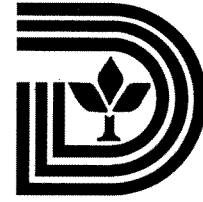


Memorandum



CITY OF DALLAS

DATE December 29, 2010

TO Honorable Mayor and Members of the City Council

SUBJECT **Sanitation Fleet Efficiencies with Global Positioning System - Update**

On Wednesday, January 5, 2011, Sanitation Services will brief the subject topic. Attached are the briefing materials for your review.

Please let me know if you have any questions.

A handwritten signature in black ink, appearing to read 'Ryan S. Evans'.

Ryan S. Evans
First Assistant City Manager

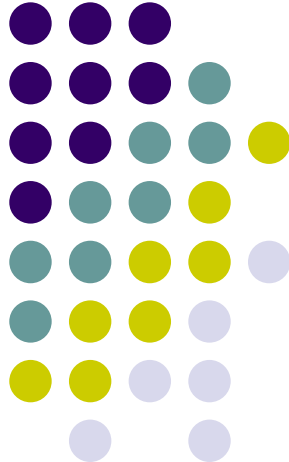
Attachment

C: Mary K. Suhm, City Manager
Deborah A. Watkins, City Secretary
Thomas P. Perkins, Jr., City Attorney
Craig D. Kinton, City Auditor
Judge C. Victor Lander, Administrative Judge
Jill A. Jordan, P.E., Assistant City Manager
A.C. Gonzalez, Assistant City Manager
Forest E. Turner, Assistant City Manager
Jeanne Chipperfield, Chief Financial Officer
Frank Libro, Public Information Office
Mary Nix, Director, Sanitation Services
Helena Stevens-Thompson, Assistant to the City Manager

Sanitation Fleet Efficiencies with Global Positioning System -- Update

Briefing to City Council

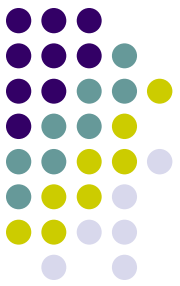
January 5, 2011



BRIEFING PURPOSE

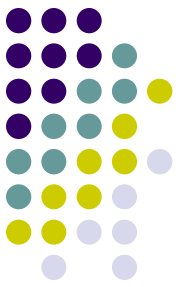


- Follow up to February 18, 2009 briefing
- Provide update on GPS deployment to Sanitation's fleet



What we said in Feb 2009

- Pilot started October 2006 with 70 units
 - DPD and DFR already utilizing GPS department-wide
- Pilot warranted expansion department wide
- Planned savings over a 3-year contract period:
 - overtime cost savings of \$691,687
 - fuel cost savings of \$188,824
 - improved customer service
- Council approves 3-year contract for **\$697,058** on Feb 18, 2009 *(see Appendix A)*



So, how are we doing?

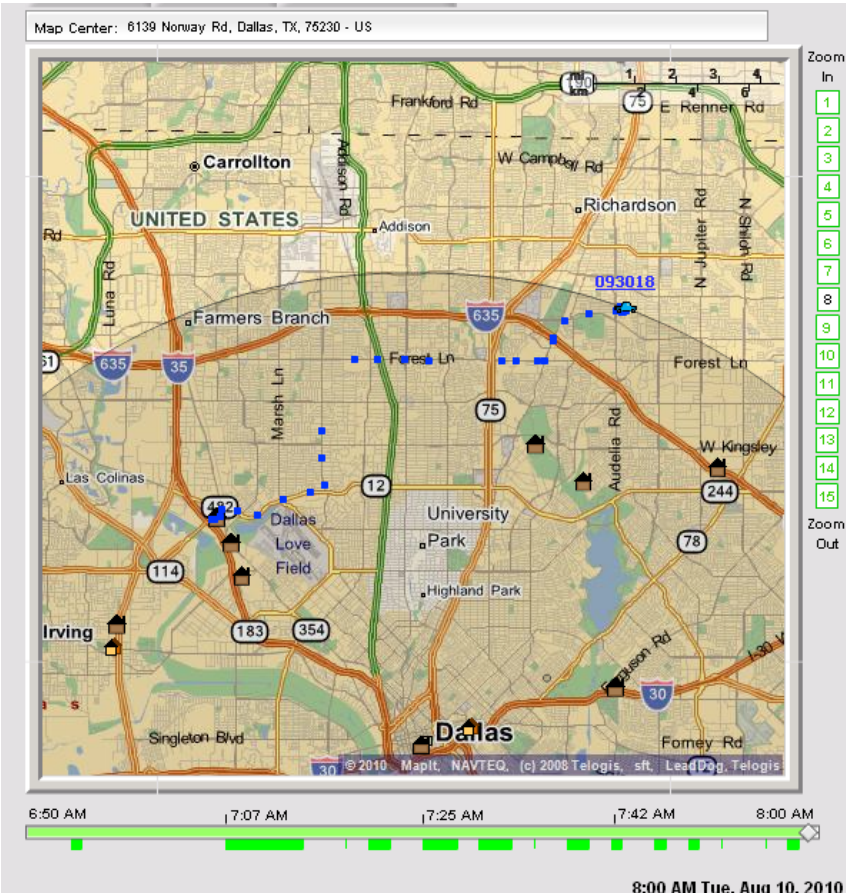
- Installation June – September 2009
 - All 378 road vehicles equipped
 - Continue to install on any new vehicles
- Training of 41 supervisors and managers
 - 3-6 month effort
 - Follow-up training introduces new features
- How are they using GPS ?
 - day-to-day verification of routes
 - Any one supervisor may have up to 16 route drivers
 - Can only field-monitor a select few each day
 - GPS gives ability to view ALL drivers at any moment
 - Better utilization of trucks and manpower
 - Weekly reports on efficiencies

