



## Monthly Report and Highlights - October 2016

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### ATTACHMENTS

- Capital Projects Summary
- Traffic and Transportation Overview
- Public Works Summary
- Environmental Services Summary

### ENGINEERING SERVICES

- Capital Projects
- Development Review
- Traffic and Transportation

### PUBLIC WORKS

- Water Distribution
- Sewer Collection
- Operations Division
- Meter Maintenance
- Street Maintenance
- Right of Way Management
- Stormwater Utility
- Environmental Services
- Water Resources



## Message from the Director

The FY 17 budget includes new monetary and human resources for the public works and engineering departments. A new office manager position was included for public works to perform various administrative tasks that are currently handled by superintendents and supervisors throughout the department. Having these tasks performed by administrative staff will allow the supervisors and

superintendents more time to focus on their mission critical duties and will provide for improved consistency and communication with human resources, finance, and other internal service departments. A new utilities superintendent position was approved, increasing the number from one to two superintendents, addressing the increased complexity in operating our water distribution and wastewater collection systems. A new valve and fire hydrant crew was approved to supplement the existing four crews that are dedicated to this purpose. A portion of the flow testing and pressure testing duties have heretofore been performed by the fire department, and with the new crew all of these duties will begin to transition to public works. The city's insurance (ISO) rating is heavily dependent on the performance of the city's water distribution system. An upgrade from part time irrigation inspector to a full time inspector position is included in the budget, addressing the increased workload faced by the water resources division. The water resources section of this report has some very encouraging performance indicators for this division, and the additional resources will help them keep pace with the growing population. Other new positions include the addition of a maintenance worker for the meter division, a crew leader and equipment operator for stormwater, a customer service representative (CSR) for environmental services, a CSR for public works, and a construction inspector in engineering. With respect to line item funding, the council approved a stormwater utility fee increase to cover the expenses of several large erosion mitigation projects, and the contract services line item in the street division was increased by almost 60% to \$1.7 million. These increases in funding demonstrate recognition by the City Council of the needs and costs related to maintenance of our drainage and street system. Our job in public works and engineering is to use these funds wisely and be ever mindful of the trust that our residents and City Council have placed in us to do the right thing.

-- Paul Knippel

# Engineering Services

Capital Projects - planning, design, and construction of city funded roadways, traffic signals, median lighting, water distribution, and wastewater collection systems.

Development Review - construction plan review and field inspection of infrastructure that is built by private development and accepted for maintenance and ownership by the City of Frisco, including floodplain and drainage engineering.

Traffic and Transportation - operation and maintenance of the city's traffic signal system, roadway median lighting, traffic signs and pavement markings, school zone and pedestrian safety, and special events.

## Water Main Break at Southwest Corner of Gaylord and Parkwood

A 12 inch water main broke during the night of September 4, 2016, damaging fire lane pavement, walkways, landscaping, and office flooring, before the on-call utility worker was able to arrive on-scene, locate and close the valves, and isolate the broken section of pipe.



Public Works Mapping 9/22/2016



*These two photos show the 12 inch water line beneath and with minimal separation from an 18 inch concrete storm sewer line. Water main breaks often occur at fittings or pipe joints. In this case, the water pipe split longitudinally, possible due to the proximity and weight of the storm sewer line. This type of construction does not conform to the city's current standards.*

*Photo at left: Water flooded offices of the Convention and Visitor's Bureau and Parks and Recreation.*

## Odor Issue in Kingswood Village

Odor issues were reported by numerous residents in the Kingswood Village Subdivision. The odors were traced to a recently installed 42 inch diameter wastewater interceptor line located along the western boundary of the subdivision. This line carries flow from a large area beyond the subdivision and discharges into the headworks of the Stewart Creek WWTP.



The odor was due to a combination of factors. One factor was that the new manhole cover rings had not yet been sealed and odor control devices on the vents had not yet been installed by the contractor.

The rings were subsequently sealed and temporary odor control devices were fabricated by public works crews until the permanent devices could be installed. The open ventilation to the air may have been inconsequential if the pipeline itself had not been backed up due to a failure at the headworks of the SCWWTP.

Resolution of the problem required close and urgent coordination between public works utility crews, city engineering, construction inspection, the pipeline contractor, and NTMWD.



*Temporary odor control device fabricated by public works crews from a 5 gallon bucket and carbon media, installed on a permanent vent pipe.*

## Annual Construction Contract for New Sidewalks

KT Contracting, Inc. is placing sidewalk and barrier free ramp on Teel Parkway and The Trails Parkway as part of ADA Transition Improvements Program. The city's engineering project manager is Tin Nguyen.



Northwest corner of Teel Parkway and The Trails Parkway.



Barrier free ramps at southeast and northeast corner of the Teel Parkway and The Trails Parkway.

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## Coit Road (Panther Creek Parkway to Rockhill Parkway)

Mario Sinacola & Sons Excavating, Inc. (MSSEI) is setting up a paving machine to pour concrete on the Coit Road and Panther Creek Parkway intersection.



Coit Road looking south from Panther Creek Parkway before paving.



Coit Road looking south from Panther Creek Parkway after paving.

## Meeting with Homeowner's Group Regarding Legacy Drive

Engineering staff met with representatives from the seven homeowner associations that form the Stonebriar Legacy Association of Neighborhoods (SLAN). The meeting was held on September 20 with about 25 in attendance, including six staff members from engineering. The purpose of the meeting was to provide SLAN with an opportunity to express their concerns and interests with respect to Legacy Drive between SH 121 and Warren, in advance of City Council consideration of an engineering contract that is planned by staff to be placed on the October 3 agenda. In general the group is concerned about current and future traffic volumes on Legacy and its impact to their neighborhood. Some of the specific concerns included, but were not limited to a) difficulty in exiting the subdivisions, particularly for those neighborhoods with one point of access to Legacy, b) the potential loss of left turn ability out of the neighborhoods if the roadway is widened, c) the potential loss of landscaping and trees if the roadway is widened, d) the impact of traffic generated by development in Plano, e) the fact that the City of Plano controls and operates the signal system at the intersection of SH 121 and Legacy, f) the validity and basis of the traffic projections and modeling used by the city for this corridor, and g) that by widening the roadway additional traffic will be attracted, creating equal or greater congestion than if no widening were to occur. SLAN expressed a desire for the city to evaluate intersection improvements as a first step (without widening to 6 lanes). SLAN also expressed a desire for staff to recognize points of diminishing returns with respect to the extent of improvements and their benefit.

Some initial responses were provided by staff including the following: a) that the call volume is high and increasing with respect to complaints and questions about plans for capacity improvements to Legacy south of Warren, b) staff have responsibility to manage the city's entire transportation network, c) congestion in one area has impacts on other areas, d) the fact that left turn exits from subdivisions is not present everywhere or guaranteed in Frisco, e) that the engineering

agreement provides for development of three alternatives and is written to provide flexibility, f) a tree expert will be engaged to evaluate the condition of all major trees in the corridor, their life expectancy, and their tolerance for construction activity, and g) that staff is committing to a process of collaboration, but is not committing to specific outcomes at this point. A general timeline was discussed that included Council consideration of the engineering agreement at the first meeting in October, field surveying and subsurface utility investigation beginning in late October and lasting approximately 3 months, with initial alternatives for improvements to Legacy developed and ready for review with SLAN about 3 months after completion of surveying. Staff left open the idea of periodic check-in meetings with SLAN during this 6 month period. Staff indicated that effort toward final design and bidding would not commence before a thorough and good faith effort has been made by the city to collaborate with SLAN and address their concerns, and that the final solution will be made known in an open manner.

## Meeting with Homeowners Regarding West Rowlett Creek Wastewater Main Extension project

Staff met with a group of approximately 15 residents of Cypress Creek Estates on September 12 to discuss the current construction and address plans for the restoration of previously forested areas that were cleared for installation of the pipeline. Since this meeting the zoning for the Edgewood subdivision on the south side of the creek was approved by Council (September 20). This is significant given that open space and construction of the trail system within this subdivision will connect to the open space and trail planned by city staff for Bacchus Park. Draft conceptual renderings of improvements to city controlled areas and a timeline for the execution of those improvements have been prepared. As of the writing of this report these items are pending internal review before distribution to the residents. Staff committed to meet with the residents for input and review of the landscaping and trail improvement plans during early stages of design.

## Public Works

The Public Works Department is organized in the following manner based on functionality.

Water Distribution - maintenance of water distribution pipelines, valves and hydrants, and water quality sampling.

Sewer Collection - maintenance of sanitary sewer collection system, and camera inspection.

Operations Division - operation and maintenance of water pump stations, elevated water storage tanks, and sewer lift stations.

Meter Maintenance - maintenance, testing, and reading of water meters.

Street Maintenance - maintenance of streets, alleys, and sidewalks.

Right of Way Management - permitting and inspection of work within public right of way, field location of city water and sewer lines, and backflow prevention.

Stormwater Utility - compliance with State permit, and maintenance of the storm drainage system.

