solid Waste (MSW)
 - Recycling
 - Bulky Item
 - Household Chemicals
- Commercial
 - MSW
 - Recycling
 - Food waste



Residential MSW Collection

- Each route makes about 1,064 to 1,097 lifts/day.
- Industry standard for an 8-hour day is 950-1,000

We recommend:

- Although 1,000 lifts/day appears reasonable, the crews work 10-hour days. It is possible that the routes can be made larger.
- CDC conduct an objective study to determine if the residential MSW route lifts per day provide for a full day's work.



Residential Recycling Collection

- Residential recycling route productivity is low.
- The drivers drive by the same number of houses as the MSW drivers
- Setout rate is estimated to be 60-70 %, about 600-700 lifts/day compared to MSW routes with 1,000 to 1,100 lifts/day
- Recycling routes used same number of trucks as MSW routes, yet they collect only 22% of the residential tonnage

We recommend:

- CDC audit the residential recycling routes for the setout rate and cart volume, then adjust the routes accordingly
- Route audits may indicate recycling can be collected every other week

Residential Yard Waste

- The yard waste collection system is slow, inefficient, leaves a mess, and is unsafe.
- 2 man crew drives by almost 2,000 houses per day but average only 128 collections, less than 4 tons per load.
 - Less than 50% of the truck's carrying capacity

We recommend:

- CDC should consider using a cart-based system like residential MSW collection.
- A cart system is:
 - Cost-effective
 - Fast
 - Clean
 - Safer for the driver



Bulky Item Collection

- Crews average 35 collections a day
- This is low by industry standards, which can range from 100-200 collections per day.

We recommend:

- CDC should consider running the bulky collection route every other week or every third week to increase collections to 70 or 100 per day.
- The schedule can be seasonally adjusted based on the service history

Household Chemical Collection (HCC)

- The City provides valet HCC service.
- Many cities require residents to bring the material to a collection location.
- In FY 2017, HCC conducted 3,899 pickups, meaning only 12% of the 32,605 residential customers utilize the service.
- The service is being funded by residents who do not utilize the service.



Household Chemical Collection (HCC)

We recommend:

- SWRD should discontinue the HCC residential collections service and only operate as a regional drop-off facility



Commercial MSW Collection

- The commercial MSW front-loader routes average 102 lifts per day
- Industry standard is a lift count of 125 to 150 lifts per day, depending on route density and distance from the post-collection facility

We recommend:

- CDC should eliminate one Monday through Friday and one Saturday route.
- This change would increase the Monday through Friday routes lift count to about 120 per day

Commercial Recycling Collection

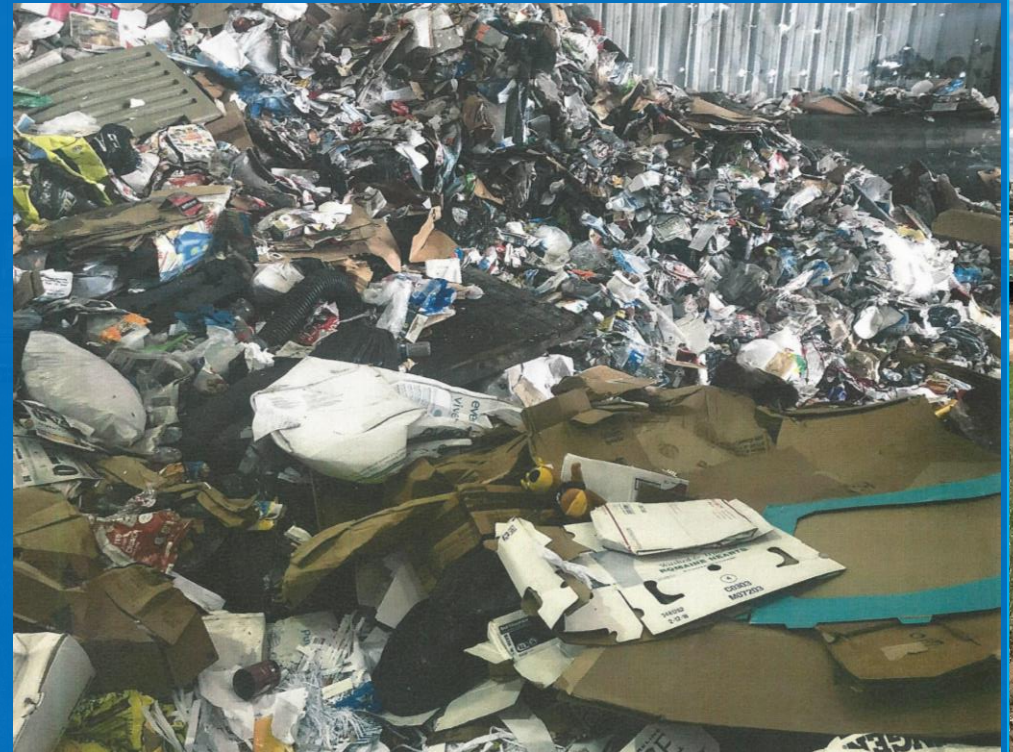
- CDC has a complex schedule for commercial recycling
- The lift count average is 68 per day with a payload a little over three tons, less than 50% of the trucks carrying capacity.