Supervisor view - route time

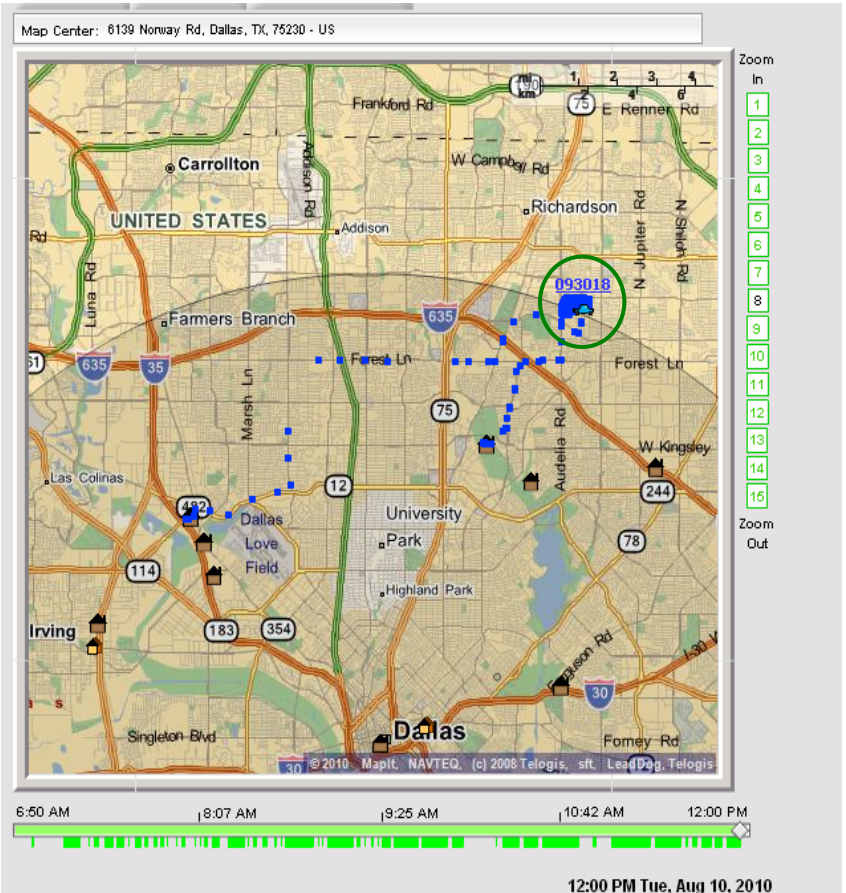


Route at 8am

Route at 12pm



Timestamp	Speed	State	Location
7:59 AM Tue, Aug 10, 2010	0	Moving	13165 Fall Manor Dr, Dallas, TX, 75243 - US