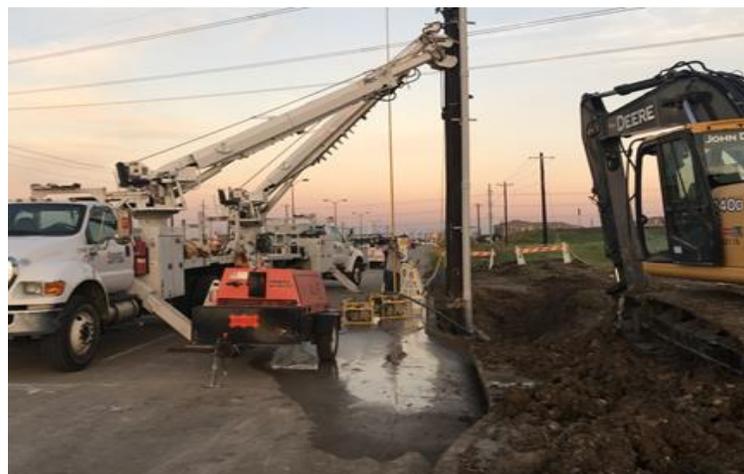
Environmental Services - residential and commercial trash collection, recycling program, and education.

Water Resources - conserve and maintain the city's water supply through educational programs, irrigation system inspections, water violation patrol, and customer service representatives.

### Water Main Break on Eldorado at Research Road

A 20 inch water main broke behind the northern curb line of Eldorado Parkway during the early morning hours of September 21, 2016, flooding all three west bound lanes with water and mud and causing a temporary closure of the roadway. The repair was particularly difficult and time consuming due to the proximity of live high pressure gas lines and power poles. A large section of the top of the pipe separated from the pipe. The cause of the separation has not been determined, but it is likely due to stress on the pipe from the movement of the ground or stress imposed on the pipe during construction of the franchise utilities adjacent and close to the water pipe.

*Photos at right: The power poles are so close to the water line that they had to be held in place while the excavation and repair was made.*





*Utility pole trucks hold power poles while City crews repair water main.*



*Crews use a backhoe to push joints of pipe together, using the dump truck as a backstop. The two joined pipes were then cut to fit to form the replacement.*



*Water crews had to work around live electrical and gas pipelines.*

## **Manhole Repair**



*L-R: David Raines, Dalton Fallaw, and Michael Butler repair sources of groundwater inflow to a manhole. Ongoing smoke testing has revealed a number of locations in the wastewater collection system where repairs need to be made.*



*Dalton Fallaw, in the harness, standing on the floor of the manhole.*

## Street Repair at 7<sup>th</sup> and Main

The asphalt crew repaired the pavement edges of 7<sup>th</sup> Street to improve drainage within the city's right-of-way.



Before: 7th Street looking south to Main.



After: 7th Street looking south to Main.



This asphalt laydown machine was purchased this summer and replaces a unit that was almost 15 years old. The machine lays a 9 foot wide mat of hot mix asphalt up to 6 inches thick. The asphalt is delivered to the site by city crews and dumped into the laydown machine. The current price of hot mix asphalt is \$90 per ton, and approximately 35 tons were used in this project.

Although the air temperature was in the low 80s on this morning, the temperature of the asphalt created hot working conditions for this crew.



(L-R) Joselito Sereno, Juan Torres, Honorio Vasquez, Rafael Hernandez, Cruz Villarreal, Brent Ross.



The hot mix asphalt is approximately 180 degrees Fahrenheit as it leaves the laydown machine. The asphalt is distributed by the laydown machine, raked by hand, and then driven over with a roller to form a smooth surface and bind the asphalt.

## Stormwater Utility: Detention pond maintenance at Ohio and La Hacienda Trail

Stormwater Utility crews cleaned a city owned detention facility. The crew included Chris Collis, Kitrell Spann, Alejandro Herrera, and Thomas Kimbrell.



Before the pond maintenance, looking south.



After the pond maintenance, looking south.

The stormwater ordinance amendment became effective on July 28, 2016. Staff issued, 467 courtesy notices at building sites where cleanup was needed.



Construction site with debris tracked into the street.



Example of a clean street as defined in the stormwater amendment.

As of August 1st, there were 189 project sites which required inspection for erosion control.

### Field work

Conducted 148 inspections of structures.  
Received 13 service requests.  
Completed 15 work orders.

### Sweeping

Contract 430 center line miles.  
City owned sweeper was used for various cleanups which was approximately 40 miles.

Stormwater Construction Inspections for Civil Projects	Authorizations to start	18
	Daily	553
	Final Vegetation (complete)	5
Stormwater Inspections for Building Construction Projects	ROW violations	14
	Audits	162

## New water meter installations by the numbers:

Month	Residential	Commercial	Irrigation	Total
Oct-15	212	5	14	231
Nov-15	129	5	16	150
Dec-15	140	4	9	381
Jan-16	172	7	17	196
Feb-16	189	27	8	224
Mar-16	249	6	14	420
Apr-16	176	13	10	199
May-16	198	40	10	248
Jun-16	216	8	16	447
Jul-16	162	9	6	177
Aug-16	180	18	18	216
Sep-16				
<b>Total</b>	<b>2023</b>	<b>142</b>	<b>138</b>	<b>2889</b>

## Right of Way Management by the numbers:

Row Inspections		
Inspections	Monthly	NOTES
ROW PERMITS	1,156	Franchise Utility Permits Applied
LINE LOCATES	1,011	5 Emergency & 296 Confirmed, 948 cable drops
ROW INSPECTIONS	310	New Home inspections
BACKFLOW TEST REPORTS	924	566 Commercial, 146 Residential, 212 New Residential Irrigation, Annual 240 Reminder letters
ROW CAMERA	255	Sewer Camera Inspections for new homes

## Environmental Services

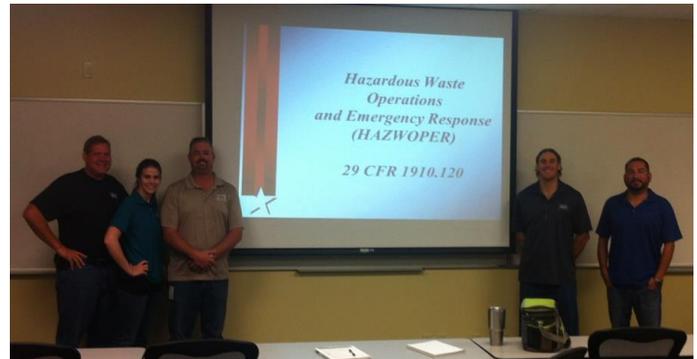
Volunteer opportunities included an Adopt-A-Street cleanup and garden cleanups at the Frisco Family Services community garden. After clearing the beds, Frisco Family services donated two plots and a walkway to Teens4Green.



Frisco Family Services Community Garden cleanup.

Teens4Green debuted new membership cards in August. The cards reward volunteers who actively participate in events. The membership levels range from bronze to diamond. Student volunteers can reference the participation level on resumes and college applications.

Environmental Services recently held a Hazardous Waste Operations and Emergency Response Standard (HAZWOPER) training, an OSHA program to protect workers at hazardous sites. Several employees received and renewed their HAZWOPER certification.

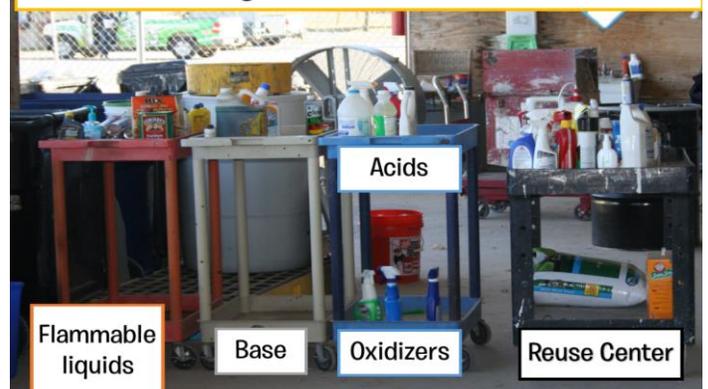


Left to Right: Todd McKinney, Julianah Marie, Jerry White, David Harris and Quincy Massey, Instructor.

Household Hazardous Waste (HHW) - including paint—that is dropped off at the center still in good condition with ample quantity is placed in our Reuse Center for Residents to pick up no more than 5 items per visit. This cuts down on disposal charges and helps residents save some money!



The Household Hazardous Waste (HHW) brought into the Environmental Collection Center is sorted for proper disposal or designated for the Reuse Center.