We recommend:

- CDC should consider a complete review of the commercial recycling system
- Redesign the routes to increase lift count to around 150 per day, in line with the industry standards for recycling routes

Multi-Family Recycling

- It is our understanding that the City is looking to significantly expand CDC recycling for multi-family housing customers
- Multi-family recycling is one of the most challenging sectors to minimize contamination.



Multi-Family Recycling

- Our visit to Pratt Recycling indicated that recyclables delivered by CDC have become increasingly contaminated over time, and we believe adding multi-family recycling to the mix will only exacerbate the problem.

We recommend:

- Wait for current markets to stabilize before making a decision
- Conduct further resident utilization analysis before expanding service



Fleet Maintenance

- A major complaint and a source of frustration was that it takes too long to get a truck repaired
- Drivers avoid dropping off their truck unless it's absolutely necessary, this is a serious safety concern, but also exacerbates maintenance time issues

We recommend:

- Periodic meetings between fleet maintenance services and drivers
- Allow both groups to develop a mutual understanding of the challenges drivers and technicians face when a truck goes in for repairs

Fleet Maintenance

- City of Denton Fleet Maintenance has 16 Technician positions (currently 1 vacant) with ~1,100 assets.
- A ratio of 1 tech to approximately 69 vehicles

We recommend:

- Increase fleet services department staff to achieve ration of 1 technician for every 7-10 vehicles in the collection department - including support vehicles, pickups and cars.



Fleet Maintenance Annex

- Truck maintenance is 4 miles from the collection Department's parking facility.
- It makes dropping off and picking up trucks for repairs inconvenient and time-consuming.
- Fleet building is currently full

We recommend:

- Constructing a maintenance shop annex close CDC's truck parking facility
- This would be convenient and encourage drivers to drop off their truck for repairs



Collections Summary

- Conduct an objective study of residential MSW route lifts
- Audit residential recycling routes for the set out rate and cart volume, then adjust the routes accordingly.
- Consider using a cart-based yard waste system.
- Consider running the bulky collection route every other week or every third week to increase collections to 70 or 100 per day.
- Discontinue the HCC residential collections service
- Operate HCC as a regional drop-off facility

Collections Summary

- Eliminate one Monday through Friday and one Saturday commercial MSW route to increase lift counts to about 120 per day
- Consider a complete review of the commercial recycling system to increase lift count to around 150 per day
- Before expanding multi-family recycling service, wait for current markets to stabilize and conduct further resident utilization analysis
- Conduct periodic meetings between fleet maintenance services and drivers
- Increase fleet services department staff to achieve ratio of 1 technician to every 7-10 vehicles
- Constructing a maintenance shop annex close CDC's truck parking facility



Findings and Recommendations

Solid Waste and Recycling Department

SWRD Safety

Absence of safety culture throughout SWRD

- Minimal high visibility safety apparel in field (gray shirts, etc.)
- Supervisors and managers do not set safety example with safety vests
- Safety meetings not focused on industry specific training
- No safety posters, notices, slogans, etc.