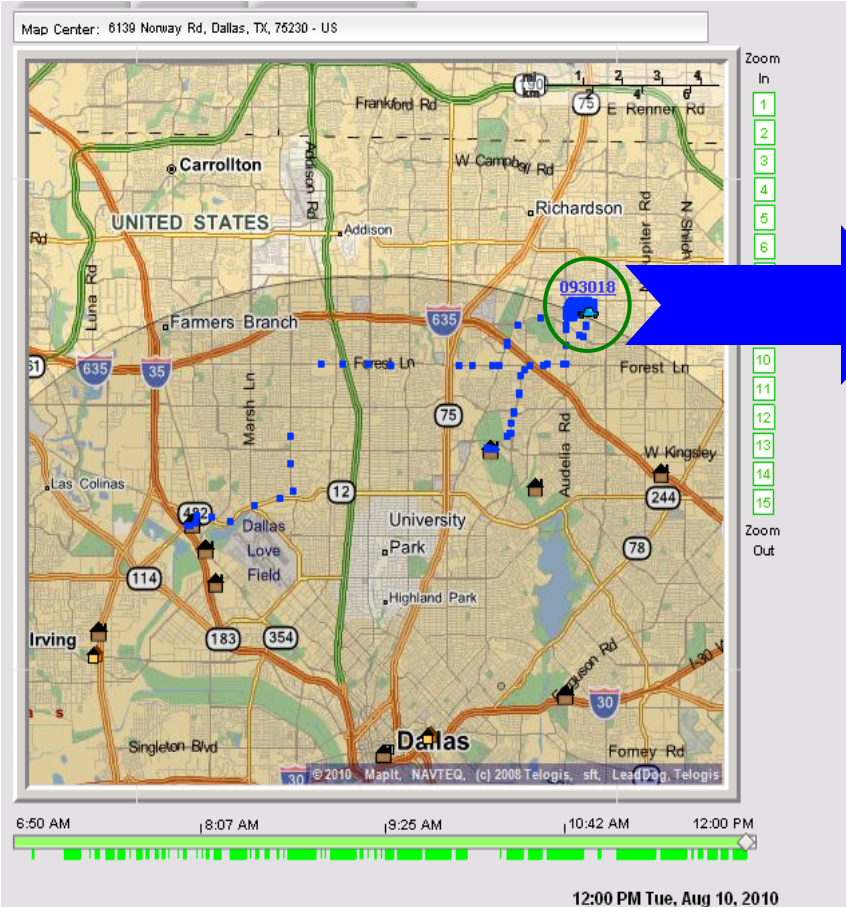


Timestamp	Speed	State	Location
11:59 AM Tue, Aug 10, 2010	12	Moving	10236 Deermont Trl, Dallas, TX, 75243 - US

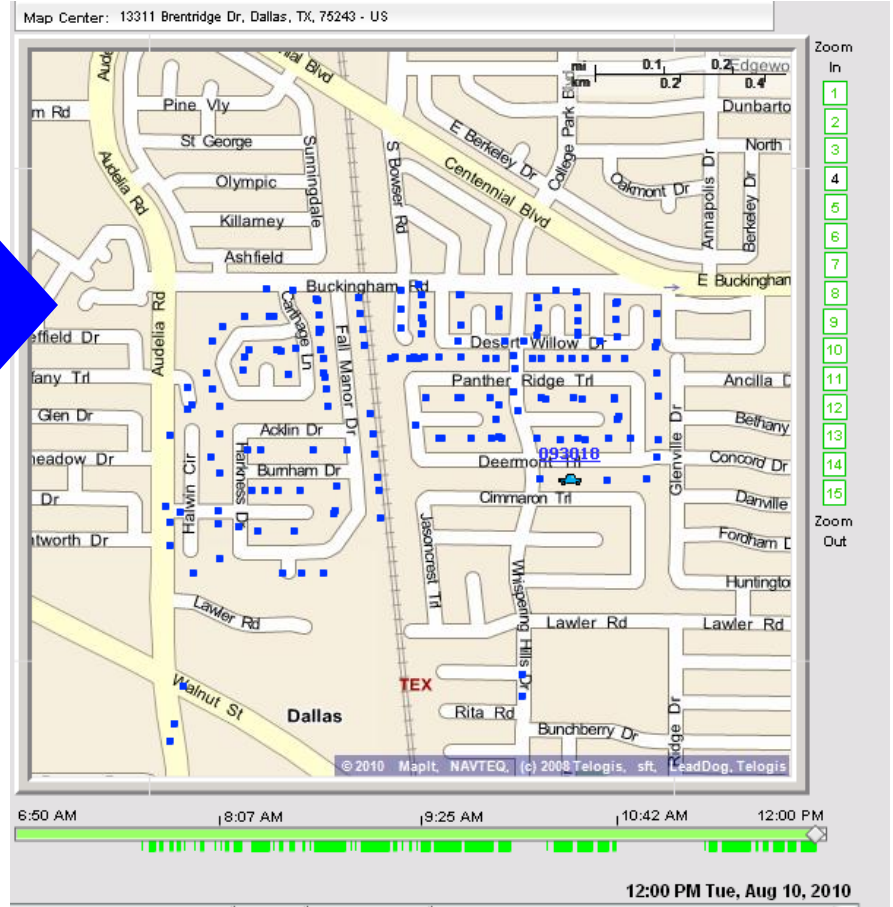
Supervisor view - route time



Route at 12pm

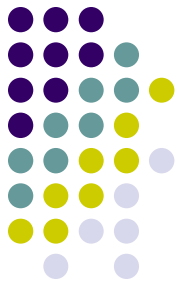


Timestamp	Speed	State	Location
11:59 AM Tue, Aug 10, 2010	12	Moving	10236 Deermont Trl, Dallas, TX, 75243 - US