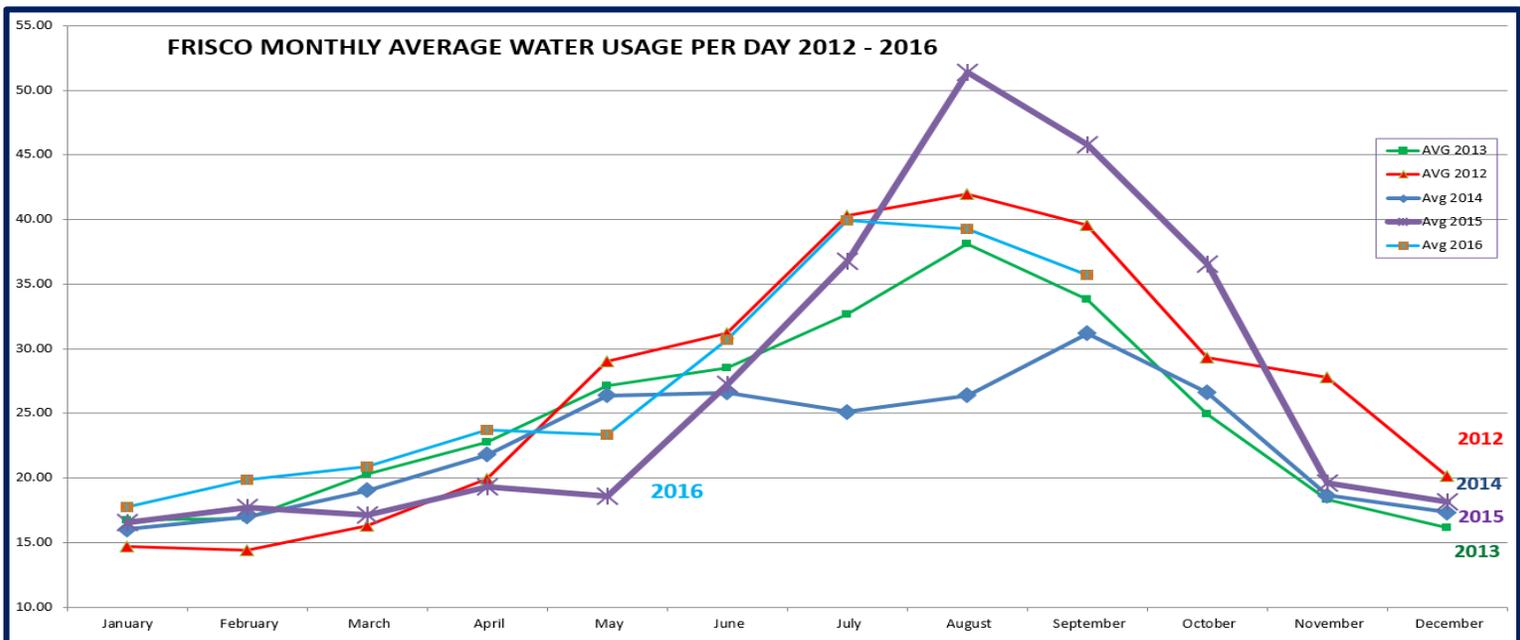
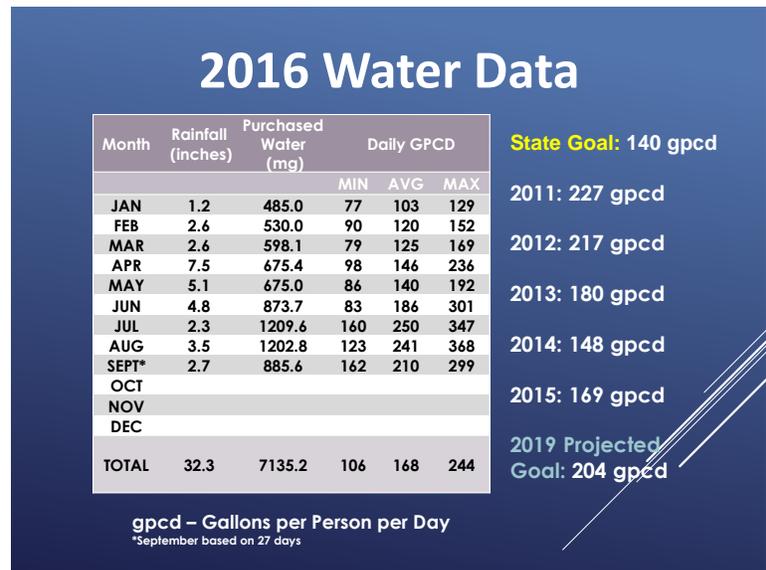
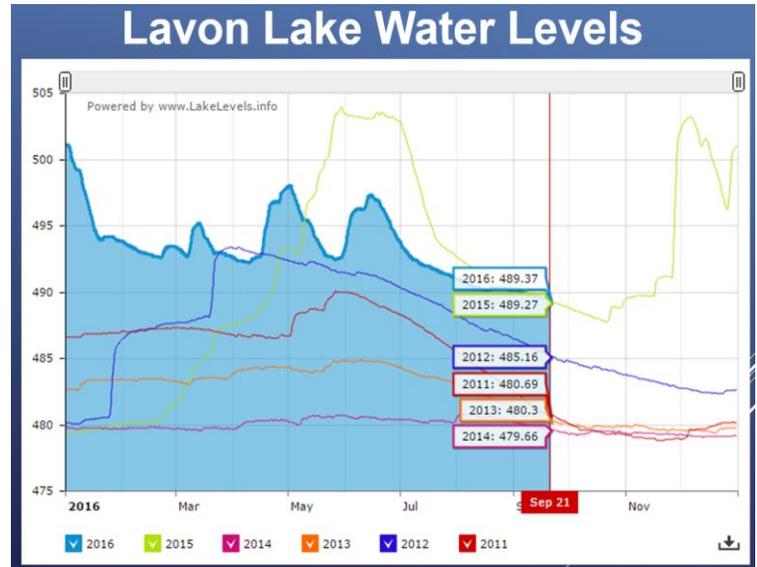
## Water Resources

The number of irrigation inspections grew 16% in August, as compared to the previous month. Because the free sprinkler system checkups continue to increase month over month, the number of sprinkler checkups performed in August increased 39% compared to July 2016.

Since January of 2016, the city has conducted more than 2,700 residential irrigation system check-ups. The free sprinkler system checkups including the certificate of occupancy checkups, performed at the end of the 30-day watering exemption, have saved more than 370 million gallons of water or 1.375 million gallons per day thus far in 2016. These numbers are based on pre and post checkup consumption records for the accounts that received a checkup.

The overall per capita consumption in Frisco has decreased, and staff attributes programs such as the free sprinkler system checkups to this reduction.

Irrigation Inspections and Check-Ups				
Month	New System Inspections	Irrigation Permits Processed	Sprinkler Check-Up Program	WaterWise Newsletter Subscribers
August	319	190	444	16,955



## WaterWise Fall Brown Bag Workshop Series

Frisco residents learned about efficient irrigation techniques at a WaterWise Sprinkler System Basics Workshop. Approximately 45 residents attended the workshop. Ron Garcia, Irrigation Supervisor, demonstrated simple irrigation repairs and how to set a sprinkler controller using the cycle and soak method.



*Residents gather in the Public Works training room for a Sprinkler System Basics Workshop.*

### Water Resources Division Meeting

All staff in the division met as a group including licensed irrigators, irrigation inspectors, water educators, and customer service representatives.

The meeting covered the following topics:

- Recognition of work accomplishments over the summer including the free sprinkler system checkups, irrigation inspections, watering violations, and WaterWise newsletter subscriber base
- FY17 Budget
- Discussion of Core Values
- Opportunity for Q & A

### WENNT Meeting

Frisco hosted the September meeting for the Water Efficiency Network of North Texas (WENNT) in the McCallum Room at City Hall. Twenty-three attendees comprised of regional water districts, area municipalities, and representatives from the Texas A&M AgriLife Research and Extension Center shared ideas about water conservation initiatives.

Mark James of Sprinkl Conserve, a Frisco based company, served as the guest speaker for the monthly meeting. Mayor Pro Tem Will Sowell, Henry Hill, and Paul Knippel shared information about the importance of continued water conservation efforts for municipalities.



*Water Educators from the North Texas Region discuss water conservation initiatives.*



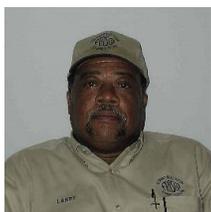
*The Water Resources team shares how Core Values can be incorporated into daily operations. L-R: Mayra Benitez, Ron Garcia, Charles Nash, Sean Aucoin, Kyle Poe, Daniel Ostertag.*

## Employee Spotlight

### Special Recognition



**Stephanie Miller**, Engineering Construction Technician, has taken the initiative to improve on the Engineering Construction Inspection processes and procedures. Stephanie took the lead on revamping several processes and streamlining/creating new forms. Some of the items include the Grading Permit, Platting procedure and Life Safety inspection for apartments. She is also working with the Construction Manager to streamline testing documentation in order to minimize or eliminate paper by receiving and filing documents electronically. Stephanie always rises to the challenge, and her commitment to help make Construction Inspection operate smoothly and efficiently is appreciated.



**Larry Frasure**, Construction Inspection Supervisor, has been a key member of the team responsible for the successful opening of the initial phase of The Star complex. Larry was responsible for making sure the infrastructure was in place, inspected, tested, and ready for the August 2016 opening. This project has been particularly challenging due to the large amount of site infrastructure as well as all the vertical construction occurring simultaneously. Larry has worked closely with a multitude of contractors and subcontractors, as well as developers, engineers, and city staff. The project has been fast-tracked, and in many instances required making decisions at a moment notice to avoid rework. The project would not have been successful without his hard work and dedication.



**Ron Garcia**, Irrigation Supervisor, is leading the charge to improve the efficiency of irrigation systems in Frisco. His team of Irrigation Inspectors and Licensed Irrigators are responsible for inspecting newly installed irrigation systems and providing free sprinkler system checkups for residents. Under Ron's leadership the free sprinkler system checkups have been fully automated, through the use of technology in the field. Ron represents the City of Frisco as a board member for the Dallas Irrigation Association. He regularly teaches workshops to residents about basic sprinkler system repairs, converting to drip irrigation, and efficient watering techniques using the cycle and soak method. Ron has constructed a smart controller board, a rain barrel display, and a "guess how much water your sprinkler system uses" exhibit to interact with residents at WaterWise educational outreach events.