SWRD Safety

We recommend

- PPE and High Visibility Safety Apparel be worn by ***all*** employees (including management)
- Implementing regular safety meetings on applicable solid waste industry topics
- Develop and implement comprehensive Standard Operating Procedures (SOPs) for all CDL and CDC tasks



Organizational Structure

- SWRD is generally management heavy
- Includes operations recommended to be discontinued/decreased
- Organizational recommendations assume full implementation of report recommendations
- Recommendations based on:
 - Review of SWRD
 - Industry standards
 - Observations working with similar solid waste operations

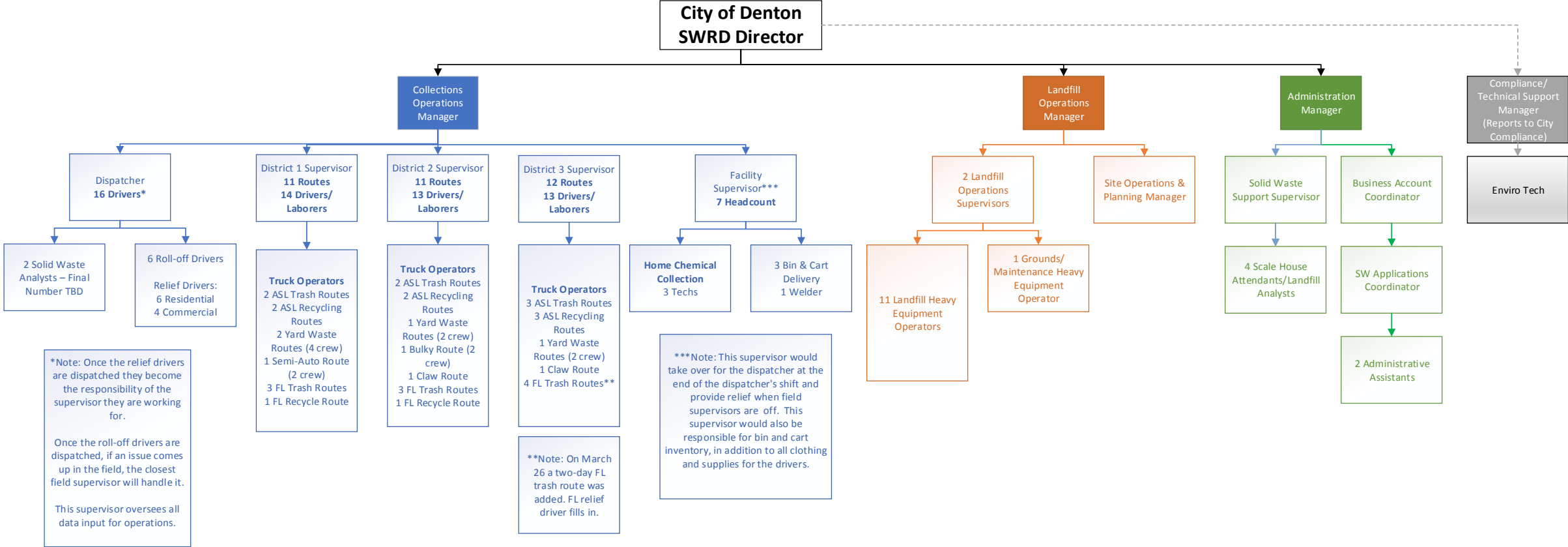
Organizational Structure Summary

- Collections Management positions constitute 16% of the staff. Industry standard is around 10%.
- Collections Supervisors currently have 6-9 employees, which is 30-50% below industry standard.
- Collections Supervisors spend an inordinate amount of time doing administrative work. Much of this can be handled by administrative staff.
- Collections dispatching, supervision of back-up drivers, and fleet maintenance need to be addressed in the organizational structure.
- Special projects and new operations should not be introduced at the same scale/frequency in the future.

Organizational Structure Recommendations

- Reduce 3 manager & 4 supervisor positions
- Dissolve the Site Operations division
- Assign planning & special projects to the Landfill Manager
- Assign the scale house to the Administration Manager
- Introduce a Dispatch operation
- Consolidate ancillary services under a new Facilities Supervisor

Position Type	Current Employees	Recommended Employees
Director	1	1
Managers	7	4
Supervisors	12	8





Questions?