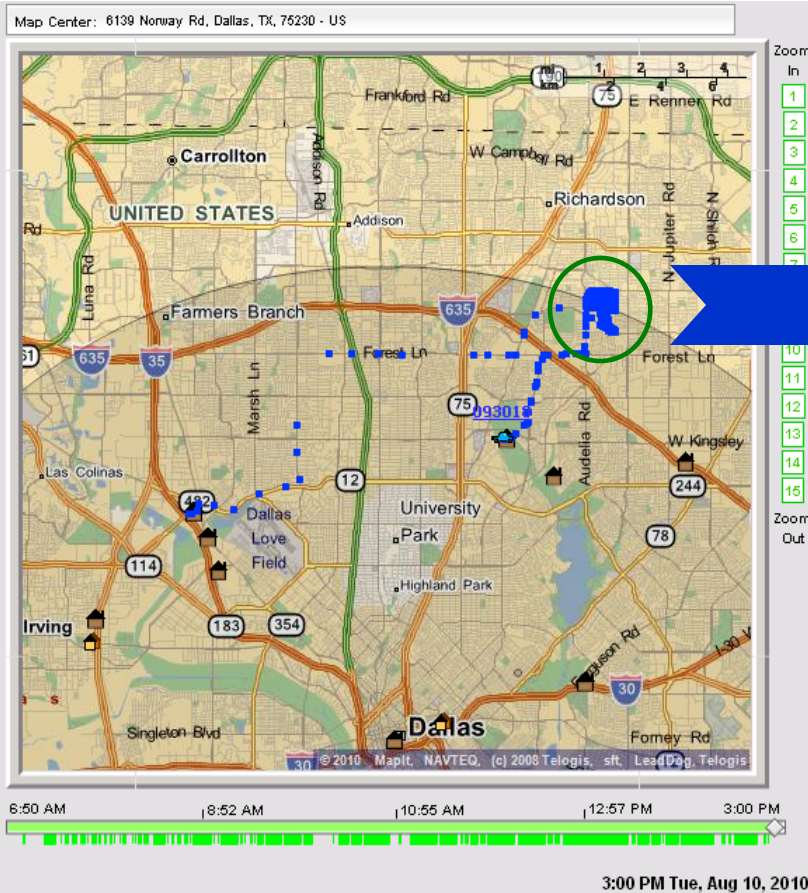


Timestamp	Speed	State	Location
11:59 AM Tue, Aug 10, 2010	12	Moving	10236 Deermont Trl, Dallas, TX, 75243 - US