## **Anniversaries**

**Mayra Benitez**, Customer Service Representative, Public Works (5 years)

**David Chacon**, Senior Civil Engineer, Engineering Services (10 years)

**Charles Lehrer**, Maintenance Worker, Public Works (5 years)

**Nicholas Scott**, Crew Leader, Public Works (10 years)

**Robert Sellers**, Stormwater Inspector, Public Works (5 years)

**Calvin Woodard**, Administration, Public Works (10 years)

## **Promotions**

**Kyle Poe**, promoted to Irrigation Inspector for the Water Resources Division.

## **City of Frisco - Our Values**

**Our Core Values are our guiding principles: who we are, what we believe in, and who we want to be going forward as an organization.**

- **Integrity**
- **Outstanding Customer Service**
- **Fiscal Responsibility**
- **Operational Excellence**
- **Our Employees**

**ATTACHMENTS:**

- Capital Projects Summary - p. 16
- Overview of Traffic and Transportation Activity - p. 17
- Public Works Output Summary - p. 18
- Environmental Services Summary - p. 19



## Overview of Traffic and Transportation Efforts by the City of Frisco

September 22, 2016

The objective of the Traffic and Transportation Division is safe and efficient movement of people and goods. Effort toward this objective is multifaceted and can be categorized as construction, operations, or planning, for the sake of discussion. Construction generally refers to additional capacity in the form new roads or additional lanes. Operations means the maintenance and optimization of existing facilities and systems. Planning involves the review of new development, thoroughfare planning, right-of-way acquisition, implementation of multimodal systems, seeking outside funding opportunities, and collaboration with other agencies.

### I. Construction

- A. Roads – new roads, widening of existing roads
- B. Intersections - new left and right turn lanes at existing intersections, roundabouts, and traffic signals.
- C. Roundabouts
- D. Annual sidewalk infill program

### II. Operations

- A. Signal operations and timing
- B. Signal Maintenance
- C. Roadway Lighting
- D. Traffic signs
- E. Pavement markings
- F. Safety
- G. Traffic control during construction
- H. Special events
- I. School zones
- J. Neighborhoods
- K. Signal system monitoring
- L. Signal operations performance indicators

### III. Planning

- A. Development review
- B. Traffic Impact Studies
- C. Thoroughfare planning
- D. Right of way acquisition
- E. School site planning with FISD
- F. Hike and bike master plan
- G. Intelligent Traffic Systems (ITS)
- H. Public Mobility
- I. Collin County
- J. Denton County
- K. NTTA
- L. TxDOT
- M. North Central Texas Council of Governments (NCTCOG) – Regional Transportation Council (RTC)
- N. Personnel and staff training

## I. Construction

### A. Roads

The City's Thoroughfare Plan shows a planned network of six-lane arterial roadways intended to provide mobility from one end of the City to the other, with other smaller arterial roadways providing more localized mobility. Most arterial roadways are initially built as four-lane divided roadways with wide medians and then are widened to six lanes in the future when traffic volumes rise to certain levels. The Engineering Department plans and oversees the construction of new sections of the arterial network and the widening of existing arterial roadways. The City has approximately \$121 million of roadways currently under design or construction within Frisco, and approximately \$30 million programmed to begin either design or construction over the next eighteen months. While the Capital Projects Division is responsible for the most of the project delivery process, the Transportation Division provides design review of work zone traffic control, traffic signals, signs and pavement markings, roadway lighting, and operational analysis. (The use of six-lane arterial roadways is a compromise between the traffic capacity provided by six lanes and the space they take up in the urban environment. Therefore, as occurs in every large city, it is understood that six-lane roadways will not provide enough capacity in the future to ensure motorists experience congestion-free driving as the City continues to grow.)

### B. Intersections

Roadway capacity is often limited by the functionality of intersections. The function of an intersection can be improved through the addition of turn or through lanes, the addition or modification of traffic signals, or the implementation of a roundabout. Examples of active projects where new turn lanes are being added to improve capacity are the Preston Road intersection improvement project and the addition of a westbound left-turn lane at Warren and Legacy. The Preston Road Intersection Improvement project will add turn lanes and modify the traffic signals at five major intersections along Preston between Warren and Main. Additional capacity is being added in the form of new lanes on Warren Parkway and on Lebanon Road with the Dallas Parkway Improvement Project. Traffic signals are under design for intersections of Cotton Gin at Legacy, Gaylord at Avenue of The Stars, and Warren at Fire Station #3. Design for signals at Legacy and Veneto and Stonebrook at 4<sup>th</sup> Army Drive are expected to start during the fall of 2016.

### C. Roundabouts

Roundabouts are the safest type of intersection, are more efficient for motorists on small to mid-sized roadways, and cost less to operate and maintain than traffic signals. The City currently has 25 single-lane roundabouts in operation (mostly within residential neighborhoods) with several more under construction. The City also has two multi-lane roundabouts in operation along arterial roadways, with another one slated to be constructed in 2017. The two multi-lane roundabouts opened to traffic in late July after months of public education and public outreach activities conducted by staff. These multi-lane roundabouts, located at the intersection of Gaylord Parkway and John Hickman Parkway and the intersection of Rockhill Parkway and Teel Parkway, were greenfield installations (meaning no intersection existed at these locations before the roundabout was built). Other greenfield multilane roundabouts will be considered where traffic volumes and conditions favor their success, and will likely only be placed at intersections of roadways with a maximum of four lanes. The conversion of an existing non-signalized intersection to a roundabout is considered to be a retrofit. The retrofit may involve the removal of existing pavement, construction of new pavement, and the acquisition of additional right-of-way in some cases. The intersection of Warren Parkway and Ohio Drive will be a retrofit intersection and is being funded with a federal grant and is expected to go to construction in 2017. Other existing intersections being

evaluated for conversion to a roundabout include Frisco Street and Technology, Frisco Street and All Stars, and Ohio Drive and Gaylord. Whether or not traffic control is accomplished at these intersections through traffic signalization or a roundabout will depend on a variety of factors and will require approval of the City Council. For more information, visit the following page on the City of Frisco website: <http://www.friscotexas.gov/Roundabouts>

*D. Annual Sidewalk Infill Program*

Sidewalks and hike and bike trails are required to be constructed by the developer when property adjacent to a roadway is developed. This leaves several gaps in the sidewalk network when there are several undeveloped properties along a roadway. Therefore, it is often necessary for the City to fill in the gaps along school routes (with cost participation by the FISD) and other areas of heavy pedestrian activity. The City also uses this program to construct or reconstruct sidewalk ramps at intersections where they are needed to meet ADA standards. The City constructs approximately \$500,000 of infill sidewalks on an annual basis. Development that occurs after a sidewalk or hike and bike trail has been built by the City is required to pay a fee to reimburse the City for the sidewalk.

## **II. Operations**

*A. Signal Operations and Timing*

- Traffic Signal Timing – On an ongoing basis, staff monitors and changes the operation of various traffic signals as needed. Staff typically receives 20 to 30 service requests regarding signal timing each month. Often the requests are due to malfunctioning equipment or changed traffic patterns.
- Rectangular Rapid Flashing Beacons –The Rectangular Rapid Flashing Beacon (RRFB) uses a pedestrian push button to activate a set of flashing yellow lights installed on warning signs. The flashing lights alert drivers to the presence of pedestrians and is intended to cause an increase in yield response by the drivers. Two of these systems are in operation presently. One is near Roach Middle School on Independence and the second is at West Stonebrook Parkway east of Anthem Drive. Design is starting on a third RRFB near the intersection of Lebanon and Deerwood. Staff is considering the installation of RRFBs at other mid-block locations in accordance with a prioritization process based on pedestrian and vehicle volumes.

*B. Signal Maintenance*

- By the Numbers - The City of Frisco currently operates and maintains 110 traffic signals within the City of Frisco and 11 traffic signals in the Town of Little Elm on behalf of TxDOT and Little Elm. TxDOT reimburses Frisco for the cost to operate these 11 signals. All but two of the signals have automatic battery backup power systems. City crews provide 24/7/365 maintenance for the signals with a maximum 45-minute response time for after-hours call outs.
- Preventative Maintenance - Crews use a preventative maintenance program to test and check all equipment at each intersection at least once per year. This includes review of wiring, lighting, signage, emergency preemption, detection systems, and other systems for each location. The preventative maintenance program at each intersection requires about two full workdays, but is effective in its purpose.
- Inspection - Signal crews perform construction inspections and help with construction management of new traffic signals and roadway lighting installations. Most recently, crews have been heavily involved in work along FM 423, Custer Road, US 380 and within The Star at Frisco.
- Line Locates - Signal crews identify the location of buried traffic signal electrical and communication lines as requested by other parties before excavation by those parties is

performed. As a measure of activity, there have been more line locate requests in the first half of FY 16 than there were in all of FY 15. Line locates are necessary to help protect the City's capital investment as contractors are installing equipment within the public right of way.

- **Flashers and Beacons** - City crews currently operate and maintain 179 school zone flashers, two pedestrian crossing flashers, six warning sign flashers, and two sets of pedestrian-activated RRFBs. City crews are in the process of upgrading the school zone flashers to have new cellular modems for remote communication, which replaces a pager technology that is being discontinued.