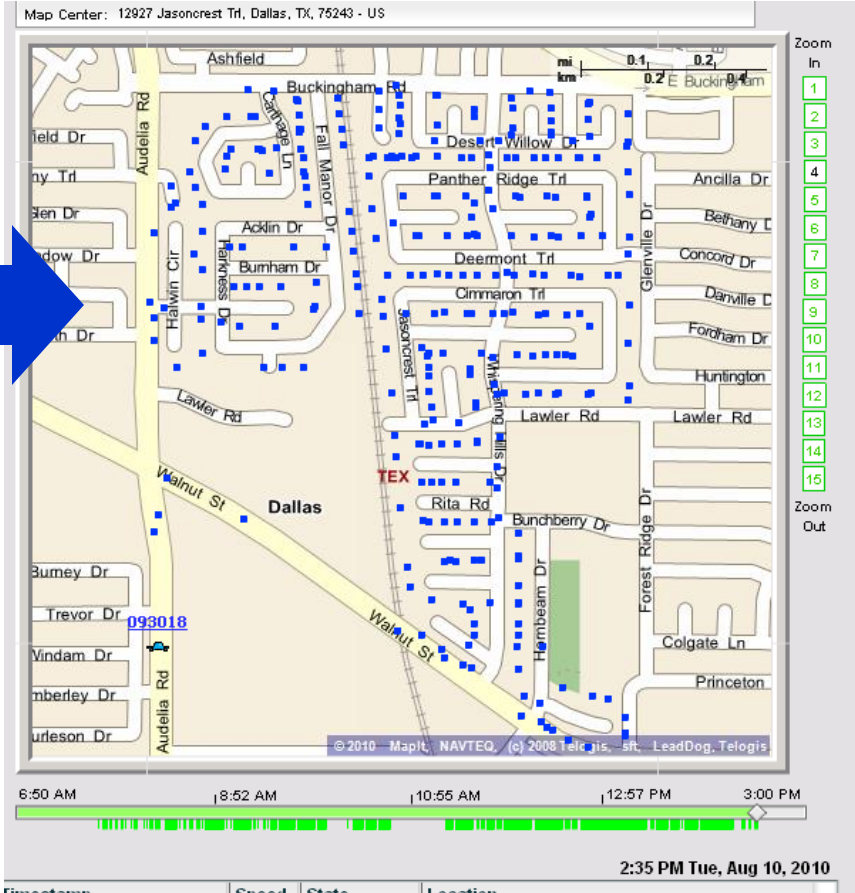
Supervisor view - route time



Route at 3pm

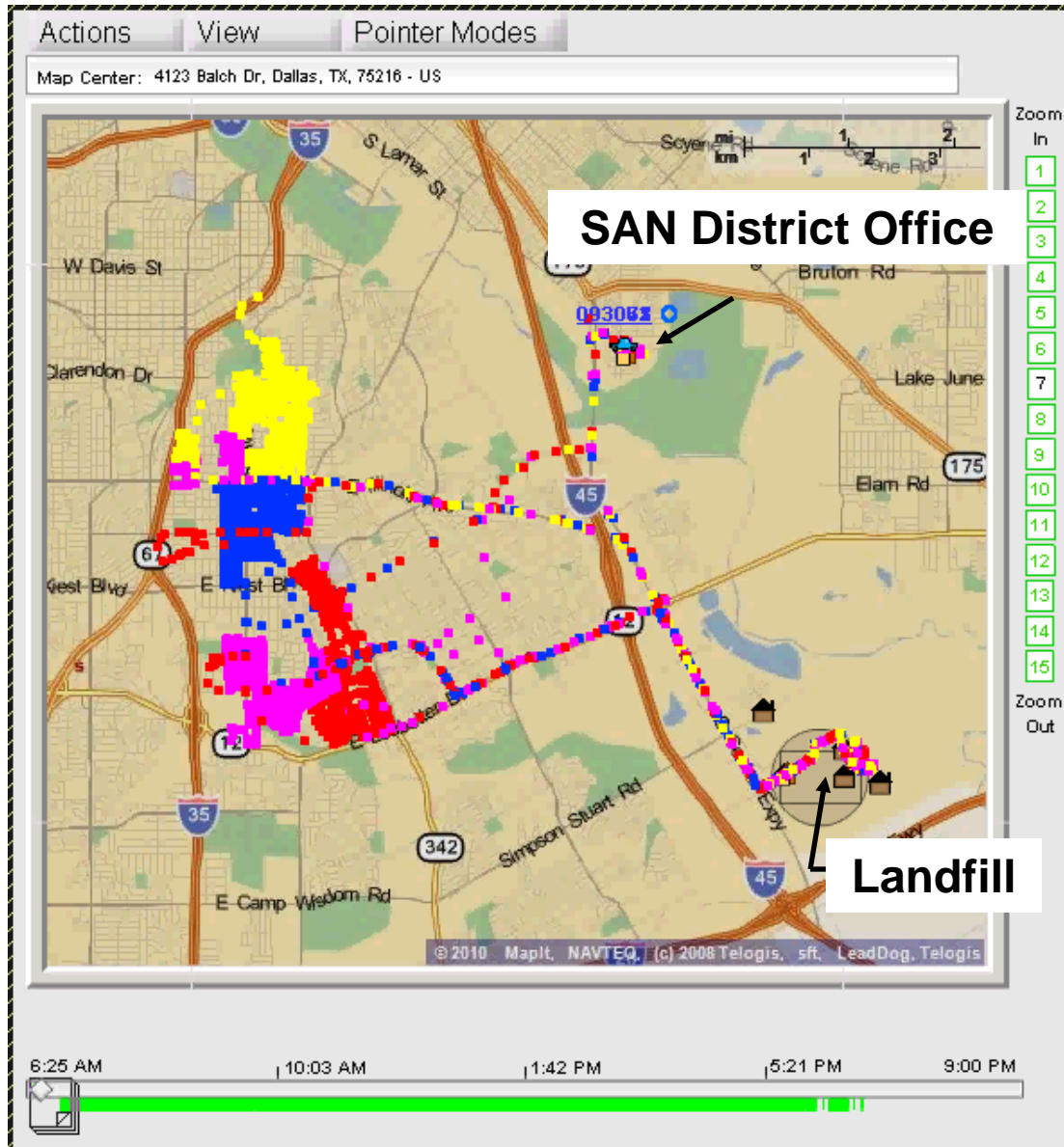
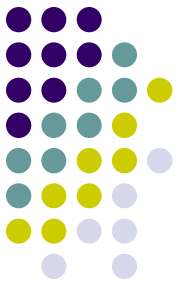


Timestamp	Speed	State	Location
2:57 PM Tue, Aug 10, 2010	0	Idling	FAIR OAKS TRANSFER



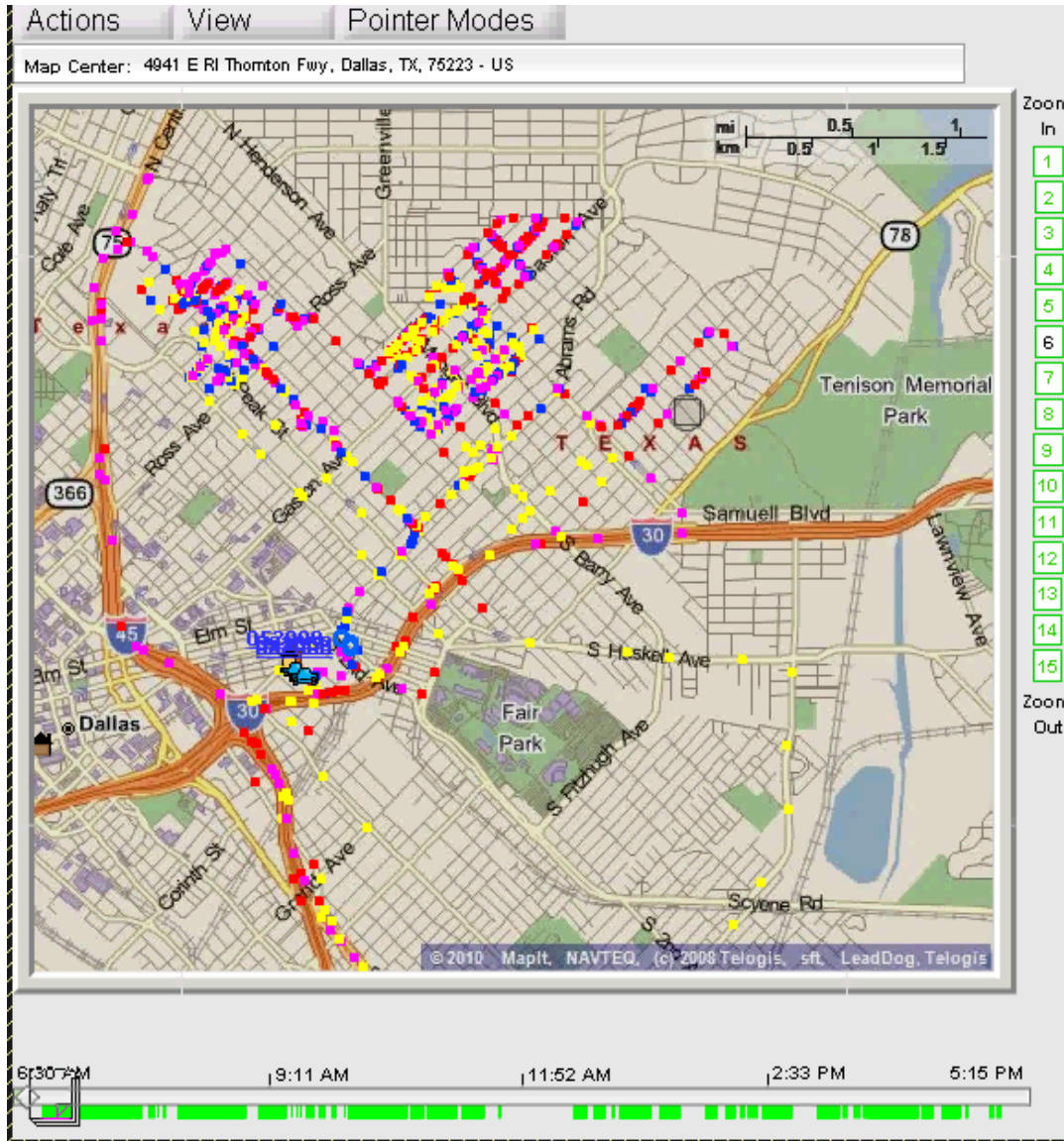
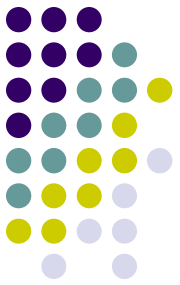
Timestamp	Speed	State	Location
2:35 PM Tue, Aug 10, 2010	29	Moving	12557 Audelia Rd, Dallas, TX, 75243 - US

Supervisor view – review routes



- Supervisors can review multiple routes at one time

Supervisor view – review routes



- Supervisors can review entire brush crew at one time.

Supervisor view - Route fidelity

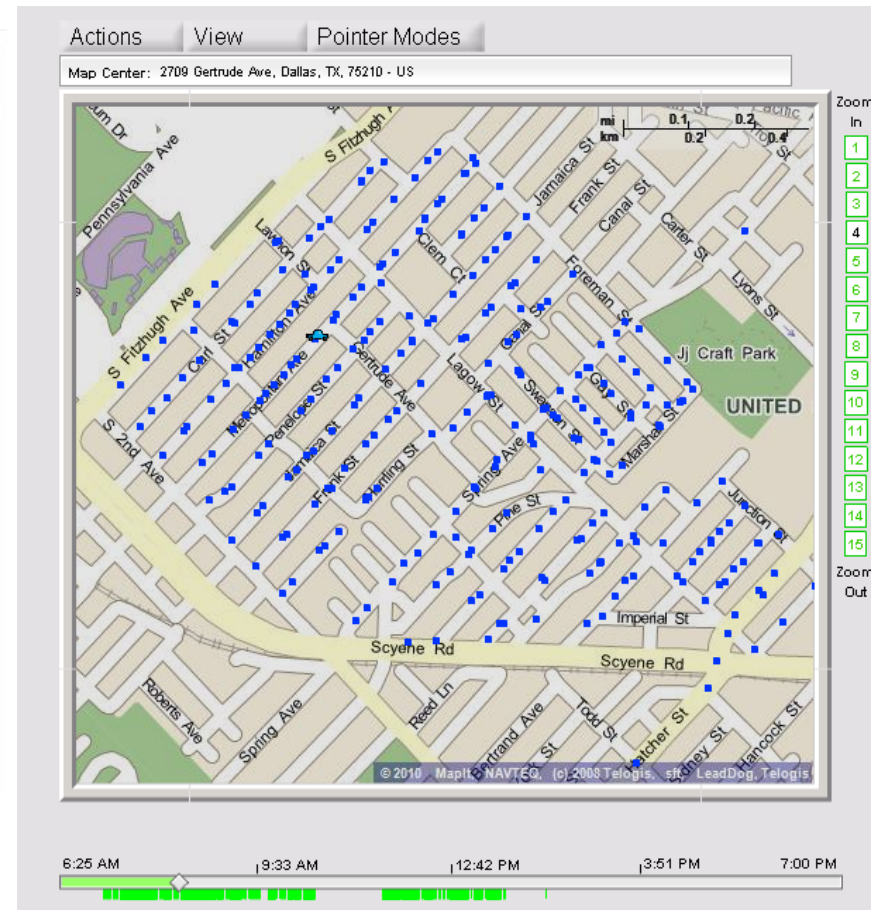


- Compare *planned* route map to *driven* GPS path

Route map – *as planned*



GPS path – *as driven*



GPS Reports - cost analysis



Vehicle Name: 093016

White Peterbilt 320 (104 6538)