**C. Roadway Lighting**

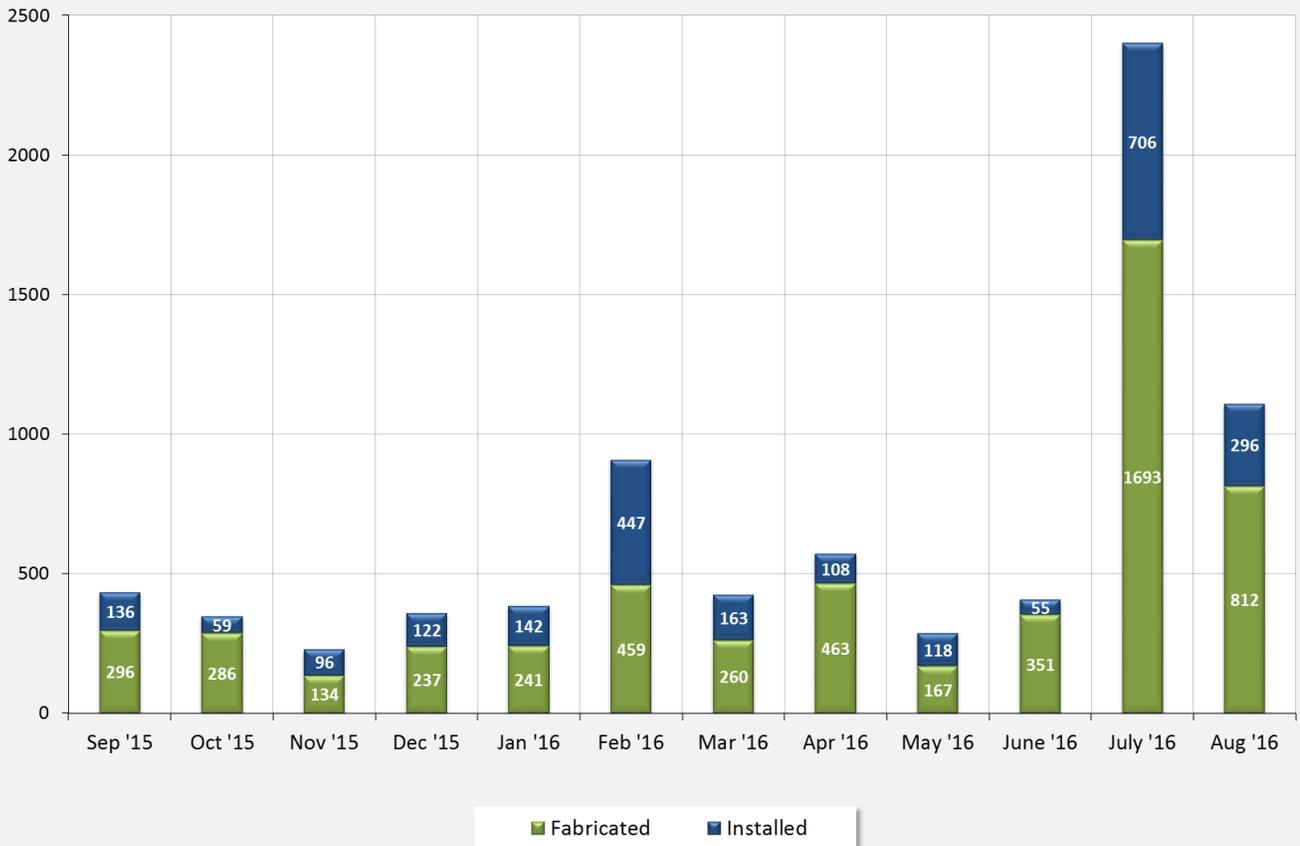
- **Scope** - City crews operate and maintain roadway lighting along major thoroughfares while the power companies operate and maintain the street lights within neighborhoods. Maintenance of roadway lighting fixtures includes replacing bulbs and replacing poles knocked down in vehicle crashes.
- **LED Fixture Conversion** - All existing Metal Halide fixtures are being converted to more energy efficient LED fixtures. These fixtures not only reduce energy consumption, but they also reduce maintenance. Both outcomes help reduce the cost to operate the lighting the system. The conversion process started in November 2015 with a goal of changing out at 150 to 200 fixtures per month. The Division has not been able to reach its monthly goal due to staffing issues. Alternatives are being evaluated to improve the rate of conversion and achieve the goals established internally. All new arterial street lighting is now installed with LED fixtures.
- **By the Numbers** - The status of the existing system and the conversion process are shown the table below.

Monthly Lighting Performance Status		LED Conversion Status	
Total Fixtures	5,856	Total LED Fixtures	1,445
Fixtures burned out	133	Total LED Conversions	847
Fixtures out due to construction	49	Total LEDs installed as new construction	508
Percent Operational	98%	Fixtures remaining to convert	4,411
		Percent of Conversion Complete	15%
		Percent of system LED	25%

**D. Traffic Signs**

- **General** - City crews fabricate, install, and maintain traffic control signs on the public streets. This division tracks all signs in the public right-of-way that have been installed by developers and City crews and has an annual program to check the status of existing signs. Crews have completed the annual night drive inspections of traffic control signs along all major arterial roadways in Frisco and are now performing the annual night drive inspections for all traffic control signs in residential areas. Improvements continue with the work order system used to track all installation and maintenance work.
- **By the Numbers** - The chart below shows the number of signs fabricated and installed during the last 12 months.

Traffic Control Regulatory Signs 12-Month History



*E. Pavement markings*

- **General** - City crews install and maintain pavement markings on the public streets and have an annual program to check the status of existing pavement markings. Inspections of all pavement markings within school zones were completed in May. Those results determined which locations needed to be restriped this summer prior to the start of the 2016-2017 school year. City crews restriped stop bars and crosswalk markings at three intersections on Teel Parkway at Panther Creek Parkway, the Trails and Lebanon Road. Crews also continued restriping existing school zone markings as part of the maintenance program.

*F. Safety*

- Annual Crash Report - Our second annual crash report (for 2014) is nearing completion. This document is a comprehensive review and analysis of all crashes involving vehicles, bicycles, and pedestrians throughout Frisco. It is compiled by and used cooperatively by city traffic engineers and the police department.
- Highway Safety Improvement Program (HSIP) – Frisco responded to the TxDOT HSIP call for projects by submitting for equipment upgrades at signalized intersection along FM 423, FM 2934 (Eldorado), SH 289 (Preston Road). A similar submittal was made for the signalized intersections along Legacy from Town and Country Boulevard to Panther Creek Parkway. Lastly, a roundabout construction project for Frisco Street at Technology was submitted as part of the program. The combined cost of all the projects submitted under this call are \$3.9 million.

*G. Traffic Control During Construction*

- Staff reviews the traffic control plans for new and ongoing construction zones and sends announcements to all City services regarding road closures and traffic switches. Staff reviewed 41 traffic control plans this month. Staff is currently coordinating with NTTA regarding closures and detours along Dallas North Tollway and Sam Rayburn Tollway during their restriping and repair projects, and coordinating with TxDOT regarding closures, detours and traffic switches along Custer Road (FM 2478), FM 423, and US 380 during their widening projects.

#### *H. Special Events*

- General - As part of the City's Special Events Review Committee, staff reviews all pending special event applications for any traffic control needs. Staff continually coordinates with the Police, Fire, Communications, and Public Works Departments regarding any special events that affect traffic flow or parking in the City. Staff also coordinates with Toyota Stadium, Dr. Pepper Arena, and the Ford Center staff regarding large events at those venues, which sometimes requires coordination with NTTA.
- Ford Center at the Star Opening - Staff developed and implemented a traffic operations plan at the quadruple High School Football Game Kickoff event on August 27<sup>th</sup>. Staff also observed parking and traffic operations at the new venue to tweak plans for future events.
- Recent Events - This month, staff provided traffic management support for the Kickoff Event at the Ford Center, the Run for Retrievers 5K, and the Emmitt Smith Gran Fondo bike ride.
- Upcoming Events – Preparations are underway for several 5K races coming in the fall.

#### *I. School Zones*

- General - Staff meets monthly with FISD transportation and administration officials and the Police Department to discuss any school safety concerns and to coordinate school zone, crossing guard, and sidewalk issues.
- Recent Activity – During this first month of school, staff visited several campuses and observed operations at the request of residents and school officials. Staff met with FISD officials to discuss these issues and agree on courses of action for changes in campus operations by FISD staff or roadway operations by the City (such as the addition of a crossing guard, installing additional No Parking signs, etc.).

#### *J. Neighborhoods*

- Resident Concerns - Staff receives five to ten complaints and requests for action each month regarding speeding on neighborhood streets. Staff also reviews requests for additional stop signs in neighborhoods. At the request of City Council, staff is working with the Development Services Department to create a new Neighborhood Design Strategy (see Section III-C).