State	Departure Time	Departure Location	Arrival Time	Arrival Location	Travel Time	Distance (+ Equiv Idle Distance)
Stopped	--	--	--	--	--	--
	Tue, Sep 14, 2010 6:36am	COD CENTRAL SC 5	6:38am	COD CENTRAL SC 5	2 Min	0.03 Miles (+ 6.03 Miles)
	7:15am	COD CENTRAL SC 5	10:32am	2889 Lagow St Dallas, TX, 75210 - US	3 Hrs, 17 Min	13.22 Miles (+ 1.34 Miles)
	10:36am	2889 Lagow St Dallas, TX, 75210 - US	10:39am	3118 Swanson St Dallas, TX, 75210 - US	3 Min	0.30 Miles (+ 0.00 Miles)
	10:39am	3118 Swanson St Dallas, TX, 75210 - US	11:41am	4260 York St Dallas, TX, 75210 - US	1 Hr, 2 Min	18.63 Miles (+ 0.67 Miles)
	11:41am	4260 York St Dallas, TX, 75210 - US	12:28pm	4026 Marshall St Dallas, TX, 75210 - US	47 Min	2.78 Miles (+ 0.00 Miles)
	12:28pm	4026 Marshall St Dallas, TX, 75210 - US	12:59pm	4327 Marshall St Dallas, TX, 75210 - US	30 Min	2.47 Miles (+ 0.67 Miles)
	1:03pm	4327 Marshall St Dallas, TX, 75210 - US	1:07pm	2844 Lagow St Dallas, TX, 75210 - US	4 Min	0.26 Miles (+ 0.34 Miles)
	1:14pm	2844 Lagow St Dallas, TX, 75210 - US	1:28pm	2886 Morning Ave Dallas, TX, 75210 - US	14 Min	0.67 Miles (+ 0.00 Miles)
	1:29pm	2886 Morning Ave Dallas, TX, 75210 - US	1:58pm	3275 Lagow St Dallas, TX, 75210 - US	28 Min	2.02 Miles (+ 3.06 Miles)
	2:37pm	3275 Lagow St Dallas, TX, 75210 - US	2:47pm	5357 S Central Expy Dallas, TX, 75215 - US	11 Min	2.18 Miles (+ 0.00 Miles)
	2:51pm	5357 S Central Expy Dallas, TX, 75215 - US	3:15pm	McCOMMAS MAIN SITE	24 Min	6.93 Miles (+ 2.51 Miles)
Stopped	3:30pm	McCOMMAS MAIN SITE	3:53pm	COD CENTRAL SC 5	23 Min	9.99 Miles (+ 0.23 Miles)

Summary for Vehicle - 093016

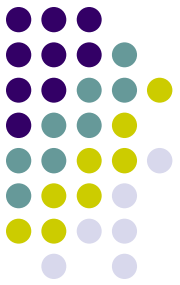
Trip Count: 12
 Travel Time: 7 Hrs, 15 Min
 Travel Distance: 59.49 Miles
 Equivalent Idling Distance: 14.85 Miles

time on route

cost of route

Fuel Cost: \$27.87
 Vehicle Cost: \$153.52
 Crew Cost: \$139.66
 Total Cost: \$321.05

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GPS Reports - *Exceptions* (speed)

Time	Location	Road Type	Speed
7:38am	476 Levant Ave, Dallas, TX, 75217 - US	Residential	20 MPH
7:40am	432 Levant Ave, Dallas, TX, 75217 - US	Residential	1 MPH
7:41am	396 Levant Ave, Dallas, TX, 75217 - US	Residential	0 MPH
7:42am	346 Levant Ave, Dallas, TX, 75217 - US	Residential	0 MPH
7:43am	10418 Harvest Rd, Dallas, TX, 75217 - US	Residential	0 MPH
7:44am	10429 Harvest Rd, Dallas, TX, 75217 - US	Residential	0 MPH
7:45am	10458 Harvest Rd, Dallas, TX, 75217 - US	Residential	0 MPH
7:46am	10477 Harvest Rd, Dallas, TX, 75217 - US	Residential	0 MPH
7:47am	10583 Trail Ave, Dallas, TX, 75217 - US	Residential	13 MPH
7:48am	10549 Trail Ave, Dallas, TX, 75217 - US	Residential	0 MPH
7:49am	10495 Trail Ave, Dallas, TX, 75217 - US	Residential	0 MPH
7:51am	10428 Trail Ave, Dallas, TX, 75217 - US	Residential	10 MPH
7:52am	10366 Trail Ave, Dallas, TX, 75217 - US	Residential	5 MPH
7:53am	10313 Trail Ave, Dallas, TX, 75217 - US	Residential	10 MPH
7:54am	252 S Trego Ct, Dallas, TX, 75217 - US	Residential	0 MPH

- Supervisors can monitor drivers' adherence to speed limits

GPS Reports - *Exceptions*

(idling and extended stops)



Long idle

Vehicle	Time	Location	Road Type	Speed	Duration
Idling	3:50pm	452 Fordham Rd, Dallas, TX, 75216 - US	Residential	0 MPH	32 Min
Moving	4:22pm	452 Fordham Rd, Dallas, TX, 75216 - US	Residential	0 MPH	--
Moving	4:23pm	644 Fordham Rd, Dallas, TX, 75216 - US	Residential	13 MPH	--
Moving	4:24pm	3666 S Marsalis Ave, Dallas, TX, 75216 - US	Secondary	16 MPH	--

Extended stop

Moving	11:31am	4863 Sunnyvale St, Dallas, TX, 75216 - US	Secondary	26 MPH	--
Moving	11:32am	2811 E Ledbetter Dr [Tx-12-Loop], Dallas, TX, 75216 - US	Primary	0 MPH	--
Ignition Off	11:33am	2782 E Ledbetter Dr [Tx-12-Loop], Dallas, TX, 75216 - US	Primary	0 MPH	42 Min
Ignition On	12:15pm	2782 E Ledbetter Dr [Tx-12-Loop], Dallas, TX, 75216 - US	Primary	0 MPH	--
Moving	12:15pm	2782 E Ledbetter Dr [Tx-12-Loop], Dallas, TX, 75216 - US	Primary	0 MPH	--

Feedback from supervisors

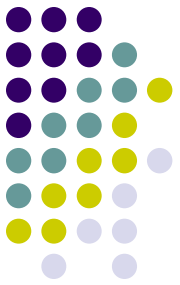


- **Both Manager and Supervisors find GPS to be a helpful tool**
 - Truly able to see ALL of their direct reports more fully
 - Provides excellent means for reinforcing basic principles
 - “Stick to the route”, “follow speed limits”, “check in by radio”
 - Allows for better day-to-day use of manpower and trucks
 - Pinpoint delays earlier – and re-allocate resources to fix
 - Reports offer means to compare driver efficiencies
 - Recognize the better operators
 - Re-train drivers where needed
- **Want to install mobile laptops in supervisor trucks**
 - Make better use of supervisors’ field time

Feedback from field staff



- **Field Employees' Morale Team**
 - 15-person group to represent the 542 SAN employees
 - Originally skeptical of GPS
 - Anticipated punitive outcomes
 - Thought the system would make errors in reporting
 - Now:
 - “Looks like one of the better ideas we’ve seen in Sanitation.”
 - “Will have lasting value if we use savings to keep drivers aware of safety issues – and how dangerous our work is.”
 - Accident at landfill resulted in driver death – May 10, 2010
 - Safety Investigation Report advised for stronger safety policies to ensure no repeat of such a tragic accident
 - “Recognitions (i.e., pins, caps, award events) really make a difference to our guys.”



So ... Is it paying for itself?

- **Cost of system:**

- Three-year contract for:

\$697,058

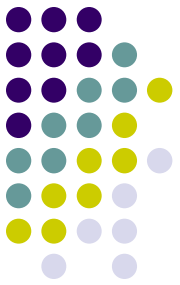
- **Expected savings:**

- Overtime reduction: \$691,687
- Fuel cost reduction: \$188,824
- Projected savings: **\$880,511**

3-year estimate

- Payback should exceed invested cost in Year 3

So ...is it paying for itself? **YES !**



- **Cost of system:**

- Three-year contract for:

\$697,058

- **Expected savings :**

- Overtime reduction:
- Fuel cost reduction:
- Projected savings:

3-year estimate

Year 1 savings*

\$691,687

\$507,670

\$188,824

\$169,636

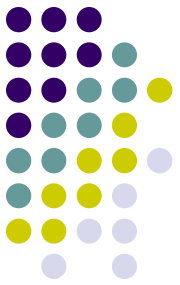
\$880,511

\$677,306

- **Rather than a 3-year payback, the system has nearly paid for itself in just one year**

- **We applied these savings to storm cleanup work**

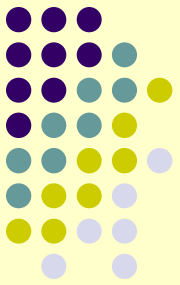
* These figures reflect actual FY10 expense reductions, as of the August FTA report.



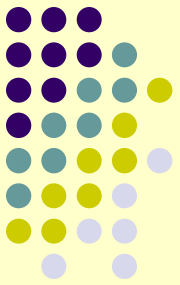
Future ?

- Continue to gather data on SAN usage of GPS – verify overall effectiveness
 - Utilize savings for employee recognition
 - Apply to Employee Safety Incentives
- Apply lessons to support route improvements
 - brush / bulk service
 - dead animal collection
 - proactive roll cart program
- Demonstrate value to other city departments

APPENDIX A



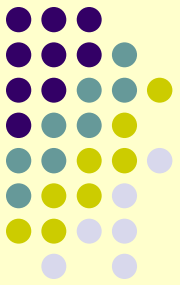
Two pertinent slides from Feb 2009 briefing



WHAT CAN WE SAVE?

- Pilot findings allow for full-fleet projections
- Non-monetary benefit
 - Better customer service – responding to calls
- Reduce Overtime cost by 5%
 - FY08 cost: \$4,611,250 -- FY09 cost \$3,756,343
 - Savings over a 3-year contract period: **\$691,687**
- Reduce fuel consumption by 1% (with routing efficiencies)
 - FY08 cost: \$6,294,140 -- FY09 cost \$3,929,439
 - Savings over a 3-year contract period: **\$188,824**

RETURN ON INVESTMENT



- Three-year cost of system:

\$697,058

- Three-year savings:

\$880,511

- Overtime: \$691,687
- Fuel: \$188,824

Three-Year ROI = 1.26