#### *K. Signal System Monitoring*

- Traffic Management Center – The City's Emergency Operations Center (EOC) contains the Traffic Management Center (TMC). The TMC is staffed every weekday from 6:00am to 6:30pm by Traffic personnel who monitor traffic conditions throughout the City using our network of traffic cameras (described below) and who can remotely modify the operations of the traffic signals or dispatch repair crews and/or coordinate with Fire and Police personnel. Traffic personnel are also in the Center during large special events and during emergency situations and bad weather events. The EOC was staffed during the Kickoff Event at the Ford Center at The Star and successfully integrated with the small, satellite operations center within that facility.
- Traffic Signal System Communications – The system provides communications to all of the traffic signals in the City, allowing staff to monitor and control their operation remotely from

our Traffic Management Center or from any City computer. Wireless communication relays are installed on four water towers and two communication towers, all of which have battery backup units. Staff can also view the traffic detection cameras at most of the traffic signals, as well as the 107 remotely controlled pan-tilt-zoom (PTZ) traffic cameras installed on most traffic signals.

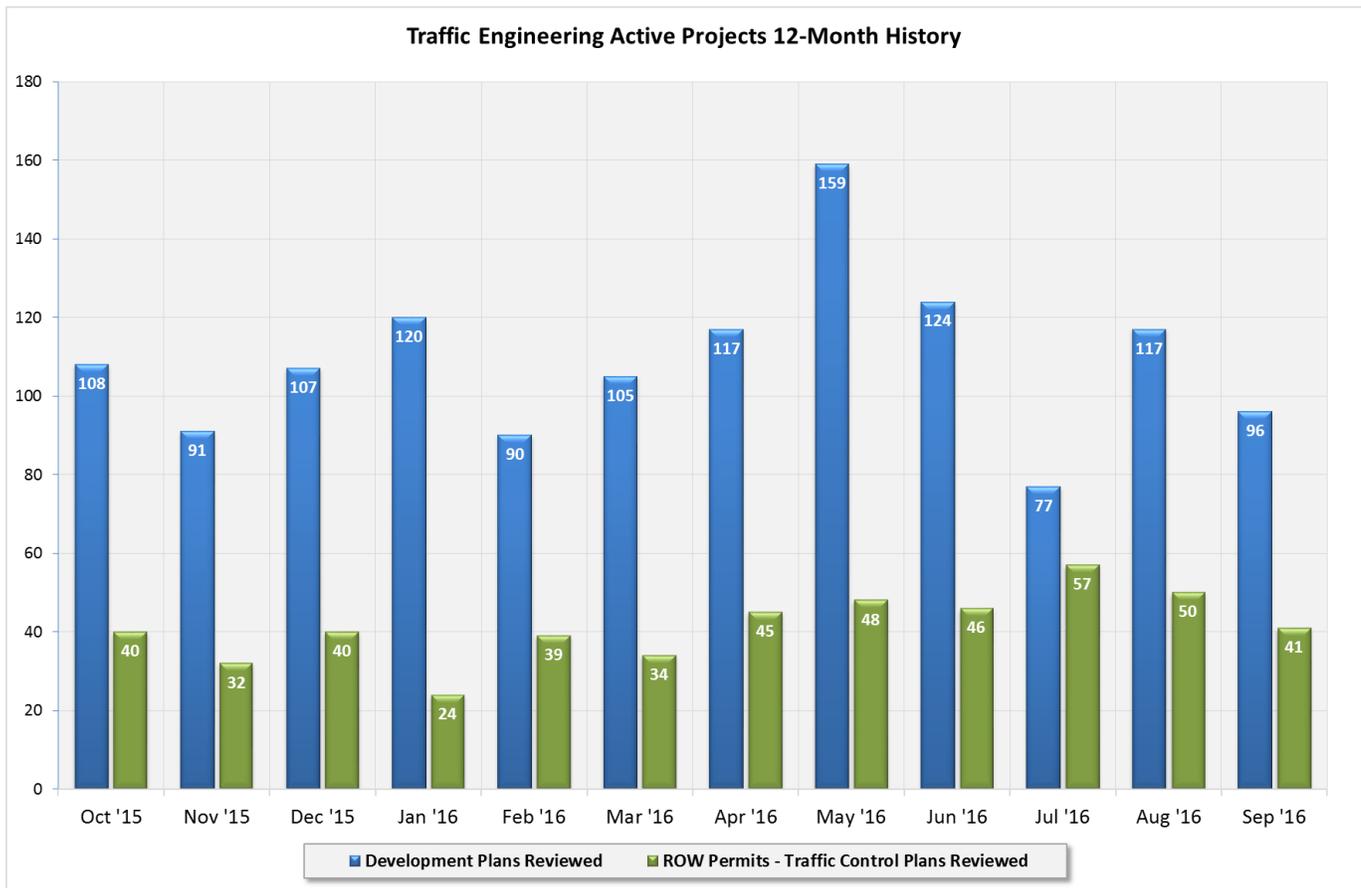
*L. Signal Operation Performance Indicators*

- Staff is working to develop performance measure indicators that can tell how well the traffic signal system is functioning. Our newest version of traffic signal system software has the ability to automatically measure the performance of each traffic signal provided there is sufficient vehicle detection in place. Automated travel time measurement is another important aspect of measuring signal performance. Technology such as Bluetooth readers and software such as Inrix are being tested by staff to see what is most appropriate for our needs. Traditionally, travel time measurements are only taken one day a year which is not sufficient for a system that has a large amount of variability on a day to day basis. More detailed daily travel time measurement can allow staff to measure the reliability of the system and detect changes in the travel time due to growth or other changes.

**III. Planning**

*A. Development Review*

- General – Traffic engineering staff are an integral piece of the city’s development review process. While the development review process as it relates to traffic is largely a function of determining which roads need to be built, when they need to be built, and by whom, multiple considerations related to the overall multimodal transportation system are under continual evaluation. These considerations include impacts to, and the effects of long range plans such as the Thoroughfare Plan, the Hike and Bike Plan, and the Comprehensive Plan, and long range opportunities for private or public transit systems.
- By The Numbers – This past month, staff reviewed 96 sets of development plans and two traffic impact analysis reports and processed one TxDOT driveway permit.



**B. Traffic Studies**

- General** – Staff reviews Traffic Impact Analyses (TIA) as needed for new developments with the potential for high levels of traffic generation. Other studies that are ongoing or required for certain circumstances include the crash database which is coordinated with the Police Department, neighborhood traffic studies based on resident complaints and requests, and studies and or monitoring of multiple intersections that are under consideration for possible installation of a traffic signal or roundabout.

**C. Thoroughfare Planning**

- General** - As development occurs in the City, staff plans the alignment and size of future streets and thoroughfares and the configuration of their intersections. Staff ensures that new thoroughfares that will be part of the arterial network adhere to the approved Thoroughfare Plan and analyzes any changes requested to that plan and makes recommendations to City Council. Staff also plans where future traffic signals will be installed based on development patterns and growth, performs studies to determine when traffic growth reaches a level that warrants a traffic signal, and then compares and ranks all locations so that funding can be allocated to the highest priority locations.
- Upcoming Thoroughfares** - Staff is currently planning the future widening of the Dallas Parkway frontage roads to three lanes in each direction north of Lebanon Road and is working with developers to dedicate the right-of-way necessary to widen the frontage roads. Staff is currently working with landowners to reserve right-of-way for improvements along US 380 and is working to finalize the agreements necessary to relocate the right-of-way for future Hillcrest Road so it will align with La Cima Boulevard at US 380. Staff is also in the process of conducting a feasibility study for the potential implementation of roundabouts to improve traffic conditions at existing intersections where a traffic signal would not be warranted (or instead of a traffic signal). Staff is

also working with Town of Prosper staff to develop an access management plan to coordinate future driveway and signal locations along US 380.

- Standards - Staff is currently working with the Development Services Department to create a new Neighborhood Design Strategy for future residential development in the City. Staff is working with a consultant who will help facilitate public input and stakeholder input, review current standards and practices, and create a new set of standards that will guide residential development. In addition to the aesthetic considerations of houses, walls and landscaping, this will also create some requirements for attractive street layouts that also meet standards of pedestrian safety, traffic calming, and emergency access.
- Traffic Count Map – The traffic count map is available on the City’s website at <http://maps.friscotexas.gov/>. It provides daily traffic volume counts (and the date of each count) on multiple segments of every major roadway. Staff conducts an annual traffic count program which updates the volumes collected on each major roadway segment every two or three years.

#### D. *Right-of-Way Acquisition*

- Staff reviews upcoming CIP projects and coordinates with development review staff to make sure the appropriate ROW is acquired during the development review process. This helps to speed up future projects by minimizing the time needed to acquire small ROW parcels for projects.

#### E. *School Site Planning with FISD & PISD*

- Staff meets monthly with representatives of FISD to review future school properties prior to FISD deciding to move forward with a property. This meeting also helps staff make sure the long range CIP plan addresses the thoroughfares and utilities needed to support the new school locations. Staff is beginning to have meetings with representatives of Prosper ISD as they begin to contemplate building their first schools within Frisco. **This month, staff continued to meet with FISD officials and architects to review and develop some preliminary site layouts for three new schools.** Staff also met with PISD officials to discuss roadway and driveway options for a couple potential sites in Frisco.

#### F. *Hike and Bike Master Plan*

- General - An update to the Hike and Bike Master Plan is currently underway. This is a joint project between the Parks and Recreation Department and Engineering. The plan will be a part of how we can continue to move people and goods safely and efficiently within Frisco given the expected growth. This is one part of a multi-modal plan that is needed to maximize the transportation system in Frisco.
- Bicycle-Friendly Community – There is a committee that works towards Frisco being named a bicycle-friendly community by championing and prioritizing various development, infrastructure, and outreach policies and improvements. The Transportation Division has a seat on the committee, as do other departments as well as Frisco ISD and the bicycling community. As a result of this committee’s effort, the League of American Bicyclists recognized Frisco as a Bicycle Friendly Community with a bronze designation last month. This is an upgrade from honorable mention designation. A Transportation staff member also attends the quarterly meetings of the North Central Texas Council of Governments’ Bicycle and Pedestrian Advisory Committee. Transportation Staff is currently working with the Parks Department on an update to the City’s Hike & Bike Master Plan which includes a large public input component.

#### G. *Intelligent Traffic Systems (ITS)*

- ITS Master Plan - Staff has completed review of the Draft ITS Master Plan. The ITS master plan will identify projects needed over the next 3 to 5 years to continue expanding and upgrading the current system. The plan will provide for effective management of all traffic operations systems.

As Frisco continues to grow and the transportation system reaches and/or exceeds capacity, ITS systems will play an integral role in effectively managing the capacity of the system.

- Adaptive Signal Control – Frisco was awarded a grant to pilot an adaptive signal control system at five signalized intersections. It is expected that this system will be installed in the late 2016 and will be tested for approximately 12 months. Adaptive signal control allows the signal controllers at the intersection to adjust their signal timing instantaneously, based on volume inputs at the intersection and parameters established by traffic engineering staff. The system has the capability to react immediately to traffic conditions at nearby intersections and implement signal timing changes at a larger scale to improve the overall network. Presently, staff must rely on input from motorists or views through the camera system to identify congestion and make preemptive changes to the signal timing.
- BlueTooth Travel Time Monitoring – Staff is working towards a project that can demonstrate the effectiveness of Bluetooth data collection devices to monitor travel time and collect historic travel time data.
- Vehicle to Infrastructure (V2I and/or Infrastructure to Vehicle (I2V) – Staff is exploring the opportunities to begin sharing data from the traffic signal system that can be used by auto manufacturers to operate their vehicles more efficiently. It also has the potential to improve the safety of operating a vehicle. Staff is attending meetings where autonomous vehicles are being discussed so we can stay abreast of how autonomous vehicles could impact Frisco and our infrastructure.

#### *H. Public Mobility*

- General – The future demands of the public with respect to transportation in and around Frisco will not likely be met in a satisfactory manner solely through the expansion and optimization of the roadway system. Staff has outlined anticipated needs in terms of the following purposes: support of Frisco employers (workforce commuting in and out of Frisco), Frisco resident work commute, events, venues, safety net for transit dependent, and education. The potential solution set from which to draw includes, but is not limited to rail, fixed route bus, demand-response service, vouchers, commuter bus, site specific shuttle circulation, and partnerships with Transportation Network Companies such as Uber and Lyft. The determination of the appropriate and best match between need and solution requires active participation by city staff and leadership, and close coordination and possible partnership with adjacent municipalities, established transit authorities or providers, TxDOT and NCTA, and local business, corporations, and venues.
- Demand Response contract with DCTA - The City currently contracts with DCTA to provide curb-to-curb demand-response transit service for trips originating within Frisco to destinations located in Frisco, McKinney and Allen. Staff presented several options service to Council for consideration at their summer work session in August. At the general direction of Council, staff has been coordinating with DCTA to develop to new options that will provide immediate Demand-Response service to Frisco’s qualifying residents without the requirement of advance scheduling or limitations of shuttle capacity. We intend to develop a partnership with Uber to provide service at a discounted rate. We will also develop a taxi voucher program that will enable residents to purchase discounted vouchers that can be used for taxi fares. Both programs allow residents to schedule rides with little notice at much reduced cost. Implementing these new programs has the added benefit of facilitating expansion of our ridership area to include the City of Plano.
- Strategic Planning efforts with DCTA staff – DCTA has participated with city staff in discussions and brainstorming with respect to an integrated approach to mobility. DCTA is in the process of implementing an integrated system within its member cities that consists of a tailored combination of services and includes a service agreement with Uber. This pilot project is expected to commence in the fall with initial results available by end of the calendar year. The City of Frisco has representation on the DCTA board of directors.

- Transportation for events and venues - Staff is engaged in identifying transportation needs as it pertains to events and venues. Meetings are scheduled this month with staff at the Convention Visitors Bureau to determine unmet needs and explore opportunities.
- Workforce Transportation– Meetings are scheduled with the Economic Development Corporation, the Chamber of Commerce, NCTCOG and local businesses to better understand the transportation needs of the workforce both in getting to/from Frisco but also within our most dense employment centers.
- Transportation Network Companies – Staff has met with representatives from Uber to explore opportunities for partnership. Initial discussions identified a number of opportunities for mutual benefit and a mutual willingness and support to move forward, but the process has not yet advanced to specific deal points or proposals.
- City of Plano Legacy Business Area mobility study – The City of Plano hired KimleyHorn to conduct a mobility study in the area at the southwest corner of DNT and SRT. Staff attended a number of meetings involving representatives from the new businesses in this area, DART, and adjacent municipalities. Staff continues to be involved in this process. Initial recommendations from this study include establishment of a Transit Management Association and the use of express shuttle routes that pulse between the LBA and specific park and ride facilities located radially some distance from the LBA. Staff is coordinating with Kimley-Horn and the City of Plano to become a partner in implementing the recommendations within the report, to discuss opportunities to expand the study regionally, and identify additional solutions that benefit the entire corridor.

#### *I. Collin County*

- General - Collin County has historically participated with municipalities in Collin County in the funding of arterial roadways, typically 50% of the cost up to a certain dollar amount. A number of arterials in Frisco under construction and/or recently completed were built with funding participation from Collin County. Approximately \$5.7 million remains available out of the approximate \$49 million identified for arterials in Frisco out of the 2007 Collin County bond sale. Other funding has come from Collin County on a competitive basis out of discretionary funding, or savings and surplus from other 2007 bond projects.
- Staff has been attending long range planning meetings regarding US 380 across Collin County. Long range improvements to US380 such as limited access freeways, interchanges, and non-traditional intersections improvements are being discussed.

#### *J. Denton County*

- General - Denton County has worked with Frisco to provide funding for Stonebrook and a traffic signal at Del Webb and FM 423.
- US380 – Staff is attending long range planning meetings with Denton County & TxDOT for US 380 from the Denton County/Collin County line to Loop 288 in Denton.

#### *K. NTTA*

- General - Staff coordinates regularly with the North Texas Tollway Authority to plan lane closures and special events.
- Video Sharing - Staff is working with NTTA to implement a traffic video sharing system where Frisco has access to NTTA cameras along DNT and SRT. NTTA will have access to Frisco cameras along the DNT service roads.
- Long Range Planning - Coordination is ongoing with NTTA regarding the future widening of SRT and development along the DNT.

#### *L. TxDOT*

- General - Staff meets monthly with the TxDOT Area Offices in Collin County and Denton County to discuss ongoing projects and plan for future projects. Project coordination meetings occur regularly where staff meet with TxDOT and their contractors on road projects in the Frisco area. These include FM 423 in Frisco and The Colony as well as work along US 380 and Custer Road.
- Roundabouts - Staff has coordinated with our on-call roundabout consultant to bring roundabout design and analysis training to the engineers at the Dallas TxDOT district office. The Warren and Ohio roundabout will be the first roundabout this TxDOT office has reviewed.

M. *North Central Texas Council of Governments (NCTCOG) – Regional Transportation Council (RTC)*

- STTC - Staff attends the Surface Technical Transportation Committee (STTC) meetings each month at NCTCOG. These meetings are where technical staff from across the region review policy and funding recommendations from a technical perspective. STTC is the technical review portion of the Regional Transportation Council (RTC). Because the combined population and employment is over 200,000 in Frisco on a daily basis, a second STTC seat was awarded to Frisco in July.
- RTC - Staff attends a pre-RTC meeting with area cities in Collin County to discuss issues that arise at the full RTC meeting.
- Safety - Brian Moen has chaired the Regional Safety Advisory Committee (RSAC) since July 2015. This committee reviews a wide range of traffic safety issues in the region. These include not only vehicle safety issues, but pedestrian and bicycle safety issues as well.
- Bike/Pedestrian - Robert Caskey represents Frisco on a regional level at the Bicycle and Pedestrian Advisory Committee (BPAC) at NCTCOG.

N. *Personnel and Staff Training*

- In-House Training – The signal and sign maintenance crews attend monthly in house training that covers day to day tasks and safety procedures. These crews also attend outside classes in order to obtain the certifications needed to work on the various pieces of equipment. The traffic engineers are currently attending a series of webinars about the planning, design, review, and implementation of roundabouts.
- Professional Organizations - Staff attends the monthly local meetings of the Texas District of the Institute of Transportation Engineers (TexITE) and Brian Moen serves as the Vice President of the statewide TexITE organization. Staff is working to plan the statewide TexITE Spring Conference which will be hosted in Frisco in April 2017. This month staff attended the statewide TexITE Fall Conference in Fort Worth.
- Interns - The Transportation Division usually has one or two summer interns (college engineering students) who help with data collection, crash analysis, and school zone sign installation among other things.
- Conference – This month staff attended the statewide TexITE Fall Conference in Fort Worth.
- Promotions – None

Public Works Monthly Report To Council													
	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16
Monthly Rainfall (Inches)	0.1	0.9	8.0	11.9	5.2	1.2	2.6	2.6	7.5	5.1	4.8	2.3	3.5
Productivity													
Street - Sidewalk Hazards Repaired/Month	15	21	37	72	33	134	4	33	47	10	63	15	21
Water - Fire Hydrants Inspected Per Day	72	76	36	41	18	20	44	57	67	53	51	43	62
Sewer - Manholes Inspected Per Month	286	419	403	298	206	242	285	287	304	235	386	353	550
Meter - Meters Installed Per Day	12	12	12	8	8	10	11	12	9	12	11	9	9
Street Sweeping (Curb Miles)	658.0	658.0	658.0	15.0	858.0	860.0	860.0	860.0	858.0	860.0	860.0	860.0	858.0
Free Irrigation Check-ups	367	482	441	276	201	74	154	345	358	370	382	318	447
Water Quality and Usage													
Water Delivered To Frisco (Million Gallons)	1535.5	1302.8	1,059.1	546.3	511.2	485.0	530.0	598.1	675.4	675.0	873.7	1,209.7	1,175.1
Gallons Per Person Per Day	330.6	288.6	226.2	120.2	108.5	102.5	119.5	125.3	145.5	140.0	186.0	250.0	241.0
Bacteriological Samples Passing (120/Month)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Chlorine Samples Passing (7/Day)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
DBP Samples Passing (4/Quarter)		100%			100%			100%			100%		
Meter Division													
New Meters Installed	232	235	234	151	154	197	226	274	199	248	241	177	216
Construction Fire Hydrant Meters Rented	211	223	216	221	216	217	216	212	213	208	206	217	228
ROW Inspections													
Right of Way Permits Issued	850	869	786	688	895	816	776	834	879	902	1,057	959	1156
Private Sewer Service Lines Televised	256	313	277	167	207	255	299	278	220	218	246	227	255
Environmental Services Division													
Residential Tonnage	2978.4	3103.8	3,033.8	3,197.1	3,776.05	3,204.2	2983.1	3490.6	3485.5	3477.6	3,736.3	3,189.0	3,526.2
Residential Citizen Use	360.0	336.2	304.0	290.3	405.02	434.2	438.4	441.8	380.2	398.5	378.5	430.4	343.7
Commercial Tonnage	3840.1	3883.8	3,992.0	3,947.1	4,366.87	3,853.9	3891.5	4167.7	4327.7	4555.3	4,515.8	4,053.6	4,666.0
Landfill Tonnage	1678.2	1599.1	1,463.4	1,332.2	1,586.99	1,424.2	1653.2	1913.3	1843.5	2052.5	1,563.2	1,350.3	1,967.9
Curbside Recycling Tonnage	1105.7	1068.6	1,129.2	1,225.9	1,389.4	1,254.9	986.0	1287.5	1191.9	1306.9	1,294.5	1,151.9	1,367.4
Compost (Yardwaste) Tonnage	153.8	164.2	153.2	142.9	296.4	132.3	173.9	239.2	354.9	288.5	251.1	203.1	227.8
*Cardboard (New Move-Ins) Tons	3.2	2.0	1.8	1.4	1.3	1.8	0.8	0.8	1.4	1.2	1.6	2.2	2.2

Public Works Monthly Report To Council													
Annual Totals	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Monthly Rainfall (Inches)	66.7	34.4	35.1	68.1	38.9	41.8	31.3	26.9	30.6	30.5	24.2	63.8	29.6
Productivity													
Street - Avg Sidewalk Hazards Repaired/Month	ND	ND	ND	33	18	27	16	7	12	18	19	34	41
Water - Avg Fire Hydrants Inspected Per Day	ND	ND	ND	55	41	41	41	32	33	24	47	53	50
Sewer - Avg Manholes Inspected Per Month	ND	ND	ND	196	243	183	212	186	162	380	335	312	330
Meter - Avg Meters Installed Per Day	ND	ND	ND	9	6	4	5	6	7	9	10	11	10
Street Sweeping (Curb Miles)	6,020.0	3,206.3	10,334.5	10,260.5	12,646.5	12,750.1	7,896.0	7,896.0	7,896.0	7,896.0	7,896.0	7,453.0	6,876.0
Free Irrigation Check-ups	ND	ND	660	515	933	1,260	1,193	1,592	2,673	2,599	3,516	3,495	2,448
Water Quality and Usage													
Water Delivered To Frisco (Million Gallons)	5,588.3	7,767.0	8,033.6	6,890.1	8,612.4	7,628.9	8,862.2	10,111.0	10,095.0	8,761.0	7,613.7	9,210.7	6,222.0
Average Gallons Per Person Per Day	230.6	287.9	249.3	196.1	233.8	201.1	205.0	228.0	216.8	179.9	148.0	168.7	163.7
Bacteriological Samples Passing (120/Month)	100%	100%	100%	100.0%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Chlorine Samples Passing (7/Day)	100%	100%	100%	100.0%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Trihalomethane Samples Passing (4/Quarter)	100%	100%	100%	100.0%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Meter Division													
New Meters Installed	3,626	3,714	3,582	1,931	1,450	1,049	1,338	1,406	1,699	2,348	2,425	2,455	1,778
Construction Fire Hydrant Meters Rented	162	178	1,198	1,826	1,963	1,395	928	1,077	1,319	1,622	2,159	2,473	1,717
ROW Inspections													
Right of Way Permits Issued	724	1,694	1,220	1,176	1,127	695	680	1,183	3,110	6,655	7,252	8,466	7,379
Private Sewer Service Lines Televised	3,957	4,398	4,124	2,079	1,327	1,048	1,557	1,527	1,720	2,549	2,616	2,644	1,998
Environmental Services Division													
Residential Tonnage	26,991.5	24,522.1	26,239.4	29,278.1	30,701.0	28,668.9	31,763.4	31,327.0	31,776.6	32,577.6	33,898.7	39,097.3	27,092.4
Residential Citizen Use	2,188.0	2,197.1	2,265.0	2,214.7	2,609.1	2,356.3	3,044.9	3,653.8	3,780.1	3,692.2	3,966.9	4,111.9	3,245.7
Commercial Tonnage	25,495.6	25,619.1	28,631.0	31,026.4	32,465.6	29,591.6	34,735.8	35,699.0	37,460.2	39,003.9	42,244.8	47,732.9	34,031.4
Landfill Tonnage	25,220.2	22,546.6	23,481.6	26,414.8	27,148.7	16,904.5	9,119.5	10,719.5	13,516.0	13,268.5	17,355.2	21,491.0	13,768.1
Curbside Recycling Tonnage	4,587.5	7,893.0	10,342.5	10,802.9	11,750.5	10,705.6	12,203.8	12,125.9	13,051.1	13,726.5	12,647.7	14,086.0	9,841.0
Compost (Yardwaste) Tonnage	1,498.3	1,504.0	1,124.9	1,799.4	2,020.9	2,233.1	2,485.2	2,245.8	2,463.8	2,485.3	2,683.9	2,598.2	1,870.8
*Cardboard (New Move-Ins) Tons	18.8	87.0	108.5	141.2	186.7	47.9	37.4	42.5	48.1	58.4	27.8	21.0	12.0

Note: \*New program implemented August 2004. ND = No Data Delayed = Data compiled by NTMWD

## Environmental Services Summary

COUNCIL STRATEGIC FOCUS		Performance measures		
<i>Sustainable city</i>				% Change
	<u>Residential Services</u>	2016	2015	
	# of households	45,905	42,795	7.27%
	Tonnage - trash	3,869.90	2,995.16	29.21%
	Tonnage -recycling	1,597.44	1,105.72	44.47%
	Lbs per household recycling	69.60	51.68	34.68%
	Lbs per household trash	169	140	20.45%
	Diversion Rate (r vs t)	29.22%	26.96%	8.36%
	<u>Commercial Services</u>			
	Tonnage - trash	4666.00	3864.00	20.76%
	# Dumpster Accounts	943.00	904.00	4.31%
	# Compactor Accounts	86.00	83.00	3.61%
	# Commercial carts	340.00	288.00	18.06%
	# of roll offs	19.00	16.00	18.75%
	Lbs per cu yd (D)	73.02	65.13	12%
	Lbs per cubic yard (CO)	318.00	320.00	-1%
	<u>Construction Waste Services</u>			
	# Accounts	165.00	125.00	32.00%
	C & D (only) Landfill Tonnage	1842.62	1344.81	37.02%
	# of hauls per month Construction	332.00	322.00	3.11%
	# of hauls per month Commercial	72.00	27.00	166.67%
<i>Public Health and Safety</i>				
	# of participants hhw	652	683	-4.54%
<i>Infrastructure</i>	Roadside litter pick up (hours cleaned)	58	9	544.44%
<i>Civic Involvement</i>				
	# of educational presentations	7	6	17%
	# of citizens reached	54270	53727	1%
	# of streets adopted	59	73	-19%
	# of volunteer hours	163	26	527%
	Cost savings to City	\$4,092.93	\$526.50	677%
	# of participants chunk your junk/quarterly	750	777	-3%
<i>Excellence in City Government</i>				
Call center work orders	Misc	1900	1326	43%
	# of deliveries newcomer packets	620	603	3%
	# of deliveries - carts	250	166	51%
	Total	2770	2095	32%
<i>Long Term Financial Health</i>				
	Used Cardboard Sales	\$174.00	\$384.50	-54.75%